Processed Q&A from: Uncategorized_questions.docx

1.

Question: The shortest distance between the lines x-1/2 = y-2/3 = z-3/4 and x-2/3 = y-4/4 = z-5/5 is

Options:

A. 1/6

B. 1/√6

C. 1/√3

D. 1/3

Answer: 1/√6

2.

Question: Vector b×(bxa) is coplanar with

Options:

A. a only

B. b only

C. both a and b

D. neither a nor b

Answer: both a and b

3.

Question: ax [bx(xa)] =

Options:

A. (a.b) (axa)

B. (a.b) (xa)

C. (a.c)-(b.c)

D. (a.c) (bxa)

Answer: (a.c) (bxa)

4.

Question: If p = i - 2j + 3k and q = 3i + 3j + k, then $(p-q)^2$ is equal to

Options:

A. |p-q|

B. |p+q|

C. $|p|^2-|q|^2$

D. (|p|+|q|)

Answer: |p+q|

5.

Question: If p = -5i + j – k, q = 2i + j + 2k and r = 4i + 2j - 2k, then the volume of cuboid whose coterminous edges are q + r, r + p and p + q is

Options:

A. 42 cubic unit

B. 84 cubic unit

C. 126 cubic unit

D. 168 cubic unit

Answer: 84 cubic unit

6.

Question: a, b, c are non-zero non-coplanar vectors and p = bxc/[bca], q = cxa/[cab], r = axb/[abc], then [abc] =

Options:

A. [pqr]

B. $[pqr]^2$

C. $[pqr]^{-1}$

D. 0

Answer: $[pqr]^{-1}$

7.

Question: The point of intersection of vector lines $(7\hat{i}+10j+13k) + k_1 (2\hat{i}+3j+4k)$ and $(3i+5j+7k) + k_2 (\hat{i} + 2j + 3k)$ is given by

Options:

A. $\hat{i}+j+k$

B. $\hat{i}-j+k$

C. $\hat{i}+j-k$

D. None of these

Answer: $\hat{i}+j+k$

8.

Question: If a, b, c ∈ G, then for a group (G, *), $(a*b*c)^{-1}$ is equal to

Options:

A. $a^{-1}*b^{-1}*c^{-1}$

B. $c^{-1}*b^{-1}*a^{-1}$

C. $b^{-1}*c^{-1}*a^{-1}$

D. $c^{-1}*a^{-1}*b$

Answer: $c^{-1}*b^{-1}*a^{-1}$

RajTest

9.

Question: A mapping f from a group (G, o) to a group (G', *) is group homomorphism from G to G' if

Options:

A. $f(a^* b) = f(a)\ o\ f(b)\ \forall a, b \in G$

B. $f(a\ o\ b) = f(a) * f(b)\ \forall a, b \in G$

C. $f(a*b) = f(a)\ o\ f^{-1}(b)\ \forall a, b \in G$

D. $f(a\ o\ b) = f(a) * f^{-1}(b)\ \forall a, b \in G$

Answer: $f(a\ o\ b) = f(a) * f(b)\ \forall a, b \in G$

10.

Question: If every element of a group G is its own inverse, then G is

Options:

A. normal

B. finite

C. abelian

D. infinite

Answer: abelian

11.

Question: Every subgroup with index 2 is

Options:

A. Quotient group

B. Normal sub group

C. Cyclic group

D. None of these

Answer: Normal sub group

12.

Question: Let f be a homomorphism from a group G into a group G'. Then which of the following is not true?

Options:

A. f(e) = e', where e and e' are identities of G, G' respectively

B. $f(a)^{-1} = [f(a)]^{-1}, \forall a \in G$

C. f(G) is a subgroup of G'

D. All of these

Answer: All of these

13.

Question: If f is a vector point function then grad (div f) =

Options:

A. curl (curl f) – $\nabla^2 f$

B. curl (curl f) + $\nabla^2 f$

C. curl (grad f)

D. curl (curl f)

Answer: curl (curl f) + $\nabla^2 f$

14.

Question: Vector $r/|r|^3$ is

Options:

A. only solenoidal

B. only irrotational

C. solenoidal and irrotational both

D. neither solenoidal nor irrotational

Answer: solenoidal and irrotational both

15.

Question: $\int_v a.\nabla\Phi\ dV =$

Options:

A. $\oint_s \Phi\ a.dS + \int_v \Phi\ \nabla.a\ dV$

B. $\oint_s \Phi\ a.dS - \int_v \Phi\ \nabla.a\ dV$

C. $\int_v \Phi\ a.\nabla\ dV + \oint_s \Phi\ a.dS$

D. $\int_v \Phi\ a.\nabla\ dV - \oint_s \Phi\ a.dS$

Answer: $\oint_s \Phi\ a.dS - \int_v \Phi\ \nabla.a\ dV$

16.

Question: If r = (cos nt) a + (sin nt) b, then dr/dt x r =

Options:

A. n(bxa)

B. n(axb)

C. (cos nt + sin nt) (bxa)

D. (cos nt + sin nt) (axb)

Answer: n(bxa)

17.

Question: div (grad $\tan^{-1} y/x$) =

Options:

A. -1

B. 0

C. 1

D. 2

Answer: 0

RajTest

18.

Question: Degeneracy in transportation problem occurs, if (matrix m x n)

Options:

A. empty cells < (m + n - 1)

B. empty cells = (m + n + 1)

C. empty cells > (m + n - 1)

D. empty cells > (m + n + 1)

Answer: empty cells > (m + n - 1)

19.

Question: Which of the following relation is not correct?

Options:

A. $\Delta V = \delta^2$

B. $\mu\delta = \xi (\nabla + \Delta)$

C. $\Delta = 1 - e^{-hD}$

D. $\Delta + \nabla = \Delta/\nabla$

Answer: $\Delta = 1 - e^{-hD}$

20.

Question: If f(1) = 2, f(2) = 4 and f(3) = 7, then f'(n) =

Options:

A. x

B. x+1

C. x + 1/2

D. 1

Answer: x + 1/2

21.

Question: The particular integral of difference equation $y_{n+2} - 2y_{n+1} + y_n = n2^{2n}$ is

Options:

A. $2^n (n^2 - 8n + 20)$

B. $2^n n(n + 1)$

C. $2^n n(n - 1)$

D. n · 2^(n-1) (n + 1)

Answer: $2^n (n^2 - 8n + 20)$

22.

Question: The nth divided difference of a polynomial of degree 'n' is

Options:

A. a variable

B. a constant

C. always zero

D. None of these

Answer: a constant

23.

Question: The series 1/(1.2) + 2/(3.4) + 3/(5.6) + ... is

Options:

A. divergent

B. convergent

C. conditionally convergent

D. oscillatory

Answer: divergent

24.

Question: If $f \in R [a, b]$, consider the following statements: (a) 'f' is continuous on [a, b] (b) 'f' is monotonic on [a, b] Which of the following is correct?

Options:

A. only (a)

B. only (b)

C. both (a) and (b)

D. neither (a) nor (b)

Answer: both (a) and (b)

25.

Question: The sequence $\{S_n\}=(1+1/n)^n$ is

Options:

A. Converges to a rational value

B. Converges to an irrational value

C. Absolutely converges to a rational value

D. Diverges

Answer: Converges to an irrational value

26.

Question: A set $\{1/n : n \in N\}$ is

Options:

A. Closed and bounded

B. Open but bounded

C. Neither open nor closed but bounded

RajTest

D. Unbounded

Answer: Neither open nor closed but bounded

27.

Question: Function f(x) = {1, when x is rational; -1, when x is irrational} defined on [0, 1], then f is

Options:

A. bounded and R-integrable

B. bounded but not R-integrable

C. unbounded and R-integrable

D. unbounded but not R-integrable

Answer: bounded but not R-integrable

28.

Question: $\int_0^2 |1-x|\, dx$ =

Options:

A. 0

B. -1

C. 1

D. 1/2

Answer: 1

29.

Question: $\lim_{n\to\infty} \sum_{r=1}^{n} 1/\sqrt{(2nr - r^2)}$ =

Options:

A. 0

B. 1/2

C. π/2

D. π/2 + 1

Answer: π/2

30.

Question: The area of the loop of the curve $ay^2 = x^2 (a - x)$ is equal to

Options:

A. $a^2/2$ sq. unit

B. $8a^2/15$ sq. unit

C. $7a^2/15$ sq. unit

D. $6a^2/15$ sq. unit

Answer: $8a^2/15$ sq. unit

31.

Question: $\lim_{n\to\infty} (1/n + 1/(n+1) + 1/(n+2) + \ldots + 1/(3n))$ =

Options:

A. log 3

B. log 2

C. 0

D. -1

Answer: log 3

32.

Question: The area bounded by the curve $y = 2x^4 - x^2$, the x axis and the two ordinates corresponding to minimal of the function is

Options:

A. 1/24 square unit

B. 1/40 square unit

C. 7/120 square unit

D. None of these

Answer: 7/120 square unit

33.

Question: The area bounded by the curve xy = 1, y = x, x = e and y = 0 is divided by the line x = 1 in the ratio

Options:

A. 3:1

B. 1:2

C. 3:2

D. 1:4

Answer: 1:2

34.

Question: Probability that a leap year selected at random containing 53 Sundays, is equal to

Options:

A. 53/365

B. 1/7

C. 2/7

D. 1/365

Answer: 2/7

35.

Question: A problem is given to three students X, Y and Z whose chances of solving it are 1/2, 1/3 and 1/4

RajTest

respectively. The chance that the problem will be solved, is equal to

Options:

A. 1/4

B. 1/2

C. 3/4

D. 1/3

Answer: 3/4

36.

Question: A coin is tossed 4 times. The probability that atleast one head turns up, is

Options:

A. 1/16

B. 1/4

C. 15/16

D. 1/2

Answer: 15/16

37.

Question: Standard deviation of Binomial distribution is equal to (n, p, q have their usual meaning)

Options:

A. npq

B. $\sqrt{np}$

C. $\sqrt{npq}$

D. np

Answer: $\sqrt{npq}$

38.

Question: If mean and mode of a distribution are 12.2 and 11.3 respectively, then median of distribution is equal to

Options:

A. 13.1

B. 34.8

C. 35.7

D. 11.9

Answer: 11.9

39.

Question: Standard deviation of a distribution is σ. If all values of the variate multiplied by a constant quantity h, then variance of the distribution is equal to

Options:

A. $h\sigma$

B. $h^2\sigma$

C. $h^2\sigma^2$

D. $h\sigma^2$

Answer: $h^2\sigma^2$

40.

Question: $\Gamma(-3/2) =$

Options:

A. $4\pi/3$

B. $3\pi/4$

C. $4\sqrt{\pi}/3$

D. $3\sqrt{\pi}/4$

Answer: $4\sqrt{\pi}/3$

41.

Question: The weighted mean of first n natural numbers whose weights are equal to the square of the corresponding number is

Options:

A. $n(n + 1)^2/4$

B. $3n(n + 1)/(2(2n + 1))$

C. $n(n + 1)/2$

D. $(n + 1)(2n + 1)/6$

Answer: $3n(n + 1)/(2(2n + 1))$

42.

Question: The value of integral $\iiint V\ x\ y\ z\ dx\ dy\ dz$ where V is the volume of
whole conicoid $x^2/a^2 + y^2/b^2 + z^2/c^2 \leq 1$,is:

Options:

A. $a^2b^2c^2 / 48$

B. $a^2b^2c^2 / 6$

C. $a^2b^2c^2 / 24$

D. 0

Answer: 0

43.

RajTest

Question: The value of integral ∫₀^∞ x^(m-1)+x^(n-1) / (1+x)^(m+n) dx is:

Options:

A. Γ(m)Γ(n) / Γ(m+n)

B. 2Γ(m)Γ(n) / Γ(m+n)

C. Γ(m)Γ(n) / 2Γ(m+n)

D. Γ(m+n) / Γ(m)Γ(n)

Answer: 2Γ(m)Γ(n) / Γ(m+n)

44.

Question: The infinite series Σ √(3^(n-1) / 5^(n-1)) is:

Options:

A. Neither convergent nor divergent

B. Divergent

C. Convergent

D. Oscillatory

Answer: Convergent

45.

Question: The set Q of rational numbers is:

Options:

A. a complete ordered field

B. not complete but ordered field

C. complete but not an ordered field

D. None of these

Answer: not complete but ordered field

46.

Question: The sequence $\{x_n\}$, where
$x_n = 1/(n+1) + 1/(n+2) + 1/(n+3) + ... + 1/(n+n)$, $\forall n \in N$

Options:

A. is not convergent

B. is not monotonic

C. is unbounded

D. is bounded

Answer: is bounded

47.

Question: The series of functions $\sum_{n=1}^{\infty} \sin nx / n^{(p-2)}$ is uniformally convergent on R if

Options:

A. $p > 3$

B. $p \geq 3$

C. $p < 3$

D. $p = 3$

Answer: $p > 3$

48.

Question: Which of the following statements is true :

Options:

A. Every discontinuous function is R-integrable.

B. Every bounded function is R-integrable.

C. Every monotonic function is R-integrable.

D. Every monotonic function is not R-integrable.

Answer: Every monotonic function is R-integrable.

49.

Question: The supremum and Infimum of the set S = $\{((-1)^n)/n + 1; n \in N\}$ are respectively:

Options:

A. 3/2, 0

B. 0, 3/2

C. 1, 3/2

D. 3/2, 1

Answer: 3/2, 0

50.

Question: The values of constant l, m, n, for which the directional derivative of
$\varphi = lxy^2 + myz + nz^2x^3$ at the point (1,2,-1) has maximum
magnitude 64 along z-axis, is equal to :

Options:

A. l = -6, m = 24, n = 8

B. l = 6, m = 24, n = -8

C. l = 6, m = -24, n = -8

D. l = 8, m = 24, n = -6

Answer: l = 6, m = 24, n = -8

51.

Question: If $\hat{r}$ is the unit vector along the vector r and r = |r|, then divergence of $\hat{r}$ is equal to :

Options:

A. 3/r

B. $2/r^2$

RajTest

C. 2/r

D. 0

Answer: 2/r

52.

Question: The value of the surface integral ∫S (axî + byĵ + czk).ñ ds
where S is the surface of sphere $x^2 + y^2 + z^2 = 9$, is equal to:

Options:

A. 4/3 π(a + b + c)

B. 3/2 π(a + b + c)

C. 36π(a + b + c)

D. 4π(a + b + c)

Answer: 36π(a + b + c)

53.

Question: If both the roots of the equation x^2 - mx + 121 = 0 are greater
than 10, then minimum value of m is -

Options:

A. 21

B. 22

C. 23

D. 11

Answer: 22

54.

Question: If a, x, y, z, b are in A.P., then x + y + z = 15 and if a, x, y, z, b
are in H.P., then 1/x + 1/y + 1/z = 5/3 . Values of a and b are equal to

Options:

A. 8, 2

B. 11, 3

C. 9, 1

D. 7, 3

Answer: 9, 1

55.

Question: Let f(x) be a quadratic function. If f(1) = f(-1) and a, b, c are in G.P., then
f'(a), f'(b), f'(c) are in -

Options:

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: G.P.

56.

Question: According to pure mathematicians out of following which is not the characteristics of mathematics
-

Options:

A. Mathematics is objective facts.

B. It is a study of reason and logic.

C. It is a system of rigour, purity and beauty.

D. Biased from societal influences.

Answer: Biased from societal influences.

57.

Question: Out of following which is not the best characteristics of functional mathematics?

Options:

A. ability to apply skills

B. use mathematics in different contexts

C. draw conclusions but no need to justify them

D. interpret results and discuss their validity

Answer: draw conclusions but no need to justify them

58.

Question: There are two groups given below. Group A is related with some key
concepts of mathematics to prepare curriculum and Group B related with
their corresponding meaning but not given in correct order.
Group A
I. Competence
II. Creativity
III. Application and Implications of mathematics.
IV. Critical understanding
Group B
(a). Appreciating how and why we engage in mathematics and the historical rules of the subject.
(b). Combining approaches and working in

RajTest

unfamiliar ways.
(c). Understanding mathematical modelling.
(d). Being able to work appropriately and accurately.
Match the correct order for key concepts of Group A with Group B.

Options:

A. I-IV, d, b, c, a

B. I-II-III-IV, d, b, a, c

C. I-II-III-IV, b, d, c, a

D. I-III-IV, c, a, b, d

Answer: I-IV, d, b, c, a

59.

Question: Out of the following which is not the starter activity of a mathematics lesson ?

Options:

A. A revision of previously learn work on the lesson topic.

B. A statement or the presentation of some data, as a focus for discussion.

C. Keep the whole class busy working actively on problems, exercises or activities related to the theme of the lesson.

D. A mathematical puzzle.

Answer: Keep the whole class busy working actively on problems, exercises or activities related to the theme of the lesson.

60.

Question: Out of the following which is the best characteristics related to plenaries work of your lesson plan ?

Options:

A. It allowing pupils to think that the lesson is over when you are presenting the plenary.

B. It is used to monitor or evaluate learning in order to inform future teaching and learning.

C. Plenary to be squeezed out through lack of time.

D. No need to pay attention that students are able to write down something about the lesson.

Answer: It is used to monitor or evaluate learning in order to inform future teaching and learning.

61.

Question: Out of the following which is not the objectives of mathematics teaching at secondary stage?

Options:

A. Power of understanding and making use of the mathematical language (symbolism)

B. Develops a power of sensing, analysing and solving problems involving simple calculation.

C. Develops quantitative thinking (precision in thinking)

D. Develops the power of organising, interpreting and expressing statistical and graphical data.

Answer: Develops a power of sensing, analysing and solving problems involving simple calculation.

62.

Question: Out of the following which is the best method of teaching to teach a topic "Laying out school gardens and finding the cost of seeds" at secondary stage?

Options:

A. Inductive method

B. Deductive method

C. Laboratory method

D. Project method

Answer: Project method

63.

Question: Out of the following which teaching aid is best suited to teach the topic " The angles in the same segment of a circle are equal "?

Options:

A. Filmstrips

B. Models

C. Charts

D. Rotractor

Answer: Models

64.

Question: Out of the following which is not the best characteristics of lesson plan in mathematics?

Options:

A. Should be based upon felt needs of the students.

B. Should provide opportunities for activity.

C. Should be proceed rigidly.

D. Should take care of unexpected developments during the lesson.

RajTest

Answer: Should be proceed rigidly.

65.

Question: To develop speedy and accurate arithmetical calculation skills, out of following which strategy is best suited ?

Options:

A. Written work

B. Drill work

C. Assignments

D. Program learning

Answer: Drill work

66.

Question: An effort or technique from which we not only tried to take Mathematics in real life situation but also take place in all discipline is known as -

Options:

A. Correlation in teaching of Mathematics

B. Induction in teaching of Mathematics

C. Deduction in teaching of Mathematics

D. Recreation in teaching of Mathematics

Answer: Correlation in teaching of Mathematics

67.

Question: The statement given by Leibnitz "Music is a modern hidden exercise in Arithmetic of a mind unconscious of dealing with numbers" reflect which values of life?

Options:

A. Moral values

B. Aesthetic value

C. Social value

D. Intellectual value

Answer: Aesthetic value

68.

Question: Who stated the statement "Mathematics is the subject which provides an opportunity for training the mind, to close thinking, stirring up a sleeping and un-instructed spirit".

Options:

A. Hubsch

B. Schultze

C. Plato

D. Dutton

Answer: Plato

69.

Question: "Mathematics should be taught on compulsory basis to all pupils as a part of general education during the first ten years of schooling" this recomendation was given by which commission/report?

Options:

A. Mudaliar Commission

B. Kothari Commission

C. Ram Murthi Commission

D. N.C.F. 2005

Answer: Kothari Commission

70.

Question: Out of the following which is not the specific objective related to skill objectives of Mathematics?

Options:

A. To develops surveying, measuring and weighing.

B. Able to use log tables, slide rules etc effectively.

C. Able to draw geometrical figures neetly, accurately and speedly.

D. Arrange available data and draw conclusion from them.

Answer: Arrange available data and draw conclusion from them.

71.

Question: If an evaluation method assesses the student performance in terms of a specified performance standard then this method of evaluation is known as -

Options:

A. Criterion Referenced Evaluation

B. Non-Referenced Evaluation

C. Formative Evaluation

D. Summative Evaluation

Answer: Criterion Referenced Evaluation

72.

Question: A test which is prepared to measure the degree of mastery of skills, fundamental concepts, process and general knowledge of the subject, attained by the student is known as

RajTest

Options:

A. Diagnostic test

B. Achievement test

C. Remedial test

D. Performance test

Answer: Achievement test

73.

Question: Out of the following which is not the characteristics of gifted students in Mathematics?

Options:

A. Picks up things rapidly and easily.

B. Quick in grasping relationships, making generalisations and drawing conclusion.

C. Good power of imagination, thinking and reasoning.

D. Liking to work at concrete levels.

Answer: Liking to work at concrete levels.

74.

Question: Out of the following which is the correct order of steps of Inductive Method in Mathematics teaching?

Options:

A. Example ---> Verification ---> Observation ---> Generalization

B. Observation ---> Example ---> Verification ---> Generalization

C. Example ---> Observation ---> Generalization ---> Verification

D. Example ---> Observation ---> Verification ---> Generalization

Answer: Example ---> Observation ---> Generalization ---> Verification

75.

Question: Who was the propounder of unit Approach?

Options:

A. Johann Friedrich Herbart

B. H.C. Morrison

C. Benjamin Bloom

D. Ziller

Answer: H.C. Morrison

76.

Question: Out of the following, which option does not shows the use of improvised apparatus during teaching of Mathematics?

Options:

A. Use of Geometry box to teach construction of triangle with given measurement.

B. Use of Bangles, Thread, Meter scale to find out circumference of circle.

C. Use of Chalkstic Box, Thread, Meter scale to find out the surface area of cube.

D. Use of Ball, Coffee Bottle, Water to find out volume of sphere.

Answer: Use of Geometry box to teach construction of triangle with given measurement.

77.

Question: Out of the following, which statement does not shows the objective related to application ?

Options:

A. Use of concept and principle in new situation.

B. Correct use of any method or process.

C. Developing Graph/chart with the help of given data.

D. Identify unstated assumptions in given content.

Answer: Identify unstated assumptions in given content.

78.

Question: Out of the following, which is not the principle of programmed instruction?

Options:

A. Principles of small steps.

B. Principle of self pacing

C. Principle of abstractness

D. Principle of immediate feedback

Answer: Principle of abstractness

79.

Question: Out of the following which is not the appropriate objective of use of Audio visual aids?

Options:

A. To improve learning speed of students.

B. To make students more active.

C. To provide informations to students.

D. To develop observation power of learner.

RajTest

Answer: To provide informations to students.

80.

Question: Out of the following, which is not postulate ?

Options:

A. A straight line can be drawn from any point to any other point.

B. Two straight line cannot intersect at more than one point.

C. Two circles intersect at two point.

D. The whole is equal to the sum of its parts and is greater than part.

Answer: Two circles intersect at two point.

81.

Question: Diagnostic test for fundamental process in Arithmetic was developed by

Options:

A. G.M. Ruch and others

B. G.T. Buswell and Lenore John

C. Leo. J. Brukner

D. Fred J. Schonnel and F. Eleanor Schonnel

Answer: G.T. Buswell and Lenore John

82.

Question: "The curriculum is a tool in the hands of artist (teacher) to mould his material (the pupil) according to his ideals (objectives) in his studio (the school)", this statement is given by whom?

Options:

A. Bankingham

B. Karlingham

C. Sunningham

D. Cunningham

Answer: Cunningham

83.

Question: Which of the following statements are correct?
A. The sum and difference of any two irrational numbers need not be irrational.
B. Product of any two irrational numbers is irrational.
C. For any two distinct irrational numbers a and b, the number a/b is irrational.

Options:

A. A, B and C

B. A and B only

C. B and C only

D. Only A

Answer: Only A

84.

Question: Sum of an integer and its square is

Options:

A. always an odd number

B. always an even number

C. always prime number

D. None of these

Answer: always an even number

85.

Question: The number √1452 / 1872 is

Options:

A. Natural number

B. Integer

C. Rational number

D. Irrational number

Answer: Irrational number

86.

Question: The digit in the unit position of the integer 1! + 2! + 3! + ... + 99! is

Options:

A. 7

B. 3

C. 1

D. 0

Answer: 3

87.

Question: The value of (256)^0.16 (16)^0.18 is

Options:

A. 4

B. 16

C. 64

D. 128

Answer: 4

RajTest

88.

Question: The number of integers n (> 1), such that n, n + 2, n + 4 are all prime numbers, is

Options:

A. more than two, but finite

B. infinite

C. two

D. one

Answer: one

89.

Question: The remainder, when 5928 is divided by 7 is

Options:

A. 6

B. 4

C. 2

D. 1

Answer: 6

90.

Question: In given figure, if AC = BD then,

Options:

A. AB = BC

B. AC = CD

C. AB = CD

D. BC = CD

Answer: AB = CD

91.

Question: In the given figure, AB || CD || EF and GH || KL, then value of θ is

Options:

A. 85°

B. 145°

C. 120°

D. 155°

Answer: 85°

92.

Question: The point of concurrency of medians of a triangle is known as

Options:

A. Incentre

B. Circumcentre

C. Orthocentre

D. Centroid

Answer: Centroid

93.

Question: If the arcs of the same length in two circles subtend angles of 60° and 75° at their respective centres, then ratio of their radii is

Options:

A. 3:4

B. 5:4

C. 4:3

D. 4:5

Answer: 5:4

94.

Question: The area of a triangle with two sides 8 cm and 11 cm and perimeter 32 cm, is equal to

Options:

A. 8 sq. cm.

B. √30 sq. cm.

C. 8√30 sq. cm.

D. 30√8 sq. cm.

Answer: 8√30 sq. cm.

95.

Question: In the given figure, O is the centre of the circle. If chord BC is extended up to P, then ∠DCP is equal to

Options:

A. 60°

B. 70°

C. 80°

D. 110°

Answer: 70°

96.

Question: If the area of an isosceles right angled triangle is 8 sq.cm., then its perimeter is equal to

Options:

A. (8+√2) cm

RajTest

B. (8+4√2) cm

C. (4+8√2) cm

D. (8-4√2) cm

Answer: (8+4√2) cm

97.

Question: If in a triangle, the radius of the circumcircle is double the radius of the inscribed circle, then the triangle is

Options:

A. equilateral

B. isosceles

C. right angled

D. None of these

Answer: equilateral

98.

Question: The area of a circle is halved when its radius is decreased by 'n', then radius of circle is

Options:

A. n√2 / (√2-1) units

B. n / (√2-1) units

C. 2n / (√2-1) units

D. n√2 / (√2+1) units

Answer: n√2 / (√2-1) units

99.

Question: If all the elements of a 3 x 3 matrix P are 1, then P^2 - 3P is

Options:

A. a null matrix

B. an unit matrix

C. a column matrix

D. a diagonal matrix

Answer: a null matrix

100.

Question: If a, b, c are the pth, qth and rth terms respectively of an arithmetic progression and also the pth, qth and rth terms of a geometric progression, then a^(b-c) b^(c-a) c^(a-b) is equal to

Options:

A. 0

B. 1

C. abc

D. (abc)^(a+b+c)

Answer: 1

101.

Question: If A = {1, 2, 3, 4, 5}, then the number of subsets of A which contain element 2 but not 4, is

Options:

A. 2

B. 4

C. 6

D. 8

Answer: 8

102.

Question: If R be the set of real numbers and f: R→ R is defined by f(x) = e^x, then f is

Options:

A. surjective only

B. injective only

C. bijective

D. Neither surjective nor injective

Answer: injective only

103.

Question: The number of ordered pairs of integers (x, y) satisfying the equation x^2 + 6x + y^2 = 4 is

Options:

A. 8

B. 6

C. 4

D. 2

Answer: 8

104.

Question: If a/x + b/y = m and b/x + a/y = n, then x/y is equal to

Options:

A. (ma + nb) / (na + mb)

B. (ma - nb) / (na + mb)

C. (ma - nb) / (na - mb)

D. (ma + nb) / (na - nb)

RajTest

Answer: (ma - nb) / (na - mb)

105.

Question: If Matrix A = [[x-1, 2, 2], [3, x-1, 2], [3, 3, x-1]] then the number of real values of x satisfying the equation d/dx |A| = 0, is

Options:

A. 0

B. 1

C. 2

D. 3

Answer: 2

106.

Question: If x^3, y^3, z^3 are in A.P.; logy, logy, logyz are in G.P. and xyz = 64, then x, y and z are

Options:

A. in A.P only

B. in G.P only

C. both in A.P and G.P

D. neither in A.P nor in G.P

Answer: both in A.P and G.P

107.

Question: If the letters of the word 'DANGER' be permuted in all possible ways and the words formed be arranged as in a dictionary, then the rank of the word 'GANDER' is

Options:

A. 372

B. 373

C. 393

D. 593

Answer: 373

108.

Question: If A = {a, b, c} and relations R1, R2: A → A are R_1 = {(a, b), (b, c), (c, a), (a, a), (b, b), (c, c)} and R_2 = {(a, b), (b, c), (c, a), (a, a)}, then

Options:

A. R_1 is equivalence relation but R_2 is not.

B. R_1 is transitive but R_2 is not.

C. R_1 and R_2 both are equivalence

D. None of these

Answer: None of these

109.

Question: If $(1 + \sqrt{3}i)^{12} = x + iy$ then $y^{(1/12)}$ is equal to

Options:

A. 1

B. 2

C. $\sqrt{3}$

D. 0

Answer: 0

110.

Question: On the sides of BC, CA and AB of a triangle ABC, there are 3, 4 and 5 interior points respectively. Number of triangles formed by these points taking as vertices is equal to

Options:

A. 220

B. 205

C. 210

D. 200

Answer: 205

111.

Question: Number of integers with seven digits, the sum of whose digits is 10 and which can be formed by only 1, 2 or 3 digits, is equal to

Options:

A. 55

B. 66

C. 88

D. 77

Answer: 77

112.

Question: How many kinds can 7 men and 7 women sit around a round table, while in the neighbourhood of each man, there is a woman?

Options:

A. (7!)2

B. (6!). (7!)

C. (6!)2

D. (7!)2

RajTest

E. (6!)2

Answer: (6!). (7!)

113.

Question: The number of permutations formed by the letters of the word CONSEQUENCE in which all three E occur simultaneously is equal to

Options:

A. (9!)(31)

B. 9!

C. 2! 2! 3!

D. 9!

E. 2! 2!

Answer: 9!

114.

Question: If A_1=|x a| and Δ2=|x a|, then b x b x a

Options:

A. Δ2 = 3Δ12

B. d

C. (Δ2) = 3Δ12

D. dx

E. d

F. (Δ2) = 3Δ1

G. dx

H. ($Δ_2$) = 2Δ1

I. dx

Answer: d / dx (Δ2) = 3Δ1

115.

Question: Let A and B are matrices of real numbers of order (3 x 3), A is symmetric and B is skew symmetric and (A+B) (A-B) = (A-B) (A+B) if (AB) =(-1)* (AB), then possible values of k are:

Options:

A. 0 and 2

B. 1 and 3

C. 0 and 3

D. 2 and 3

Answer: 1 and 3

116.

Question: A relation R is defined on the set Z of integers as - mRn ⇔ (m+n) is odd, then

Options:

A. R is symmetric only

B. R is symmetric and transitive

C. R is reflexive and symmetric

D. R is reflexive and transitive

Answer: R is symmetric only

117.

Question: If f(x) = log(5x-x2 / 4) be a real function then domain of f is:

Options:

A. [1,4)

B. [0,1]

C. [0,5]

D. [1,4]

Answer: [1,4]

118.

Question: If f(x) = {x, x ∈ Q / 0, x ∉ Q} g(x) = {0, x ∈ Q / x, x ∉ Q} then the (f-g) is -

Options:

A. one-one onto

B. one-one but not onto

C. onto but not one-one

D. neither one-one nor onto

Answer: one-one onto

119.

Question: If z1, z2, z3 be the vertices of an equilateral triiangle formed inside the circle |z| = 2 and z_1 = 1 + i√3, then -

Options:

A. z2=-2, z3=1-i√3

B. z2=2, z3=1-i√3

C. z2=-2, z3=-1-i√3

D. z2=1-i√3, z3=-1-i√3

Answer: z2=-2, z3=1-i√3

120.

Question: If |z + 4| ≤ 3, then maximum and minimum values of |z + 1| are :

RajTest

Options:

A. 6,1

B. 4,0

C. 4,1

D. 6,0

Answer: 6,0

121.

Question: tan 1° tan 2° tan 3° .....tan 89° is equal to -

Options:

A. 0

B. 1

C. ∞

Answer: 1

122.

Question: For $x \in (0,\pi)$ the equation $\sin x + 2 \sin 2x - \sin 3x = 3$ has -

Options:

A. infinite solutions

B. three solutions

C. one solution

D. no solution

Answer: no solution

123.

Question: If $A + B + C = \pi$, then $\cos 2A + \cos 2B + \cos 2C$ is equal to

Options:

A. 4 cos A cos B cos C

B. 1+4 cos A cos B cos C

C. -1-4 cos A cos B cos C

D. -1+4 sin A sin B sin C

Answer: -1-4 cos A cos B cos C

124.

Question: If the perimeter of a triangle ABC is six times the arithmatic mean of sines of their angles and BC=1, then angle A is equal to -

Options:

A. π/6

B. π/4

C. π/3

D. π/2

Answer: π/6

125.

Question: If in a triangle ABC, the sides a, b, c are in A.P. then tan A/2, tan B/2, tan C/2 are in -

Options:

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: H.P.

126.

Question: The general solution of differential equation $dy/dx + x \sin 2y = x^3 \cos^2 y$ is:

Options:

A. $\tan y = 1/2 (x^2 - 1) + ce^{-x^2}$

B. $\tan y = (x^2 - 1) + ce^{-x^2}$

C. $\tan y = 1/2 (x^2 - 1) + ce^{x^2}$

D. $\tan y. e^{x^2} = (x^2 - 1)e^{x^2} + c$

Answer: $\tan y = 1/2 (x^2 - 1) + ce^{-x^2}$

127.

Question: The singular solution of differential equation $y = px + a\sqrt{1 + p^2}$, where $p = dy/dx$, is

Options:

A. $y = cx + a\sqrt{1 + c^2}$

B. $x^2 - y^2 = a^2$

C. $x^2 + y^2 = a^2$

D. $y = cx - a\sqrt{1 + c^2}$

Answer: $x^2 + y^2 = a^2$

128.

Question: The particular integral of differential equation $d^2y/dx^2 + 3dy/dx + 2y = e^2x. \sin x$, is:

Options:

A. 1/170 e2x (7 cos x - 11 sin x)

B. 1/170 e2x (7 cos x - 11 sin x)

C. 1/170 e2x (7 cosx + 11 sin x)

D. 1/170 e2x (7 sin x - 11 cosx)

Answer: 1/170 e2x (7 cos x - 11 sin x)

RajTest

129.

Question: The solution of differential equation dx/z(x+y) = dy/z(x-y) = dz/x2+y2 is:

Options:

A. $x^2-y^2+z^2 = C1, 2xy-z^2 = C2$

B. $2xy+z^2 = C1, x^2-y^2-z^2 = C2$

C. $x^2+y^2-z^2 = C1, 2xy-z^2 = C2$

D. $2xy-z^2 = C1, x^2-y^2-z^2 = C2$

Answer: $2xy-z^2 = C1, x^2-y^2-z^2 = C2$

130.

Question: The complimentary function of differential equation $d^2y/dx^2 + (1 - \cot x)\, dy/dx - y \cot x = \sin^2 x$, is:

Options:

A. $C_1 e^x + C2 (\sin x - \cos x)$

B. $C_1 e^{-x} + 1/2\ C2 (\sin x + \cos x)$

C. $C_1 e^x + C2 (\cos x - \sin x)$

D. $C_1 e^x + 1/2\ C2 (\sin x - \cos x)$

Answer: $C_1 e^x + C2 (\sin x - \cos x)$

131.

Question: The resultant of two forces P and Q is R. If Q is doubled, R is doubled; while, if Q is reversed, R is again doubled, then the ratio in P, Q and R is equal to

Options:

A. $\sqrt{2}: \sqrt{3}: \sqrt{2}$

B. $\sqrt{3}: \sqrt{2}: \sqrt{2}$

C. $\sqrt{2}: \sqrt{3}: \sqrt{3}$

D. $\sqrt{2}: \sqrt{2}: \sqrt{3}$

Answer: $\sqrt{2}: \sqrt{3}: \sqrt{2}$

132.

Question: Three like parallel forces P, Q, R act at the angular points of a triangle ABC. If their resultant passes through the centroid, then

Options:

A. P/a = Q/b = R/c

B. P/tan A = Q/tan B = R/tan C

C. P = Q = R

D. P.a = Q.b = R.c

Answer: P = Q = R

133.

Question: A particle moves with uniform velocity 4 m/sec from a point O. After 2 seconds a second particle starts from the same point O and in the same direction with velocity 5 m/sec and 3 m/sec² acceleration. When and where does the second particle meet the first ?

Options:

A. after 4 seconds since first particle starts motion and at 16 meter from O.

B. after 2 seconds since first particle starts motion and at 16 meter from O.

C. after 4 seconds since second particle starts motion and at 8 meter from O.

D. None of these

Answer: after 4 seconds since first particle starts motion and at 16 meter from O.

134.

Question: A body of 10 kg falls down from a 10 meter height and comes to rest after entering 1 meter into the sand. The average resisting force of sand on the body is -

Options:

A. 90 kg wt

B. 100 kg wt

C. 110 kg wt

D. 120 kg wt

Answer: 110 kg wt

135.

Question: A particle is projected with velocity 39.2 m/sec at the angle of projection 30° from the horizon. The particle will move in perpendicular direction with its direction of projection after a time interval of:

Options:

A. 6 seconds

B. 8 seconds

C. 4 seconds

D. 16 seconds

Answer: 8 seconds

136.

Question: The optimum solution of the linear programming problem Max $z = 2x1 + x2$ subject to $-x1 + x2 \leq 1, -5x1 + x2 \leq 2, x_1 \geq 0, x_2 \geq 0$ is:

Options:

A. $X_1=0, X2 = 2$

RejTest

B. $X_1 = 0, X2 = 1$

C. No feasible solution exists

D. Unbounded solution

Answer: Unbounded solution

137.

Question: The set of all feasible solutions of a linear programming problem is :

Options:

A. not necessarily a convex set

B. always a convex set

C. nothing can be said

D. None of these

Answer: always a convex set

138.

Question: Let a linear programming problem is as- Maximise z = x1+5x2 + 0.x3 +0.X4 subject to 3x1 + 4x2 + x3 + 0x4 = 6 X1+3x2+0x3-X4=2 X1,X2,X3, X4 ≥ 0 The basic feasible solution after first iteration of simplex method is:

Options:

A. $x_1 = 0$, X2 = 10/3, X3 = 0, X4 = 0

B. $x_1 = 0$, X2 = 0, X3 = 6, X4 = 2

C. x1 = 0 , X2 = 2/3, X3 = 0, X4 = 5/2

D. x1=0, X2 = 2/3, X3 = 0, X4 = 5/2

Answer: $x_1 = 0$, X2 = 0, X3 = 6, X4 = 2

139.

Question: The method to solve assignment problem is known as:

Options:

A. Eulerian method

B. Lagrangian method

C. Hungerian method

D. Hamiltonian method

Answer: Hungerian method

140.

Question: The method to find basic feasible solution of a transportation problem which gives minimum transportation cost, in comparision to others, is:

Options:

A. North-west corner rule

B. Vogel's approximation method

C. Least cost entry method

D. All the above methods

Answer: Vogel's approximation method

141.

Question: If f(x1), f (x2) and f (x3) are values of f (x) near a maximum or minimum point at x, then with the help of divided difference formula, the value of x is given by :

Options:

A. x = (x1 + x2) - f(x1, x2) / 2f(x1,x2, x3)

B. x = (x1 + x2) - f(x1.x2) / f(X1,X2, X3)

C. x = 1/2 (x1 + x2) + f(x1, x2) / 2f(x1, x2, x3)

D. x = 1/2 (x1 + x2) + f(x1, x2) / 2f(x1,x2.X3)

Answer: x = (x1 + x2) - f(x1, x2) / 2f(x1,x2, x3)

142.

Question: The error is least in calculating the value of integral using the rule :

Options:

A. Trapezoidal rule

B. Simpson one-third rule

C. Weddle rule

D. Simpson three-eighth rule

Answer: Weddle rule

143.

Question: The solutiion of difference equation Ux+2 - 7 Ux+1 + 10 Ux = 12.4x is:

Options:

A. Ux = C15x + C22x + 12.4x

B. Ux = C15x + C22x + 6.4x

C. Ux = c1e5x + c2e2x - 6.4x

D. Ux = C12x + C25x - 6.4x

Answer: Ux = C12x + C25x - 6.4x

144.

Question: The difference equation corresponding to the function $yn = A2^n + B3^n$ is:

Options:

A. Yn+2+5yn+1+6yn = 0

B. Yn+2-5yn+1 + 6yn = 0

RajTest

C. Yn+2-5yn+1-6yn = 0

D. Yn+2 + 5Yn+1-6yn = 0

Answer: Yn+2-5yn+1 + 6yn = 0

145.

Question: The rate of convergence of Regula-falsi method to solve algebraic and transcedental equations, is equal to :

Options:

A. 1.618

B. 0.618

C. 2.618

D. 2.0

Answer: 1.618

146.

Question: If $z = \tan^{-1}((x^3+y^3)/(x-y))$ then the value of $x(\partial z/\partial x) + y(\partial z/\partial y)$ is:

Options:

A. sin 2z

B. 2 sin 2z

C. 2

D. 2tan z

Answer: sin 2z

147.

Question: For the function $x^3 + y^3 - 3axy$, which of the following is true :

Options:

A. It has maximum value at (a, a) if a > 0.

B. It has stationary value at (0,0).

C. It has no stationary value at (0,0).

D. It has minimum value at (a, a) if a > 0.

Answer: It has minimum value at (a, a) if a > 0.

148.

Question: Number of asymptotes of the curve $x^2/a^2 + y^2/b^2 = 1$ is:

Options:

A. 0

B. 1

C. 2

D. 4

Answer: 0

149.

Question: The number of distinct real solutions of the equation |x^2 - x - 6| = x + 2 is

Options:

A. 0

B. 2

C. 3

D. 4

Answer: 3

150.

Question: Number of terms in the expansion of (a + b + c)^25 is

Options:

A. 351

B. 325

C. 625

D. 338

Answer: 351

151.

Question: The radius of a wire is decreased to its one-third. If its volume remains the same, then its length will increase

Options:

A. 3 times

B. 6 times

C. 9 times

D. 27 times

Answer: 9 times

152.

Question: The circumference of the base of a 9 m, high wooden solid cone is 44 m, then slant height of the cone is equal to

Options:

A. √120 m

B. √130 m

C. √150 m

D. 7√5 m

Answer: √130 m

RajTest

153.

Question: If each edge of a cube is increased by 50%, then increase in its surface area will be

Options:

A. 50%

B. 75%

C. 100%

D. 125%

Answer: 125%

154.

Question: A solid is hemispherical at the bottom and conical above it. If the surface areas of these two parts are equal, then the volumes of these two parts are in the ratio

Options:

A. 1:√3

B. 2:√3

C. 1:2

D. 2:3

Answer: 2:√3

155.

Question: If $\cos^2\theta - 3\cos\theta + 2 / \sin^2\theta = 1$, where $0 < \theta < \pi/2$ then which of the following statements is/are correct?
a. There are two values of θ satisfying the above equation.
b. only $\theta = 60°$ is satisfied by the above equation.
Select the correct answer.

Options:

A. 'a' only

B. 'b' only

C. Both 'a' and 'b'

D. Neither 'a' nor 'b'

Answer: 'b' only

156.

Question: $(1 - \sin A + \cos A)^2$ is equal to

Options:

A. $2(1-\cos A)(1 + \sin A)$

B. $2(1+\sin A)(1 + \cos A)$

C. $2(1-\cos A)(1 - \sin A)$

D. None of these

Answer: None of these

157.

Question: If $\tan\theta + \cot\theta = 4/\sqrt{3}$ where $0 < \theta < \pi/2$ then $\sin\theta + \cos\theta$ is equal to

Options:

A. 1

B. $(\sqrt{3}-1)/2$

C. $(\sqrt{3}+1)/2$

D. $\sqrt{2}$

Answer: $(\sqrt{3}+1)/2$

158.

Question: If $x + 1/x = 2$, then principal value of $\sin^{-1}x + \cos^{-1}x$ is

Options:

A. 0

B. π

C. π/2

D. π/4

Answer: π/2

159.

Question: For a triangle ABC, with sides a, b, c, the ratio of sin (A - B) to sin (A + B) is

Options:

A. $(b^2 + c^2)/a^2$

B. $(b^2 - c^2)/bc$

C. $(a^2 - b^2)/c^2$

D. $(a^2 - b^2)/ab$

Answer: $(a^2 - b^2)/c^2$

160.

Question: For a triangle ABC with side a, b, c the product of tan A/2 and tan B/2 is

Options:

A. (b+c-a)/(a+b+c)

B. (c+a-b)/(a+b+c)

C. (a+b-c)/(a+b+c)

D. 2c/(a+b+c)

Answer: (a+b-c)/(a+b+c)

RajTest

161.

Question: Difference between the roots of the equation $\sqrt{8}\cos x = \text{cosec } x$, $(0 \le x \le 2\pi)$ is

Options:

A. $\pi/6$

B. $\pi/4$

C. $\pi/3$

D. $\pi/2$

Answer: $\pi/4$

162.

Question: If $y = e^{(\tan^{-1}x)}$, then $(1 + x^2)\, d^2y/dx^2$ is equal to

Options:

A. $x^{-1}\, dy/dx$

B. $(1-2x)\, dy/dx$

C. $(2x-1)\, dy/dx$

D. $(1-2x)\, y$

Answer: $(1-2x)\, dy/dx$

163.

Question: If $f(x) = 3x^4 - 4x^2 + 5$, then the interval for which f(x) satisfy all the conditions of Rolle's theorem, is

Options:

A. [0,2]

B. [-1,1]

C. [-1,0]

D. [1,2]

Answer: [-1,1]

164.

Question: For all real values of x, the minimum value of $(1-x+x^2)/(1+x+x^2)$ is equal to

Options:

A. 0

B. 1

C. 3

D. 1/3

Answer: 1/3

165.

Question: If $\lim (kx \cot x)$ as $x \to 0 = \lim (x \cot kx)$ as $x \to 0$, then value of k is to

Options:

A. only 1

B. only -1

C. ± 1

D. $\pm 1/2$

Answer: ± 1

166.

Question: If $dx/dy = u$, $dy^2/dx^2 = v$, then d^2x/dy^2 is

Options:

A. $-u^2/v$

B. $-v^2/u$

C. $-u^3/v$

D. $-v^3/u$

Answer: $-u^3/v$

167.

Question: If the function $f(x) = \min \{x, x^2\}$, then f(x) is

Options:

A. continuous and differentiable $\forall x \in R$

B. continuous $\forall x \in R$

C. discontinuous at x=1 only

D. discontinuous at x=0 and x=1

Answer: continuous $\forall x \in R$

168.

Question: If [ ] is greatest integer function, then differentiation of x + [x] is

Options:

A. 2

B. 1

C. 0

D. does not exist

Answer: does not exist

169.

Question: From a point P, normal is drawn to the curve $3x^2 + 6y^2 = 18$, which is perpendicular to the line $x + y = 8$. Coordinates of P are:

Options:

A. (1,1)

RajTest

B. (2,1)

C. (8,1)

D. (9,1)

Answer: (2,1)

170.

Question: The equation of the locus of a point which moves so that its distance from (4, 0) and y-axis are equal, is given by

Options:

A. $y^2 + 4x + 16 = 0$

B. $y^2 + 8x + 16 = 0$

C. $y^2 - 8x + 16 = 0$

D. $x^2 - 8y + 4 = 0$

Answer: $y^2 - 8x + 16 = 0$

171.

Question: If the equation $hxy + gx + fy + c = 0; h \neq 0$ represents a pair of straight lines, then

Options:

A. $fc = gh$

B. $fh = cg$

C. $fh = c^2g^2$

D. $gf = ch$

Answer: $gf = ch$

172.

Question: The parabola $y^2 = 4ax$ possesses

Options:

A. one real asymptote

B. two real asymptotes

C. many real asymptotes

D. no real asymptote

Answer: no real asymptote

173.

Question: If co-ordinates of focii are $(\pm 5, 0)$ and vertices are $(\pm 13, 0)$, then equation of ellipse is

Options:

A. $x^2/169 + y^2/144 = 1$

B. $x^2/144 + y^2/169 = 1$

C. $x^2/144 + y^2/169 = 1$

D. $x^2/169 + y^2/144 = 1$

Answer: $x^2/169 + y^2/144 = 1$

174.

Question: The coordinates of the centre of the hyperbola $2x^2 + y^2 - 3xy - 5x + 4y + 6 = 0$ is

Options:

A. (1,2)

B. (2,1)

C. (1,1)

D. (2,2)

Answer: (2,1)

175.

Question: Number of distinct chords of the circle $x^2 + y^2 - \sqrt{2}x - (1/2)y = 0$, passes through the point $(\sqrt{2}, 1/2)$ and bisected by x-axis, is

Options:

A. zero

B. one

C. two

D. infinite

Answer: one

176.

Question: The radius of circle, which touches the circles given by $(x + 1)^2 + (y + 1)^2 = 1$ is

Options:

A. $(\sqrt{2}-1)$ unit

B. $\sqrt{2}$ unit

C. $2\sqrt{2}$ unit

D. None of these

Answer: $(\sqrt{2}-1)$ unit

177.

Question: If A(0, 3), B(-2, 0) and C(6, 1) are vertices of triangle ABC and P(2x, x) be any point, then A and P lies on same side of BC when

Options:

A. $x > 1/2$

B. $x > 1/3$

C. $x > 2$

D. $x > 3$

Answer: $x > 1/3$

RajTest

178.

Question: The point (a cos θ + b sin θ, a sin θ - b cos θ) lies on

Options:

A. ellipse

B. parabola

C. hyperbola

D. circle

Answer: circle

179.

Question: The maximum number of normals which can be drawn common to $y^2 = 4ax$ and $x^2 = 4by$ is

Options:

A. 2

B. 3

C. 4

D. 5

Answer: 5

180.

Question: If a line makes the angles θ_1, θ_2 and θ_3 with the axes, the value of $\sin^2\theta_1 + \sin^2\theta_2 + \sin^2\theta_3$ is equal to

Options:

A. 1

B. 2

C. 3/2

D. 5/4

Answer: 2

181.

Question: The length of perpendicular from (1, 2, 3) to the line (x-6)/3 = (y-7)/2 = (z-7)/-2 is equal to

Options:

A. 3

B. √17

C. 7

D. √66

Answer: 7

182.

Question: If the lines (x-1)/λ = (y-2)/3 = (z-3)/4 and (x-2)/3 = (y-3)/4 = (z-4)/5 are coplanar, then λ is equal to

Options:

A. 2

B. 1

C. 4

D. 3

Answer: 2

183.

Question: The coordinates of the three consecutive vertices of a parallelogram ABCD are A(3, -1, 2), B(1, 2, - 4) and C(-1, 1, 2), then coordinates of the vertex D are

Options:

A. (1,2,8)

B. (2,8,1)

C. (1,-2,8)

D. (1,2,-8)

Answer: (1,-2,8)

184.

Question: The equation of the plane perpendicular to the yz-plane and passing through the points (1, -2, 4) and (3, -4, 5) is

Options:

A. 2x+y-3z+12 = 0

B. y+2z-6=0

C. 3x+y-4z+15=0

D. x-2y+7=0

Answer: y+2z-6=0

185.

Question: The angle between the planes given by combined equation $6x^2 + 4y^2 - 10z^2 + 3yz + 4zx - 11xy = 0$ is equal to

Options:

A. $\cos^{-1}(2/3)$

B. π/2

C. π/3

D. $\cos^{-1}(1/6)$

Answer: π/2

186.

RaiTest

Question: The line (x-1)/2 = (y-21)/-6 = (z+1)/3 and the plane 3x + 2y + 2z = 19

Options:

A. are perpendicular to each other.

B. are parallel to each other.

C. line lies in the plane.

D. angle between line and plane is π/3.

Answer: are parallel to each other.

187.

Question: The straight line (x-α)/l = (y-β)/m = (z-γ)/0 is parallel to

Options:

A. x-axis only

B. y-axis only

C. z-axis only

D. x and y-axes both

Answer: x and y-axes both

188.

Question: The equation of plane parallel to x-axis is

Options:

A. ax + by + cz + d = 0

B. ax + by + d = 0

C. by + cz + d = 0

D. ax + cz + d = 0

Answer: by + cz + d = 0

189.

Question: The function f(x) = $\tan^{-1}$ (sinx + cosx) is monotonic increasing, when -

Options:

A. x < 0

B. x > 0

C. 0 < x < π/2

D. 0 < x < π/4

Answer: 0 < x < π/4

190.

Question: The maximum value of the function 1/x .loge x is-

Options:

A. e

B. 1/e

C. 2e

D. 2/e

Answer: 1/e

191.

Question: The height of the right circular cone with maximum volume inscribed in the sphere of diameter A, is

Options:

A. 2/3 a

B. 3/4 a

C. 1/3 a

D. 1/4 a

Answer: 2/3 a

192.

Question: If y = e^(x+e^(x+ex+∞)), then dy/dx

Options:

A. y/(1+y)

B. y/(y-1)

C. y/(1-y)

D. y/(1+y)

Answer: y/(1-y)

193.

Question: ∫ dx / (x²(x⁴+1)^(3/4)) equals to-

Options:

A. 1/(x⁴+1)^(1/4) / x + c

B. (x⁴+1)^(1/4) / x + C

C. 3(x⁴+1)^(3/4) / x + C

D. 4(x⁴+1)^(3/4) / 3x + C

Answer: (x⁴+1)^(1/4) / x + C

194.

Question: ∫(from 0 to π/2) |sin x - cos x| dx equals to -

Options:

A. 0

B. 2(√2+1)

C. 2(√2-1)

D. √2-1

Answer: 2(√2-1)

RajTest

195.

Question: lim (n→∞) [1/√n² + 1/√(n²+n) + 1/√(n²+2n) + ... + 1/√(n²+(n-1)n)] equals to -

Options:

A. 2√2

B. 2

C. 2-2√2

D. 2√2-2

Answer: 2√2-2

196.

Question: ∫(from -π to π) cos²x / (1+a^x) dx (a > 0) equals to -

Options:

A. π

B. απ

C. π/2

D. 2π

Answer: π/2

197.

Question: The area bounded by parabolas y = (x + 1)² and y = (x - 1)² and the straight line y = 1/4 is -

Options:

A. 4

B. 1/6

C. 4/3

D. 1/3

Answer: 1/3

198.

Question: Between any two roots of the equation e^x cosx = 1, there exists for the equation e^x sinx-1=0:--

Options:

A. Atleast one root

B. Exactly one root

C. No root

D. Infinite roots

Answer: Atleast one root

199.

Question: In the Lagrange's mean value theorem f (x + h) = f(x) + hf'(x+θh), 0 < θ < 1 where f(x) = ax² + bx + c, the value of θ is -

Options:

A. 1/3

B. 1/2

C. 1/4

D. 1

Answer: 1/2

200.

Question: If A (3, 1), B (6,5) and C (x, y) are three points such that ∠ACB = 90° and area of ΔABC = 7, then number of such points C is -

Options:

A. 0

B. 1

C. 2

D. 4

Answer: 0

201.

Question: If three non-zero numbers a,b,c are in H.P., then the straight line x/a + y/b + 1/c = 0 always passes through a fixed point, which is -

Options:

A. (1, 1/2)

B. (1,-2)

C. (-1,-2)

D. (-1,2)

Answer: (1,-2)

202.

Question: If equation 2x² + 7xy + 3y² + 8x + 14y + λ = 0 represents a pair of straight lines, then the value of λ is -

Options:

A. 2

B. 4

C. 6

D. 8

Answer: 8

203.

RajTest

Question: The image of origin with respect to the straight line $x + y + 1 = 0$ is -

Options:

A. (1,1)

B. (-1,-1)

C. (-2,-2)

D. (-1/2, -1/2)

Answer: (-1,-1)

204.

Question: The locus of the centre of the circle, which touches externally the circle $x^2 + y^2 - 6x - 6y + 14 = 0$ and also touches y-axis, is -

Options:

A. $x^2 - 6x - 10y + 14 = 0$

B. $x^2 - 10x - 6y + 14 = 0$

C. $y^2 - 10x - 6y + 14 = 0$

D. $y^2 - 6x - 10y + 14 = 0$

Answer: $y^2 - 10x - 6y + 14 = 0$

205.

Question: If the straight lines joining origin to the intersection points of straight line $y = 2\sqrt{2}\,x + c$ and circle $x^2 + y^2 = 2$ are mutually perpendicular, then -

Options:

A. $c^2-4=0$

B. $c^2-8=0$

C. $c^2-9=0$

D. $c^2-10=0$

Answer: $c^2-9=0$

206.

Question: If the focal chord of parabola $y^2 = 16x$ is the tangent line of the circle $(x-6)^2 + y^2 = 2$, then the possible values of slopes of this chord are :

Options:

A. {-1, 1}

B. {-2, 2}

C. {-2, -1/2}

D. {-2}

Answer: {-1, 1}

207.

Question: The angle between the tangent lines drawn from the origin to the parabola $y^2 = 4a\,(x-a)$, is-

Options:

A. 90°

B. 30°

C. $\tan^{-1}(1/2)$

D. 45°

Answer: 90°

208.

Question: The coordinates of the focii of the ellipse $25(x + 1)^2 + 9(y+2)^2 = 225$ are:

Options:

A. (-2, 1), (-2,6)

B. (-1,2), (-1,-6)

C. (-1,-2), (-2,-1)

D. (-1,-2), (-1,-6)

Answer: (-1,2), (-1,-6)

209.

Question: If the sum of intercepts of the tangent line from the point $(3\sqrt{3}\cos\theta, \sin\theta)$ to the ellipse $x^2/27 + y^2 = 1$, where $0 < \theta < \pi/2$, is minimum, then the value of θ is -

Options:

A. $\pi/3$

B. $\pi/6$

C. $\pi/8$

D. $\pi/4$

Answer: $\pi/6$

210.

Question: The equations of the asymptotes of the hyperbola $xy - 3x + 4y + 2 = 0$ are-

Options:

A. $x + 4 = 0, y + 3 = 0$

B. $x - 4 = 0, y - 3 = 0$

C. $x + 4 = 0, y - 3 = 0$

D. $x - 4 = 0, y + 3 = 0$

Answer: $x + 4 = 0, y - 3 = 0$

211.

RajTest

Question: If a focal chord of the parabola $y^2 = 4ax$ makes a angle with the x-axis then the length of chord is -

Options:

A. $4a \sin^2 \alpha$

B. $4a \operatorname{cosec}^2 \alpha$

C. $4a \cos\alpha \operatorname{cosec}^2 \alpha$

D. $4a \cos\alpha \operatorname{cosec}\alpha$

Answer: $4a \operatorname{cosec}^2 \alpha$

212.

Question: A straight line makes $\alpha, \beta, \gamma, \delta$ angles with the four diagonals of a cube, then $\cos^2 \alpha + \cos^2 \beta + \cos^2\gamma + \cos^2 \delta$ equals to -

Options:

A. 1

B. 2/3

C. 4/3

D. 0

Answer: 4/3

213.

Question: The projections of a line segment on the coordinates axes are 12, 4 and 3 respectively, then the length of this line segment is -

Options:

A. 12

B. 13

C. 14

D. 7

Answer: 13

214.

Question: The shortest distance between the straight lines $(x-3)/3 = (y-8)/-1 = (z-3)/1$ and $(x+3)/-3 = (y+7)/2 = (z-6)/4$ is-

Options:

A. $\sqrt{30}$

B. $2\sqrt{30}$

C. $5\sqrt{30}$

D. $3\sqrt{30}$

Answer: $3\sqrt{30}$

215.

Question: A plane meets the coordinate axes at the points A, B, C. If centroid of the ΔABC is (a,b,c), then the equation of this plane is -

Options:

A. $x/a + y/b + z/c = 1$

B. $x/a + y/b + z/c = 1/3$

C. $x/a + y/b + z/c = 3$

D. $x/a + y/b + z/c = 4$

Answer: $x/a + y/b + z/c = 3$

216.

Question: If the equation $ax^2 + ay^2 + az^2 + 2ux + 2vy + 2wz + d = 0$ $(a \neq 0)$ represents a sphere, then -

Options:

A. $u^2 + v^2 + w^2 - d \geq 0$

B. $u^2 + v^2 + w^2 - ad \geq 0$

C. $u^2 + v^2 + w^2 - ad \leq 0$

D. $u^2 + v^2 + w^2 - d \leq 0$

Answer: $u^2 + v^2 + w^2 - ad \geq 0$

217.

Question: If α, β are the roots of the equation $2x^2 + 6x + b = 0$ $(b < 0)$, then $\alpha/\beta + \beta/\alpha$ is

Options:

A. $=-2$

B. <-2

C. >-2

D. None of these

Answer: <-2

218.

Question: If $a \in Z$ and the equation $(x-a)(x - 10) + 1 = 0$ has integral roots, then the values of a are -

Options:

A. 10,8

B. 12,10

C. 12,8

D. 9,11

Answer: 12,8

219.

Question: The values of a for which $(a^2 - 1)x^2 + 2(a-1)x + 2$ is positive for any real value of x, are

RajTest

Options:

A. $a \geq 1$

B. $a \leq 1$

C. $a > -3$

D. $a \leq -3$ or $a \geq 1$

Answer: $a \leq -3$ or $a \geq 1$

220.

Question: Two students while solving a quadratic equation in x, one copied the constant term incorrectly and got the roots 3 and 2. The other copied constant term and coefficient of x^2 correctly and got the roots -6 and 1. The correct roots are :

Options:

A. 3,-2

B. 6,-1

C. -6, -1

D. -3,2

Answer: 6,-1

221.

Question: The coefficient of x^5 in the expansion of $(1+x)^{21} + (1+x)^{22} + ... + (1+x)^{30}$ is

Options:

A. $^{51}C_5$

B. $^{9}C_5$

C. $^{31}C_6$-$^{21}C_6$

D. $^{30}C_5$+$^{20}C_5$

Answer: $^{31}C_6$-$^{21}C_6$

222.

Question: If $(1 + x)^n = c_0 + c_1x + c_2x^2 + ... + cnx^n$, then $c_0^2 + c_1^2 + c_2^2 + ... + cn^2$ is equal to

Options:

A. $(2n)! / (n!)^2$

B. 2^(2n)

C. 2^(2n-2)

D. $(2n)! / (2(n!)^2)$

Answer: $(2n)! / (n!)^2$

223.

Question: If a, b, c, d are in G.P., then $(a^3+b^3)^{(-1)}$, $(b^3+c^3)^{(-1)}$, $(c^3 + d^3)^{(-1)}$ are in

Options:

A. A.P.

B. H.P.

C. G.P.

D. None of these

Answer: G.P.

224.

Question: If 1/(q+r), 1/(r+p), 1/(p+q) are in A.P., then true statement is :

Options:

A. p,q,r are in A.P.

B. p^2, q^2, r^2 are in A.P.

C. 1/p, 1/q, 1/r are in A.P.

D. $1/p^2$, $1/q^2$, $1/r^2$ are in A.P.

Answer: p^2, q^2, r^2 are in A.P.

225.

Question: If first term of an infinite G.P. is x and its sum is 5, then

Options:

A. $x \geq 10$

B. $-10 < x < 0$

C. $0 < x < 10$

Answer: $0 < x < 10$

226.

Question: If mean of a Binomial distribution is 3 and its variance is 3/2, the number of trials is

Options:

A. 4

B. 6

C. 8

D. 12

Answer: 6

227.

Question: If $z = f(x + ay) + (x - ay)$, then

Options:

A. $\partial^2z/\partial x^2 = a^2\ \partial^2z/\partial y^2$

B. $\partial^2z/\partial y^2 = a^2\ \partial^2z/\partial x^2$

C. $\partial^2z/\partial y^2 = (1/a^2)\ \partial^2z/\partial x^2$

RajTest

D. $\partial^2z/\partial x^2 = -a^2\ \partial^2z/\partial y^2$

Answer: $\partial^2z/\partial y^2 = a^2\ \partial^2z/\partial x^2$

228.

Question: $\int \int (x^2 + y^2)\ dx\ dy =$

Options:

A. 7/60

B. 3/35

C. 4/49

D. 2/15

Answer: 3/35

229.

Question: $\int_{-1}^{1} \int_{0}^{x} \int_{x}^{(x+z)} (x + y + z)\ dz\ dx\ dy =$

Options:

A. 4

B. 0

C. -4

D. 2

Answer: 0

230.

Question: One of the asymptote of curve $x^3 + 3x^2y - 4y^3 - x + y + 3 = 0$ is

Options:

A. y+x=1

B. y-x=0

C. 2y+x=0

D. 2y-x=0

Answer: y-x=0

231.

Question: For the function $z = \tan^{-1}(y/x)$ consider the following statements :
S1: $x\ \partial z/\partial x + y\ \partial z/\partial y = 0$
S2: $x^2\ \partial^2z/\partial x^2 + 2xy\ \partial^2z/\partial x\partial y + y^2\ \partial^2z/\partial y^2 = 0$
S3: $\partial^2z/\partial x^2 + \partial^2z/\partial y^2 = 0$
Which of the following is true?

Options:

A. only S1

B. only S1 and S2

C. All S1, S2, S3

D. None of these

Answer: All S1, S2, S3

232.

Question: If $\int_0^1 x^m (1-x)^n\ dx = \int_0^\infty x^m / (1+x)^p\ dx$, then p equals to

Options:

A. m+n

B. m+n-1

C. m+n-2

D. m+n+2

Answer: m+n+2

233.

Question: General solution of differential equation $(x + 2y^3)\ dy/dx = y$ is

Options:

A. $x=cy + y^2$

B. $x=cy - y^2$

C. $x=cy + y^3$

D. $x=cy - y^3$

Answer: $x=cy + y^3$

234.

Question: The solution of differential equation $xp + 2y = pxy$: $(p = dy/dx)$ is

Options:

A. $xy^2 = ce^x$

B. $xy^2 = ce^{-x}$

C. $x^2y = ce^x$

D. $xy = ce^x$

Answer: $x^2y = ce^x$

235.

Question: The general solution of the differential equation $d^2y/dx^2 + (3i-1)\ dy/dx - 3iy = 0$ is

Options:

A. $y = c_1e^x + c_2e^{(3ix)}$

B. $y = c_1e^{(ix)} + c_2e^{(3ix)}$

C. $y = c_1e^x + c_2e^{(-3ix)}$

D. $y = c_1e^{(-x)} + c_2e^{(-3ix)}$

Answer: $y = c_1e^x + c_2e^{(-3ix)}$

236.

RajTest

Question: If $\lambda = [1 + (dy/dx)^2]^{(3/2)} / (d^2y/dx^2)^{(2/3)}$, then the degree and order of the above differential equation are respectively

Options:

A. 2,2

B. 9,2

C. 2,4

D. 3,2

Answer: 2,2

237.

Question: The integrating factor of linear differential equation dy/dx = e^x - y (e^x - e^y) is

Options:

A. e^x

B. e^y

C. e^(e^x)

D. e^(-e^y)

Answer: e^(e^x)

238.

Question: Solution of the differential equation $d^2y/dx^2 - 2y^3 - 2y = 0$; $y(0) = 0$, $y'(0) = 1$ is

Options:

A. $y = \cot x + 1$

B. $y = \tan x + 1$

C. $y = \tan x$

D. $y = \cot x$

Answer: $y = \tan x$

239.

Question: In an assignment problem, if all $c_{ij} \geq 0$, then $X_{ij} = X_{ij}$ will be an optimal solution where

Options:

A. $\Sigma\Sigma X_{ij} = 1$

B. $\Sigma X_j = 1$

C. $\Sigma\Sigma C_{ij} = 0$

D. $\Sigma\Sigma X_{ij} = 0$

Answer: $\Sigma\Sigma C_{ij} = 0$

240.

Question: To solve the following LPP by simplex method how many artificial variable/s will be added?

$\min z = 5x_1 + 2x_2$
s.t. $3x_1 + x_2 = 4$
$x_1 + 2x_2 \geq 3$
$2x_1 + x_2 \geq 3$,
$x_1, x_2 \geq 0$

Options:

A. 4

B. 3

C. 2

D. 1

Answer: 3

241.

Question: In a linear programming problem if the set of feasible solution is null set, then the problem has

Options:

A. Optimum solution

B. Infinitely many solutions

C. Unbounded solution

D. No solution

Answer: No solution

242.

Question: The intersection of two convex sets is

Options:

A. always a convex set

B. not always a convex set

C. not a convex set

D. null set

Answer: always a convex set

243.

Question: The linear programing problem $z = 5x + 7y$ subject to the constraints $x + y \leq 6$; $2x + 3y \geq 3$; $x \geq 3$, $y \geq 3$, then z is

Options:

A. always minimum

B. always maximum

C. either minimum or maximum

D. infinite

Answer: either minimum or maximum

244.

RajTest

Question: If the maximum and minimum value of the resultant of two forces are 40 units and 20 units respectively, then the magnitude of both forces are

Options:

A. 30, 10 unit

B. 25, 15 unit

C. 50, 10 unit

D. 35, 15 unit

Answer: 30, 10 unit

245.

Question: The resultant of two equal forces inclined at an angle α is half of resultant when they are inclined at the angle β, then

Options:

A. $\cos \alpha = 2\cos \beta$

B. $\cos \beta = 2\cos \alpha$

C. $\cos \alpha/2 = 2\cos \beta/2$

D. $\cos \beta/2 = 2\cos \alpha/2$

Answer: $\cos \beta/2 = 2\cos \alpha/2$

246.

Question: Horizontal range of a projectile is 30 units and it acquires maximum height at 10 units, the angle of projection α is given by

Options:

A. $9(\sin 2\alpha + 1) = 25 (\tan \alpha - 1)^2$

B. $9(\sin 2\alpha + 1) = 25 (\tan \alpha + 1)^2$

C. $25(\sin 2\alpha + 1) = 9 (\tan \alpha + 1)^2$

D. $25(\sin 2\alpha + 1) = 9 (\tan \alpha - 1)^2$

Answer: $25(\sin 2\alpha + 1) = 9 (\tan \alpha + 1)^2$

247.

Question: Out of the following, which statement does not shows Nature of Mathematics?

Options:

A. Mathematics is universal subject.

B. Every branch of Mathematics begins with a set of postulates.

C. In Mathematics, area of Generalization is very narrow.

D. Abstract terms/concepts are explained in Mathematics.

Answer: In Mathematics, area of Generalization is very narrow.

248.

Question: Out of the following, which statement is not a characteristic of specific objectives?

Options:

A. They are specific and precise

B. They are in terms of behavioural outcome

C. They are attainable

D. They are in Generalized form

Answer: They are in Generalized form

249.

Question: "The progress and the improvement of Mathematics are linked to prosperity of the state". This statement indicates which value of Mathematics?

Options:

A. Social value

B. Cultural value

C. Moral value

D. Utilitarian value

Answer: Utilitarian value

250.

Question: "Mathematics is the gateway and key of all the Sciences", this statement is given by whom?

Options:

A. Dutton

B. Roger Bacon

C. Napoleon

D. Hogben

Answer: Roger Bacon

251.

Question: Out of the following, which is the correct logical sequence of steps for inductive method ?

Options:

A. Example → Observation → Generalization → Example

B. Observation → Example → Generalization → Example

C. Example → Observation → Generalization → Example

RajTest

D. Example → Generalization → Example → Generalization

Answer: Example → Observation → Generalization → Example

252.

Question: Out of the following which is not correct maxims of Deductive Method?

Options:

A. From General to particular

B. From Abstract to concrete

C. From Formula to example

D. From Concrete to abstract

Answer: From Concrete to abstract

253.

Question: "Lesson plan is the title given to a statement of achievements to be realized and the specific means by which these are to be attained as a result of the activities engaged in day-by-day under the guidance of the teacher". The statement is given by whom?

Options:

A. N.L. Bossing

B. Bining and Bining

C. Carter V. Good

D. Yokam and Simpson

Answer: N.L. Bossing

254.

Question: Unit approach is based on which Psychology?

Options:

A. Cognitive Psychology

B. Diagnostic Psychology

C. Gestalt Psychology

D. Counselling Psychology

Answer: Gestalt Psychology

255.

Question: Following are the Jumbled steps of Project method. Find out the logical order of these steps from given options :
(i) Choosing and purposing the project.
(ii) Planning of project.
(iii) Providing a situation.
(iv) Evaluation of the project.
(v) Executing the project.
(vi) Recording of the project.

Options:

A. (i), (ii), (iii), (iv), (v), (vi)

B. (v), (vi), (iii), (ii), (i), (iv)

C. (iii), (i), (ii), (v), (iv), (vi)

D. (iii), (i), (ii), (v), (vi), (iv)

Answer: (iii), (i), (ii), (v), (iv), (vi)

256.

Question: "Students will be able to give examples of Arithmetical Progression". This specific objective is related to

Options:

A. Knowledge

B. Understanding

C. Application

D. Analysis

Answer: Understanding

257.

Question: The evaluation which is being taken at interactive phase of teaching is known as

Options:

A. Interactive evaluation

B. Formative evaluation

C. Summative evaluation

D. Purposive evaluation

Answer: Formative evaluation

258.

Question: When teachers of Science, Economics, Philosophy, Geography etc. uses concepts of Mathematics in their respective teaching at that time correlation of each subject with Mathematics is known as

Options:

A. Co-lateral correlation

B. Multi-lateral correlation

C. Uni-lateral correlation

D. Partial correlation

Answer: Multi-lateral correlation

259.

RajTest

Question: "The Scientific education which does not commence with Mathematics is, necessity defective, at its foundation". This statement stated by whom?

Options:

A. Roger Backen

B. Hoghben

C. Herbert

D. Kamte

Answer: Kamte

260.

Question: (1+2+___+15) (1^2+2^2+___+15^2) / (1^3+2^3+___+ $(15)^3$)

Options:

A. 1

B. 31

C. 62

D. 31/2

Answer: 31

261.

Question: The variance of binomial distribution is -

Options:

A. always equal to its mean

B. less than from its mean

C. greater than from its mean

D. None of these

Answer: less than from its mean

262.

Question: If mean and standard deviation of a binomial variate X are 4 and √3 respectively, then P (X≥ 1) is equal to

Options:

A. 1-(1/4)^16

B. 1-(1/3)^16

C. 1-(3/4)^16

D. 1-(1/6)^16

Answer: 1-(3/4)^16

263.

Question: The probabilities of dicing Mr. A and Mr. B in a leap year are p and q. In the end of year the probability of living of only one out of two, is equal to

Options:

A. p + q - pq

B. pq

C. p + q - 2 pq

D. p + q + pq

Answer: p + q - 2 pq

264.

Question: A bag contains 8 white and 6 red balls. 5 balls are drawn randomly from the bag, the probability that 3 or more balls are white, is equal to

Options:

A. 317/1001

B. 658/1001

C. 210/1001

D. None of these

Answer: 658/1001

265.

Question: n persons sit around a round table. The odds in favour that two particular persons sit together, is equal to

Options:

A. 2: (n-3)

B. 2: (n-2)

C. 2: (n-1)

D. 2 : n

Answer: 2: (n-3)

266.

Question: A die is thrown 8 times. The probability of occuring third time 6 in eighth throw, is equal to-

Options:

A. (7C2 x 5^5) / 6^6

B. (7C2 x 5^5) / 6^2

C. (7C2 x 5^5) / 6^8

D. None of these

Answer: (7C2 x 5^5) / 6^8

267.

RajTest

Question: The probability of winning a game by the team A is 2/3. If A plays four games, then the probability of winning more than half of the games, is equal to

Options:

A. 16/27

B. 19/27

C. 19/81

D. 32/81

Answer: 16/27

268.

Question: Let a, β be the roots of the equation $ax^2 + bx + c = 0$. If $\Delta = b^2 - 4ac$ and $a + \beta$, $a^2 + \beta^2$, $\alpha^3 + \beta^3$ are in G.P., then

Options:

A. Δ≠0

B. bΔ=0

C. cΔ=0

D. cΔ≠0

Answer: cΔ=0

269.

Question: If 10 bulbs are faulty out of 100 bulbs. The probability that no bulb is faulty in a sample of 5 bulbs, is equal to

Options:

A. (1/2)^5

B. (9/10)^5

C. (9/10)^5

D. (1/10)^5

Answer: (9/10)^5

270.

Question: If a, β, y are unequal real numbers, then the three points, whose position vectors are $\alpha\hat{i} + \beta\hat{j} + \gamma k$, $\beta\hat{i} + \gamma\hat{j} + \alpha k$ and $\gamma\hat{i} + \alpha\hat{j} + \beta k$ are

Options:

A. collinear

B. vertices of equilateral triangle

C. vertices of isoceles triangle

D. vertices of right angle triangle

Answer: vertices of equilateral triangle

271.

Question: a. [(b + c) x (a + b + c)] equals to

Options:

A. 0

B. [a b c] + [b c a]

C. [a b c]

D. None of these

Answer: 0

272.

Question: If a and b be two such unit vectors that a + 2b and 5a - 4b are mutually perpendicular then angle between a and b is equal to

Options:

A. 45°

B. 60°

C. Cos^-1(1/3)

D. Cos^-1(2/3)

Answer: 60°

273.

Question: If a, b and c be unit vectors and |a - b|^2 = |b - c|^2 = |c - a|^2 = 9, then |2a + 5b +5c| equals to -

Options:

A. 3

B. 4

C. 6

D. 8

Answer: 3

274.

Question: If a, b and c are non-coplanar vectors and d = λa + μb + vc, then λ equals to -

Options:

A. [d b c] / [a b c]

B. [b c d] / [b d a]

C. [c d a] / [a b c]

D. [a b d] / [a b c]

Answer: [d b c] / [a b c]

275.

Question: A well with 14 metres inside diameter is dug 8 metres deep. Sand taken out of it has been evenly spread

RajTest

all around it to a width of 21 metres to form an embankment. The height of embankment is equal to-

Options:

A. 43 cm

B. 47.6 cm

C. 53.3 cm

D. 41 cm

Answer: 53.3 cm

276.

Question: If the volumes of two cones are in the ratio 1:4 and their diameters are in ratio 4: 5, then the ratio of their heights is -

Options:

A. 1:5

B. 5:4

C. 5:16

D. 25: 64

Answer: 25: 64

277.

Question: A cylinderical vessel 60 cm in diameter is partially filled with water. A sphere, 30 cm in diameter is gently dropped into the vessel. To what further height will water in the cylinder rise ?

Options:

A. 40 cm

B. 15 cm

C. 3.75 cm

D. cannot be determined, since height of the cylinder has not been given.

Answer: 40 cm

278.

Question: A cone of height 7 cm and base radius 3 cm is carved from a rectangular block of wood (10 cm x 5 cm x 2 cm). The percentage of wood wasted is -

Options:

A. 66%

B. 34%

C. 46%

D. 54%

Answer: 34%

279.

Question: ABCD is a trapezium whose sides AB= a cm and DC= b cm. AB and DC are parallel, E and F are mid-points of non parallel sides. The ratio in the areas of ABFE and EFCD is -

Options:

A. (a+3b): (3a + b)

B. (3a + b): (a + 3b)

C. (2a+b): (3a + b)

D. None of these

Answer: (3a + b): (a + 3b)

280.

Question: D is the mid-point of the base BC of a triangle ABC. DM and DN are perpendiculars on AB and AC respectively. If DM = DN, then the triangle is -

Options:

A. isoscales

B. equilateral

C. right angled

D. None of these

Answer: isoscales

281.

Question: Two circles touch internally. The sum of their areas is 116π sq cm and the distance between their centres is 6 cm. The radius of larger circle is -

Options:

A. 4 cm

B. 8 cm

C. 10 cm

D. 12 cm

Answer: 10 cm

282.

Question: Which of the following statements is incorrect -

Options:

A. The circle is a locus of a point in 2D.

B. The locus of the points which are equidistant from three non-collinear points is the centre of the circle passing through the given points.

C. The locus of the points which are equidistant from three points on a line, is a line parallel to the given line.

RaTest

D. None of these

Answer: The locus of the points which are equidistant from three points on a line, is a line parallel to the given line.

283.

Question: If O be the interior point in a triangle, then -

Options:

A. (AB+BC+CA) < (OA+OB+OC)

B. (AB+BC+CA) < 2(OA+OB+OC)

C. (AB+BC+CA) > 2(OA+OB+OC)

D. (AB+BC+CA) = 2(OA+OB+OC)

Answer: (AB+BC+CA) < 2(OA+OB+OC)

284.

Question: If AD, BE and CF are the medians of a triangle ABC, then

Options:

A. $AB^2 + BC^2 + CA^2 = AD^2 + BE^2 + CF^2$

B. $3 (AB^2 + BC^2 + CA^2) = 4 (AD^2 + BE^2 + CF^2)$

C. $AB^2 + BC^2 + CA^2 = 3 (AD^2 + BE^2 + CF^2)$

D. $AB^2 + BC^2 + CA^2 = 2 (AD^2 + BE^2 + CF^2)$

Answer: $3 (AB^2 + BC^2 + CA^2) = 4 (AD^2 + BE^2 + CF^2)$

285.

Question: D, E, F are the mid-points of the sides BC, CA and AB respectively of a equilateral ΔABC, then which of the following is true?

Options:

A. ΔDEF, ΔAFE, ΔBDF, ΔCDE are congruent.

B. ΔDEF, ΔAFE, ΔBDF, ΔCDE are similar.

C. ΔDEF, ΔAFE, ΔBDF, ΔCDE are of same area.

D. All of these.

Answer: All of these.

286.

Question: Let ABC be an equilateral triangle and BE perpendicular CA and meeting CA at E, then ($AB^2 + BC^2 + CA^2$) is equal to -

Options:

A. $3\ BE^2$

B. $4\ BE^2$

C. $6\ BE^2$

D. $2\ BE^2$

Answer: $4\ BE^2$

287.

Question: Every composite number can be uniquely expressed as the product of primes. It is known as -

Options:

A. Fundamental theorem of algebra.

B. Fundamental theorem of arithmatic.

C. Euclid's lemma.

D. None of these

Answer: Fundamental theorem of arithmatic.

288.

Question: The set G={1,2,3,.....m-1}, is an abelian group with respect to multiplication modulo m, if

Options:

A. m is any positive integer.

B. m is prime integer.

C. m is even integer.

D. m is odd integer.

Answer: m is prime integer.

289.

Question: The order of permutation p = (1 2 3 4 5 6 7 8 9 / 7 8 9 6 4 5 2 3 1) is

Options:

A. 3

B. 9

C. 6

D. 4

Answer: 6

290.

Question: Let C_0 be the set of non zero complex numbers and f: $(C_0,x) \rightarrow (C_0,x)$ be a group homomorphism, where f(z) = z^n, n ∈ N. The kernel of f is :

Options:

A. {1}

B. {1,-1}

C. {1,0,-1}

D. {n^th roots of unity }

Answer: {n^th roots of unity }

RaTest

291.

Question: The number of generators of cyclic group ({a, a^2, a^3, ..., a^8 = e }, x), where e is identity element, is

Options:

A. 1

B. 2

C. 4

D. 3

Answer: 4

292.

Question: "Every homomorphic image of a group G is isomorphic to some quotient group of G." This theorem is known as:

Options:

A. Fundamental theorem of morphism.

B. Lagrange's theorem

C. Cayley's theorem

D. Euler's theorem

Answer: Fundamental theorem of morphism.

293.

Question: If f: R -> R is a function such that f(1) = 3, f'(1) = 6, then lim (f (1+x)/f(1))^(1/x) as x->0 is equal to -

Options:

A. 1

B. e^(1/2)

C. e^2

D. e^3

Answer: e^2

294.

Question: If f(x) = { x^α cos(1/x) for x ≠ 0; 0 for x = 0 } is continuous at x = 0, then -

Options:

A. α < 0

B. α > 0

C. α = 0

D. α ≥ 0

Answer: α > 0

295.

Question: If $f(x) = \cos^{-1}[\sin((1+x)/2) + x^x]$, then f'(1) is equal to -

Options:

A. 0

B. 1/2

C. 3/4

D. -1/2

Answer: -1/2

296.

Question: The function f(x) = ||x|-1| is not differentiable at the points -

Options:

A. X = 1

B. x = ± 1

C. x = 0, ± 1

D. x = -1

Answer: x = 0, ± 1

297.

Question: If $y = \tan^{-1}[x / (1+\sqrt{(1-x^2)})] + \sin[2\tan^{-1}\sqrt{((1-x)/(1+x))}]$, then dy/dx =

Options:

A. $x / \sqrt{(1-x^2)}$

B. $(1-2x) / (2\sqrt{(1-x^2)})$

C. $(1-2x) / \sqrt{(1-x^2)}$

D. $(2x-1) / (2\sqrt{(1-x^2)})$

Answer: $(1-2x) / (2\sqrt{(1-x^2)})$

298.

Question: If tangent line at the point (m^2, m^3) on the curve $y^2 = x^3$ is also normal at the point (M^2, M^3) on this curve, then value of m.M is -

Options:

A. 4/9

B. 2/3

C. 1/3

D. -9/4

Answer: -9/4

299.

RajTest

Question: Equation of the right circular cylinder, whose axis is x/2 = y/3 = z/6 and radius 5, is -

Options:

A. $40x^2 + 45y^2 + 11z^2 - 12xy + 36yz - 24zx - 1225 = 0$

B. $45x^2 + 40y^2 + 13z^2 - 12xy - 36yz - 24zx - 1225 = 0$

C. $45x^2 + 40y^2 + 13z^2 + 12xy - 36yz + 24zx + 1225 = 0$

D. $40x^2 + 45y^2 + 11z^2 + 12xy + 36yz + 24zx + 1225 = 0$

Answer: $45x^2 + 40y^2 + 13z^2 - 12xy - 36yz - 24zx - 1225 = 0$

300.

Question: The condition that transformation $w = (az+b)/(cz+d)$ transforms the unit circle in the w-plane into straight line in the z-plane is -

Options:

A. $c = d$

B. $|a||d|=1$

C. $|a|=|c|$

D. $|a||c|=1$

Answer: $|a|=|c|$

301.

Question: Among 10 persons, there are 4 men, 2 women and 4 children. If 4 persons are selected, then the probability that there are exactly 2 children among the selected is -

Options:

A. 2/7

B. 4/7

C. 1/7

D. 3/7

Answer: 3/7

302.

Question: The mean and the variance of a binomial distribution are 4 and 2 respectively, then the probability of 2 successes is -

Options:

A. 48/256

B. 32/256

C. 28/256

D. 26/256

Answer: 28/256

303.

Question: $1^3/(1) + (1^3+2^3)/(2) + (1^3+2^3+3^3)/(3) + ...n$ upto n terms is equal to -

Options:

A. $n^2(n+1)/4$

B. $n(n+1)(n+2)(3n+5)/48$

C. $n(n+1)^2(2n+5)/48$

D. $n(n+1)(n+2)(n+3)/4$

Answer: $n(n+1)(n+2)(3n+5)/48$

304.

Question: Roots, of auxiliary equation of the differential equation $d^3y/dx^3 = 8y/x^3$ is-

Options:

A. $3,\pm i\sqrt{2}$

B. 2,-2,3

C. $2,\pm i\sqrt{3}$

D. $-3,\pm i\sqrt{3}$

Answer: $3,\pm i\sqrt{2}$

305.

Question: Which of the following subsets of R^2 is convex set?

Options:

A. $\{(x, y): y \leq x^2\}$

B. $\{(x, y): |x| \leq 5, |y| \geq 10\}$

C. $\{(x, y): y \geq x^2\}$

D. $\{(x, y) : x^2 + y^2 = 1\}$

Answer: $\{(x, y): y \geq x^2\}$

306.

Question: If $ax^2 + 2y^2 + bz^2 + 2axyk - bz - a = 0$ is equation of sphere (a, b, c, k are constants), then its radius is -

Options:

A. $\sqrt{3}/2$

B. $\sqrt{17}/2$

C. $\sqrt{5}/2$

D. 1/2

RajTest

Answer: √5/2

307.

Question: Using graphical method, maximum value of objective function for the following programming problem will be -
max z = 2000x + 3000y
s. t. 2x + 5y ≤ 180, x + y ≤ 45
and x, y ≥ 0

Options:

A. 120000

B. 60000

C. 90000

D. 150000

Answer: 120000

308.

Question: In assignment problems, if 'm' is number of rows (Men) and 'n' is number of columns (Jobs), then correct statement is -

Options:

A. m > n

B. 2m > n

C. m = n

D. m < n

Answer: m = n

309.

Question: The number of solutions of the equation $z^2 + z = 0$, z = x + iy, is-

Options:

A. 2

B. 3

C. 4

D. 1

Answer: 2

310.

Question: Conjugate element of element (1 2) of the permutation group S3 on three symbols 1, 2, 3 is -

Options:

A. (1 2)

B. (1 3 2)

C. (2 3)

D. (1 2 3)

Answer: (2 3)

311.

Question: In triangle ABC, AD is the median through A and E is the midpoint of AD. BE is produced to meet AC in F, then AF equal to -

Options:

A. (1/2) AC

B. (1/3) AC

C. AC

D. (3/4) AC

Answer: (1/3) AC

312.

Question: $\int_0^{\infty} x^a/a^x \, dx$ is equal to, (a > 1) -

Options:

A. $\Gamma(a)/(\log a)^{a+1}$

B. $\Gamma(a+1)/(\log a)^{a}$

C. $\Gamma(a+1)/(\log a)^{a+1}$

D. $\Gamma(a)/(\log a)^{a}$

Answer: $\Gamma(a+1)/(\log a)^{a+1}$

313.

Question: If z and z' are inverse points with respect to a circle, then which of the following is correct?
(a and c are real constants and α is complex constant)

Options:

A. $azz' + \alpha z' + \alpha z + c = 0$

B. $azz + \bar{a}z' + \alpha z + c = 0$

C. $az'z + az + \bar{a}z + c = 0$

D. $az'z + az' + \bar{a}z + c = 0$

Answer: $azz' + \alpha z' + \alpha z + c = 0$

314.

Question: Particular solution of the difference equation $Y_{x+2} - 4Y_x = 2^x$ is -

Options:

A. $(1/4)\, x2^x$

B. $(1/2)\, x2^x$

C. $(1/8)\, x2^{x-1}$

RajTest

D. (1/4) $x2^{x-1}$

Answer: (1/4) $x2^{x-1}$

315.

Question: For function f (z) = { $(z^2+3iz-2)/(z+i)$, $z \neq -i$; 5, $z=-i$ },

Options:

A. lim f(z) = - i

B. $z \rightarrow -i$

C. lim f(z) = 3i

D. $z \rightarrow -i$

E. f (z) is discontinuous at z = - i

F. lim f(z) = ∞

G. $z \rightarrow -i$

Answer: f (z) is discontinuous at z = - i

316.

Question: Solution of the differential equation $e^{2x}(p-1) + p^3e^{2y} = 0$, (p = dy/dx) is-

Options:

A. $e^y = ce^{-x} + c^3$

B. $e^y = ce^{2x} + c^3$

C. $e^{2y} = ce^{2x} + c^3$

D. $y = \log(ce^x + c^3)$

Answer: $e^y = ce^{-x} + c^3$

317.

Question: If group G = {a, a^2, a^3, a^4 = e} where 'e' is the identity element, O (G) = 4 and H = {e, a^2} is a subgroup of G, then all cosets of H in G are -

Options:

A. H; a^3H

B. H, aH

C. H, aH, a^2H

D. H, a^2H

Answer: H, aH

318.

Question: The quadrilateral formed by joining the midpoints of the sides of a quadrilateral ABCD, taken in order, is a rhombus, if -

Options:

A. Diagonals of ABCD are perpendicular

B. Diagonals of ABCD are equal

C. ABCD is a rhombus

D. ABCD is a parallelogram

Answer: Diagonals of ABCD are equal

319.

Question: Limit point of set {1/3, 4/11, 3/8, 8/21, ...} is -

Options:

A. 2/5

B. 1/2

C. 1/3

D. 2/3

Answer: 2/5

320.

Question: The value of z, for which the function w defined
by the equation z = e^(- cos u + i sin u),
w = u + iv, ceases to be analytic is -

Options:

A. 2

B. 1

C. 0

D. -1

Answer: 0

321.

Question: If α_1, α_2 are roots of the equation $x^2 + px + q = 0$, then iteration $Xn+1 = -q/(Xn+P)$ will converge near root $x = \alpha_1$, if -

Options:

A. $|\alpha_1+1| < |\alpha_2|$

B. $|\alpha_1| > |\alpha_2|$

C. $|\alpha_1| < |\alpha_2|$

D. $|\alpha_1| = |\alpha_2|$

Answer: $|\alpha_1| < |\alpha_2|$

322.

Question: Solution of differential equation $xdx/(z^2-2yz-y^2) = dy/(y+z) = dz/(y-z)$ is -

Options:

A. $y^2 - z^2 + 2yz = C_1$

B. $x^2 + y^2 + z^2 = C_2$

RajTest

C. $y^2-z^2 - 2yz = C_1$

D. $x^2 + y^2 + z^2 = C_2$

E. $y^2-z^2 - yz = C_1$

F. $x^2 + y^2 + z^2 = C_2$

G. $y^2 -z^2 - 2yz = C_1$

H. $x^2-y^2 - z^2 = C_2$

Answer: $y^2-z^2 - 2yz = C_1$
$x^2 + y^2 + z^2 = C_2$

323.

Question: Let (R, +) be the additive group of real numbers
and (Co, X) be the multiplicative group of non - zero complex numbers. If g : R → Co such that g (x) = e^x is a homomorphism, then kernel of g is -

Options:

A. 0 only

B. {0, ±2π, ±4π, ...}

C. 1 only

D. 2π only

Answer: {0, ±2π, ±4π, ...}

324.

Question: The line segment joining points (2, 1, 5) and (3, 4, 3) is divided by the plane 2x + 2y-2z = 1 in the ratio -

Options:

A. 7:3

B. 5:3

C. 3:5

D. 5:7

Answer: 5:7

325.

Question: Value of $|2ab\ a^2\ b^2 / a^2\ b^2\ 2ab / b^2\ 2ab\ a^2|$ is equal to -

Options:

A. $(a^3+b^3)2$

B. $-3(a + b)^3$

C. $-(a^3+b^3)2$

D. $(a^2 + b^2)3$

Answer: $-(a^3+b^3)2$

326.

Question: If f (D) y = x g(x), then (1/f(D)) xg(x) is equal to : (D=d/dx)

Options:

A. $x(1/f(D))g(x) - (f'(D)/\{f(D)\}^2)g(x)$

B. $x(1/f(D))g(x) + (f'(D)/\{f(D)\}^2)g(x)$

C. $(1/f(D))g(x) + (f'(D)/\{f(D)\}^2)g(x)$

D. $x(1/f(D))g(x) + (d/dD(1/f(D)))g(x)$

Answer: $x(1/f(D))g(x) + (d/dD(1/f(D)))g(x)$

327.

Question: The equation of the normal to the curve $3x^2 - y^2 = 8$ which are parallel to x + 3y = 8, is -

Options:

A. $x+3y\pm2=0$

B. $x+3y\pm4=0$

C. $x+3y\pm6=0$

D. $x+3y\pm8=0$

Answer: $x+3y\pm8=0$

328.

Question: If φ is a homomorphism of the group G into the
group G' with kernel K, then φ (a) = φ (b) if and only if -

Options:

A. $a \in K$

B. $ab \in K$

C. $b \in K$

D. $ab^{-1} \in K$

Answer: $ab^{-1} \in K$

329.

Question: If the circumference of a circle and the perimeter of a square are equal, then -
(where π = 22/7)

Options:

A. Area of the circle > Area of the square

B. Area of the circle ≤ Area of the square

C. Area of the circle < Area of the square

D. Area of the circle = Area of the square

Answer: Area of the circle > Area of the square

RajTest

330.

Question: The length of the curve
$x = a(\cos\theta + \theta \sin\theta)$; $y = a(\sin\theta - \theta \cos\theta)$
from $\theta = 0$ to $\theta = 2\pi$ is :

Options:

A. $2\pi a^2$

B. $\pi^2 a$

C. πa^2

D. $2\pi^2 a$

Answer: $2\pi^2 a$

331.

Question: For $x^2/a^2 + y^2/b^2 + z^2/c^2 \leq 1$ as region of integration,
value of $\iiint xyz\, dx\, dy\, dz$ is -

Options:

A. $a^2b^2c^2/48$

B. $a^3b^3c^3/24$

C. $a^3b^3c^3/48$

D. $a^2b^2c^2/24$

Answer: $a^2b^2c^2/48$

332.

Question: The pedal equation of the curve $r = a(1-\cos\theta)$ is:

Options:

A. $p^2/a = r^3$

B. $p^2/r = 2a$

C. $p^3/a = r^2$

D. $p^2/r^2 = 2a$

Answer: $p^3/a = r^2$

333.

Question: With usual notation, for $y(20) = 24$, $y(24) = 32$, $y(28) = 35$ and $y(32) = 40$, approximate value of $y(25)$ by Bessel's interpolation formula is -

Options:

A. 33.4

B. 32.2

C. 32.8

D. 33.9

Answer: 32.8

334.

Question: The occurrence of degeneracy while solving a transportation problem means that -

Options:

A. Problem is unbalanced

B. The solution so obtained is not feasible

C. Total supply equals total demand

D. The few allocations become negative

Answer: The solution so obtained is not feasible

335.

Question: Four forces P, 2P, 3P and 4P are acting along the sides of a square taken in order. The magnitude of their resultant is equal to -

Options:

A. 4P

B. $4\sqrt{2}P$

C. $3\sqrt{2}P$

D. $2\sqrt{2}P$

Answer: $2\sqrt{2}P$

336.

Question: In Simpson's One-Third Rule, the function $y = f(x)$ is taken as:

Options:

A. Circle

B. Straight line

C. Ellipse

D. Parabola

Answer: Parabola

337.

Question: Given that:
x:1 2 3 4 5
y:2 5 10 17 26
then $\mu_4 y_3$ is equal to -

Options:

A. 12

B. 11

C. 22

D. 11.5

Answer: 11

RajTest

338.

Question: The series Σnxe^{-nx^2}, $\forall x \in R$ is -

Options:

A. uniformly convergent

B. convergent

C. non-uniformly convergent

D. divergent

Answer: non-uniformly convergent

339.

Question: In the following figure, chord ED is parallel to the diameter AC of the circle. Given $\angle CBE = 65°$, then $\angle DEC$ is -

Options:

A. 20°

B. 15°

C. 35°

D. 25°

Answer: 25°

340.

Question: For system of linear equations -
$X_1+2x_2 + kx_3 = 3$
$2X_1+3X_2 + X_3 = 3$
$3X_1+5X_2 + 2x_3 = 1$,
Correct statement is -

Options:

A. Unique solution for k = 2

B. No solution for any value of k

C. No solution for k = 0

D. Solution for k = 1

Answer: Unique solution for k = 2

341.

Question: The semi-vertical angle of a right circular cone
having sets of three mutually perpendicular generators, is -

Options:

A. $\tan^{-1}(\sqrt{3})$

B. $\tan^{-1}(3)$

C. $\tan^{-1}(\sqrt{2})$

D. $\tan^{-1}(2)$

Answer: $\tan^{-1}(\sqrt{2})$

342.

Question: Two forces equal to P and 2P respectively, act on a particle. If the first be doubled and second be increased by 10 lbs.wt. the direction of the resultant is unaltered, the value of P is -

Options:

A. 2 lbs.wt.

B. 5 lbs.wt.

C. 3 lbs.wt.

D. 8.lbs.wt.

Answer: 5 lbs.wt.

343.

Question: In the expansion of (3/x^2 - 2/x^3)^9, the third term from the end is:

Options:

A. 1152/x^8

B. -1152/x^8

C. 672/x^3

D. -672/x^3

Answer: -1152/x^8

344.

Question: The value of |a b c / b c a / c a b| will be negative if

Options:

A. a, b, c are positive.

B. a, b, c are negative.

C. (a+b+c) is zero.

D. a, b, c possess any value.

Answer: a, b, c are positive.

345.

Question: If A = |0 1 0 / 2 0 2 / 0 3 0|, B = |5 6 / -3 2 / -1 0|, C = |1 3 5 / 2 -1 / 2 4 -5 / -4 -2| and D = (AB)C, then d34 in the matrix D is

Options:

A. 0

B. 12

C. -42

D. 1

Answer: -42

RajTest

346.

Question: One of the values of (-1)^(1/3) is:

Options:

A. (1+√-3)/2

B. (-1+√3)/2

C. (-1-√3)/2

D. 1

Answer: (1+√-3)/2

347.

Question: The co-efficient of x^11 in the expansion of (3x^2-2x+1)(x+1)^14 is :

Options:

A. (3)(14C11)

B. (-2)(14C10)

C. 14C11

D. 4368

Answer: 4368

348.

Question: If w is a complex cube root of unity, then (1 + w + w^2 + ... + w^100) equals :

Options:

A. w^2

B. -w

C. -1

D. 0

Answer: 0

349.

Question: The exponential form of (√3/2 - i/2) is :

Options:

A. 3e^(iπ/6)

B. 2e^(-iπ/2)

C. 3e^(-iπ/6)

D. 3e^(iπ/3)

Answer: 3e^(-iπ/6)

350.

Question: If the edge of a cube is √3 a units, then the true statement is :

Options:

A. volume of cube = 3a^3

B. surface area of cube = 6a^2

C. diagonal of cube = 3a

D. area of one of square face = a^2

Answer: diagonal of cube = 3a

351.

Question: Three cylinders of equal heights 'h' have their circular bases with diameters r1, r2, r3 and r1, r2 are the sides of a right angled triangle with r3 as hypotenuse. The true statement is :

Options:

A. Volume of the greatest cylinder is more than the sum of volumes of remaining two cylinders.

B. Volume of the greatest cylinder is equal to the sum of volumes of remaining two cylinders.

C. Volume of the greatest cylinder is less than the sum of the volumes of the remaining two cylinders.

D. Curved surface area of the greatest cylinder is equal to the sum of curved surface areas of the remaining two cylinders.

Answer: Volume of the greatest cylinder is equal to the sum of volumes of remaining two cylinders.

352.

Question: Let u = g(t) and t = f(x), and g and f both are one-one and onto functions, then true statement is :.

Options:

A. (f-log-1)(u) = x

B. (gof)-1=g-1of-1

C. (gof)(x) = x

D. (gof)-1 u = u

Answer: (f-log-1)(u) = x

353.

Question: Two cones of same vertical angles have their heights as h1, h2; then ratio of their volumes is:

Options:

A. h1^2/h2^2

B. h1^2/h2

C. h1^2 tan^2α/h2^2

D. h1^3/h2^3

Answer: h1^3/h2^3

RajTest

354.

Question: An equilateral triangle of side b is revolved about a line through one of its vertices and parallel to opposite side. The volume of the solid so formed is:

Options:

A. πb^3

B. (1/2)πb^3

C. (1/3)πb^3

D. (1/4)πb^3

Answer: (1/2)πb^3

355.

Question: A solid sphere of radius 3 cm is melted and recast into smaller spherical balls each of diameter 0.6 cm. The number of these smaller balls will be

Options:

A. 1000 π

B. 1000/π

C. 1000

D. 500

Answer: 1000

356.

Question: The radii of internal and external surfaces of metallic spherical shell are 3 cm and 5 cm respectively. It is melted and recast into a solid right circular cylinder of height 32/3 cm; the diameter of base of cylinder is :

Options:

A. 7 cm

B. (7/2) cm

C. (7/3) cm

D. 14 cm

Answer: 7 cm

357.

Question: Volume of a solid cylinder is 1540 (cm)^3. A wire of radius 7 mm is made by melting this cylinder. Length of wire is

Options:

A. 10 cm

B. 100 cm

C. 1000 cm

D. 10000 cm

Answer: 1000 cm

358.

Question: {(cos 45°) (cos 60°) – (sin 45°) (sin 60°)} equals

Options:

A. -(√3-1)/(2√2)

B. (√3-1)/(2√2)

C. (√3+1)/(2√2)

D. (-1-√3)/(2√2)

Answer: -(√3-1)/(2√2)

359.

Question: What is the angle of elevation of sun when the length of the shadow of a pole is √3 times the height of the pole ?

Options:

A. 60°

B. 30°

C. 45°

D. 105°

Answer: 30°

360.

Question: The most general value of θ which satisfies both of the equations sin θ = -1/2 , tan θ = 1/√3 is

Options:

A. nπ + 7π/6

B. 2nπ - 7π/6

C. 2nπ + 7π/6

D. nπ - 7π/6

Answer: 2nπ + 7π/6

361.

Question: Solution of equation tan 5θ = cot 2θ is

Options:

A. θ = (1/7)(nπ + π/2)

B. θ = (1/7)(nπ - π/2)

C. θ = (1/3)(nπ + π/2)

D. θ = (1/3)(nπ - π/2)

Answer: θ = (1/7)(nπ + π/2)

362.

RajTest

Question: $(\sin^{-1}(3/5) - \cos^{-1}(12/13))$ equals

Options:

A. $\sin^{-1}(56/65)$

B. 1

C. 0

D. $\sin^{-1}(16/65)$

Answer: $\sin^{-1}(16/65)$

363.

Question: The diameter of a wheel is 28 cm; through what distance does its centre move during one revolution of the wheel along the ground ?

Options:

A. 88 cm

B. 176 cm

C. 44 cm

D. $(28/\pi)$ cm

Answer: 88 cm

364.

Question: If $f(x) = |x - 1| + |x - 2|$, then the true statement is:

Options:

A. function is discontinuous at $x = 1$

B. function is discontinuous at $x = 2$

C. continuous at $x = 1$ and at $x = 2$

D. the function is not defined for any real value of x.

Answer: continuous at $x = 1$ and at $x = 2$

365.

Question: Which of the following is true?

Options:

A. $\lim (x\to0) (a^x-1)/x = \log_e a$

B. $\lim (x\to0) (a^x-1)/a^x = \log_e a$

C. $\lim (x\to0) (a^x-1)/x = 0$

D. $\lim (x\to0) (e^x-1)/x \to \infty$

Answer: $\lim (x\to0) (a^x-1)/x = \log_e a$

366.

Question: If $y=\tan^{-1}(x/\sqrt{(1-x^2)}) + \sec^{-1}(1/\sqrt{(1-x^2)})$, $|x|<1$, then dy/dx equals:

Options:

A. $1/\sqrt{(1-x^2)}$

B. $2/\sqrt{(1-x^2)}$

C. $2\sqrt{(1-x^2)}$

D. $1/\sqrt{(1-x^2)}$

Answer: $2/\sqrt{(1-x^2)}$

367.

Question: If $f(x) = |x-2|$, then $f'(2)$ equals :

Options:

A. 1

B. -1

C. 0

D. Does not exist.

Answer: Does not exist.

368.

Question: Which of the following is correct? (Letters have their usual meaning in plane trigonometry.)

Options:

A. $R = a/\sin A$

B. $R = abc/(2S)$

C. $r1 = S/(s+a)$

D. All the three are wrong.

Answer: All the three are wrong.

369.

Question: At which point of curve $12y = x^3 - 3x^2$, the tangent is parallel to x-axis ?

Options:

A. (2/3, -1)

B. (0,1)

C. (2, -1)

D. No where

Answer: No where

370.

Question: The interval, in which the function $f(x) = 2x^3 + 3x^2 - 12x - 4$ is monotonically decreasing, is :

Options:

A. $]-\infty,-2[$

B. $]-2,1[$

C. $[1,\infty[$

D. The function is always increasing.

RajTest

Answer:]-2,1 [

371.

Question: ∫(sin x + cos x)/√sin 2x dx equals :

Options:

A. cosec^{-1} (sin x + cos x) + C

B. cosec^{-1} (sin x - cos x) + C

C. $\sin^{-1}$ (sin x - cos x) + C

D. $\sin^{-1}$ (√sin x - cos x) + C

Answer: $\sin^{-1}$ (sin x - cos x) + C

372.

Question: ∫e^x (x-1)/(x+1)^3 dx equals :

Options:

A. e^x/(x+1)^2 + C

B. e^x/(x+1) + C

C. -e^x/(x+1)^2 + C

D. e^x/(x-1)^2 + C

Answer: e^x/(x+1)^2 + C

373.

Question: The area enclosed by the curve y = 4x(x-1) (x - 2) and x-axis is :

Options:

A. zero

B. 16

C. 2

D. 8

Answer: 2

374.

Question: If x^2+y^2=t - 1/t and x^4+y^4 = t^2 + 1/t^2, then dy/dx equals:

Options:

A. -1/(x^3y)

B. -1/(x^2y)

C. 1/(x^2y)

D. 1/(xy)

Answer: -1/(x^3y)

375.

Question: The area bounded by the parabola y = x^2 + 2 and the lines x = 0, x = 1, x + y = 0 (in square units) is :

Options:

A. 17/6

B. 11/6

C. 14/6

D. 16/6

Answer: 17/6

376.

Question: The area bounded by the parabolas y^2 = 5x + 6 and x^2 = y (in square units) is :

Options:

A. 57/5

B. 27/5

C. 209/15

D. 299/15

Answer: 27/5

377.

Question: The area common to the parabola y^2 = x and the circle x^2 + y^2 = 2 (in square units) is

Options:

A. (1/6)(3π-2)

B. (1/6)(12-3π)

C. (1/6)(2π+3)

D. (1/6)(3π+2)

Answer: (1/6)(3π+2)

378.

Question: If points (a, 0), (0, b) and (1, 1) are collinear, then $(a^{-1} + b^{-1})$ will be equal to:

Options:

A. -1

B. -2

C. 1

D. √2

Answer: 1

379.

Question: The image of the point (3, 8) with respect to the line x + 3y = 7 will be :

Options:

RajTest

A. (-1,4)

B. (1,-4)

C. (-1,-4)

D. (1,4)

Answer: (-1,-4)

380.

Question: The area enclosed by the curves $x = \sin^{-1} y$ and $x = \cos^{-1} y$ and y-axis and lying in the first quadrant is :

Options:

A. $(\sqrt{2}+1)$

B. $(\sqrt{2}-1)$

C. $2\sqrt{2}$

D. $(2\sqrt{2}-1)$

Answer: $(\sqrt{2}-1)$

381.

Question: What is the area of the sector of a circle of radius 5 cm, if the corresponding arc length is 3.5 cm?

Options:

A. 8.50 cm^2

B. 8.25 cm^2

C. 8.75 cm^2

D. 8.95 cm^2

Answer: 8.75 cm^2

382.

Question: Let G= {a, a^2, a^3, a4 = e), where 'e' is the identi element, be a cyclic group generated by H = {a^2, a4 = e} and G itself are its two subgroups, then order of element (a^2, a) of HG is -

Options:

A. 2

B. 1

C. 3

D. 4

Answer: 4

383.

Question: The number of inversion of the permutation (1 2 3 / 3 1 2) is-

Options:

A. 0

B. 3

C. 2

D. 1

Answer: 2

384.

Question: The shortest distance between the lines x-1/2 = y-2/3 = z-3/4 and x-2/3 = y-4/4 = z-5/5 is-

Options:

A. 1/2

B. $1/\sqrt{6}$

C. 2

D. $1/\sqrt{৩}$

Answer: $1/\sqrt{6}$

385.

Question: The particular integral of the differential equation $(D^2 + 1)\ y = \sin x \sin 2x$ is -

Options:

A. x/4 sin x + 1/8 cos 3x

B. x/2 sin x - 1/8 cos 3x

C. x/4 sin x - 1/16 cos 3x

D. x/4 sinx + 1/16 cos 3x

Answer: x/4 sinx + 1/16 cos 3x

386.

Question: A circle moves such that its center lies. on the parabola $y^2 = 4ax$. Circle passes through the vertex of the parabola. The envelope of this circle is -

Options:

A. $x^3 + y^2 (x-a) = 0$

B. $x^3 + y^2 (x+2a) = 0$

C. $x^3 + y^2 (x-2a) = 0$

D. $x^3 + y^2 (x+a) = 0$

Answer: $x^3 + y^2 (x+2a) = 0$

387.

Question: If a force F be resolved into two components and if one component be at right angle to the force F and is equal to F $\sqrt{3}$ in magnitude, then the magnitude of the second component is -

Options:

RajTest

A. F

B. 3F

C. F/2

D. 2F

Answer: 2F

388.

Question: If a and b are differentiable vector point functions and u is a differentiable scalar point function, then incorrect statement is -

Options:

A. u div a + a. grad u is a scalar quantity

B. (b.∇)a - (a.∇)b - (a.∇)b + [a. (∇.b)] is a vector

C. Curl grad u is a vector

D. (grad u) xả + u Curl a is a vector

Answer: (b.∇)a - (a.∇)b - (a.∇)b + [a. (∇.b)] is a vector

389.

Question: A Mathematics teacher wants to teach Mathematics through 'Preparing the garden in free space of school'. Which method of teaching he has to follow?

Options:

A. Inductive method

B. Synthetic method

C. Deductive method

D. Project method

Answer: Project method

390.

Question: Which of the following is the highest level of cognitive domain under Bloom taxonomy?

Options:

A. Evaluation

B. Analysis

C. Knowledge

D. Synthesis

Answer: Evaluation

391.

Question: Some of the additional characteristics of Mathematics teacher given below - (A) Active support in organizing co-curricular activities. (B) Active support in administrative duties. (C) Active support in community service. Which of the following option is most appropriate in context of above mentioned characteristics?

Options:

A. Only B & C is correct

B. Only A & B is correct

C. A, B, C are correct

D. Only A is correct

Answer: A, B, C are correct

392.

Question: A Mathematics teacher prepare a question on construction of pentagon of 5 cm size, this question is related to which of the following?

Options:

A. Evaluation

B. Understanding

C. Skill

D. Analysis

Answer: Skill

393.

Question: A teacher prepares following question in his unit test - 'Which of the following is empty set?' (A) {} (B) Φ (C) {{ }} (D) {0} The above question is based on which objective of Mathematics teaching?

Options:

A. Application

B. Understanding

C. Analysis

D. Knowledge

Answer: Understanding

394.

Question: Which of the following point/element carinot be the reason to decide the giftedness of a child in Mathematics?

Options:

A. Student behaviour

B. Record of aptitude tests in Mathematics

C. Present achievement

D. Record of earlier class achievement in Mathematics

Answer: Student behaviour

RajTest

395.

Question: Which of the following cannot be the characteristics of unit test in Mathematics?

Options:

A. Discrimination power

B. Difficulty level distribution

C. Validity

D. Language of question with highly technical language

Answer: Language of question with highly technical language

396.

Question: A programme which is prepared for resolving the errors, upon identifying them with particular causes in Mathematics is known as -

Options:

A. Remedial programme

B. Activity programme

C. Entertainment programme

D. Mathematics club

Answer: Remedial programme

397.

Question: Which of the following method of teaching Mathematics, impart Mathematics education by correlating it with real life situations?

Options:

A. Deductive method

B. Inductive method

C. Synthetic method

D. Project method

Answer: Project method

398.

Question: Which of the following method of teaching Mathematics is often criticized because it encourages memorization?

Options:

A. Inductive method

B. Deductive method

C. Problem solving method

D. Project method

Answer: Deductive method

399.

Question: Who imagine the concept of 'infinity' for division of any number by zero?

Options:

A. Aryabhatta

B. Brahmagupta

C. Bhaskaracharya

D. Vishnugupta

Answer: Bhaskaracharya

400.

Question: Which of the following is the projected aids for teaching of Mathematics?

Options:

A. Filmstrip

B. Chart

C. Model

D. Speciment

Answer: Filmstrip

401.

Question: For discovery 'truth' Mathematics employs - (a) Simulation (b) Observation (c) Experimentation (d) Logical reasoning Choose the correct answer from the options given below -

Options:

A. (a), (b) and (c)

B. (b), (c) and (d)

C. (a), (b), (c) and (d)

D. (a) and (b)

Answer: (a), (b), (c) and (d)

402.

Question: "Students will be able to give the approximate answer of the problem". The above objective is related to -

Options:

A. Application

B. Analysis

C. Knowledge

D. Evaluation

RajTest

Answer: Application

403.

Question: Which of following approach of sequencing a frame in a programmed instruction employs inductive reasoning?

Options:

A. Matrix approach.

B. Egrul approach

C. Ruleg approach

D. Emil approach

Answer: Egrul approach

404.

Question: Which of the following is the propounder of Five Step Approach of Lesson Plan?

Options:

A. Johann Friedrich Herbart

B. Johann Friedrich Bloom

C. Johann Friedrich Allport

D. Johann Friedrich Morrison

Answer: Johann Friedrich Herbart

405.

Question: While dividing syllabus in to units for unit planning a teacher need not take care of -

Options:

A. Suitability in terms of extra classes

B. Suitability in terms of age of learner

C. Total days & working hours

D. Suitability in terms of ability of learner

Answer: Suitability in terms of extra classes

406.

Question: What is the other name of uni-lateral correlation?

Options:

A. Bilateral correlation

B. Horizontal correlation

C. Mathetic correlation

D. Vertical correlation,

Answer: Vertical correlation,

407.

Question: Which of the following is not the characteristics of supervised study method?

Options:

A. This method follows the principle of individual difference.

B. In this method students get confidence through learning by doing.

C. Students learn use of books, magzine etc. by using this method.

D. This method is most appropriate for gifted students.

Answer: This method is most appropriate for gifted students.

408.

Question: Which of the following is not a basic Principle of Curriculum Construction? (a) It must be dynamic. (b) It emphasises as living for learning. (c) It emphasises as learning for living. Choose correct answers from the options below -

Options:

A. (a) and (c)

B. Only (c)

C. Only (b)

D. Only (a)

Answer: Only (b)

409.

Question: If A and B are non empty bounded subsets of R
and A + B = {x+y : x∈ A, ye B} and
A-B = {x-y: χε A, ye B), then incorrect statement is -

Options:

A. Sup {A + B) = Sup (A) + Sup (B)

B. Sup {A - B} = Sup (A) - Sup (B)

C. Inf {A + B} = Inf (A) + Inf (B)

D. Inf {AB} = Inf (A) - Sup (B)

Answer: Sup {A - B} = Sup (A) - Sup (B)

410.

Question: The angle of intersection between the curves r = 2 sine and r = 2 cose is -

Options:

RajTest

A. π

B. 3

C. 6

D. 2

Answer: 2

411.

Question: If a+b+c=0 and a = 3,6 = 5 and || = 7, then the angle between vectors a and bis -

Options:

A. 2

B. 0

C. 6

D. 3

Answer: π/3

412.

Question: O‘is any interior point of rectangle ABCD. If area.
of AAOD is 3 cm² and area of ABOC is 6 cm², then area of rectangle ABCD is -

Options:

A. 18 cm²

B. 27 cm²

C. 36/cm²

D. 15 cm²

Answer: 18 cm²

413.

Question: For u = x² - y², v =
-y
x2+y2
which of the
,
following statement is not correct? (z = x + i y)

Options:

A. u- iv is not an analytic.function of z

B. both u and v satisfy Laplace's equation

C. u and v are not harmonic function

D. u + iv is an analytic function of z

Answer: u and v are not harmonic function

414.

Question: If u = sec-1
ди
x+y
∂x
+ cosec), then
ди
ду
is equal to -

Options:

A. 2น

B. .u

C. 0

D. -น

Answer: 0

415.

Question: The equation of the sphere which touches the sphere x² + y2 + z² + 2x - 6y + 1 = 0 at (1, 2, -2) and passing through the point (1, -1, 0), is -.

Options:

A. x²+ y² + z²+24x - 17y - 22z = 23

B. x²+ y² + z²+24x - 17y - 22z = 43.

C. x2+y2+z²+24x + 17y + 22z = 43:

D. x²+ y²+z2-24x - 17y - 22z=23

Answer: x²+ y² + z²+24x - 17y - 22z = 43.

416.

Question: If -5 is a root of the equation 2x² + px -15 = 0 and the equation p(x² +x) + q = 0 has equal roots, then the value of q is -

Options:

A. 1

B. 7

C. 4

D. 7

E. 7

F. 2

G. 4

Answer: 7/4

417.

Question: A solid body is composed of a cylinder with hemispherical ends.. If the whole length of the body is 126 cm and the diameter of both hemispherical ends is 36cm, then total surface

RajTest

area of the body is - (where =)
π

Options:

A. 7128 cm²

B. 14256 cm²

C. 21384 cm²

D. 28512 cm²

Answer: 14256 cm²

418.

Question: For some integer x, cube of 122 is of the form
-

Options:

A. 9x + 2

B. 9x + 1

C. 9x +8

D. 9x

Answer: 9x + 8

419.

Question: If surface S is the sphere x²+ y² + z² =`a?,
then ff (xdy dz + y dzdx + z dxdy) is -
S

Options:

A. 1 πα³

B. 3

C. 4

D. 3

E. πα³

F. 4 πα²

G. 3

H. 2

I. 4πα3

Answer: 4πa³

420.

Question: If An=
[1]Vn 1 ∀n ∈ N is a infinite closed set,
8
then U An is-
n = 1

Options:

A. (0, 1)

B. (0, 1]

C. [0, 1]

D. (0, 1)

Answer: (0, 1]

421.

Question: lim
z3+8
is -
Z-Zein/3 (z4+4z²+16)

Options:

A. (3-1)

B. 8

C. (3-13)

D. 8

E. (3-i√3)

F. (√3+1)

Answer: (3-i√3)

422.

Question: If G = (Z, +) be the additive group of integers and H = (mZ, +) be the subgroup of G, where m is a fixed positive integer, then the quotient
G
group is equal to -

Options:

A. {H, H + 1, H + 2, ... H + (m - 1)}

B. {H + 1, H + 2,

C. H + m}

D. {H, H + 1, H + 2,

E. H + (m + 1)}

F. {H + 1, H + 2,

G. H + (m + 1)}

Answer: {H, H + 1, H + 2, ... H + (m - 1)}

423.

Question: Integral So
a ca ra xdydx
ra raf dydx
into polar coordinates
0 Jy x2+y2
Jy x2+y2
is -

Options:

A. a seco

B. cos 0 dodr

RajTest

C. 0

D. a seco

E. cos 0 dodr

F. 0

G. a coseco

H. cos 0 dodr

I. cos e dedr

Answer: a seco - cos 0 dodr - 0

424.

Question: The volume of the solid generated by revolving
y2
a2b2
the ellipse+
=
1 about y - axis is -

Options:

A. 1nab²

B. 3

C. 2 παb²

D. 3

E. 3

F. 2 πα²b

G. 4

H. 3

I. πα²b

J. 3

Answer: 4 / 3 πα²b

425.

Question: In an acute angled triangle ABC, if tan (A + B - C) = 1 and sec (B + C - A) = 2, then C-A=

Options:

A. 5210

B. 2

C. 720

D. 2

E. 15°

F. 1270

G. 2

Answer: 15°

426.

Question: If the 2nd, 5th and 9th terms of a Arithmetic Progression (A.P.) arè in Geometric Progression (G.P.), then the common ratio of this G.P. is -

Options:

A. 3

B. 4

C. 1

D. Z

E. 4

F. 4

G. 3

Answer: 1

427.

Question: C is the curve $x^2 + y^2 = 4$ and z = 2, and
Sc (ex dx + 2ydy - dz) = √, then is equal to -

Options:

A. 0

B. 1

C. 2

D. 4

Answer: 0

428.

Question: If f = (ax + 3y + 4z)î + (x – 2y + 3z)j +(3x+2y-z)k is a solenoidal vector, then value of a is -

Options:

A. 4

B. -1.

C. 2

D. 3

Answer: 3

429.

Question: Point of not to uniform convergence of series nx
Σ 1+220≤x≤ 1 is -

Options:

A. 1

B. 1

RajTest

C. 2

D. 2

E. 0

Answer: 0

430.

Question: Let H be a subgroup of group G, then for a, be Ġ, incorrect statement is -

Options:

A. a H = H, if a e H

B. ae aH

C. 0 (aH) = 0 (bH)

D. a H is subgroup of G.

Answer: a H is subgroup of G.

431.

Question: The section of the cone whose vertex is origin and base is the circle x = a, y2 + z^2 = b^2, cut by a plane parallel to the xy - plane is -

Options:

A. Hyperbola

B. Parabola

C. Ellipse

D. Circle

Answer: Hyperbola

432.

Question: With usual notations, A11 O12 is equal to -

Options:

A. 6 x 11

B. 11 12

C. 2

D. 6 x 12

E. 12.11

F. 2

Answer: 2

433.

Question: Let a, b and ĉ be non-zero vectors such that
č
1
(axb) x = [b] |c| a. If.0 is the acute angle
3
between the vector b and d, then sine is equal to-

Options:

A. 2√2

B. 3

C. 1

D. 3

E. 2

F. 3

G. √2

H. 3

Answer: 2√2 / 3

434.

Question: In the given figure, which of the following statement is/are true?
(i) a°+ c°+ e° = 180°
(ii) a° + b°= d°+ c°
(iii) b° + f° = c° +e°

Options:

A. (i) and (ii) only

B. (ii) and (iii) only

C. (i) and (iii) only

D. (i) only

Answer: (i) and (ii) only

435.

Question: The line joining centre O of a sphere of radius 3, to the point A (3, 4, 0) meets the polar plane of A in R, then OR equals -

Options:

A. 16

B. 5

C. 16.

D. 3

E. 9

F. 5

G. 9

H. 4

Answer: 9 / 5

436.

Question: If the primal problem has an unbounded solution, then dual has -

RajTest

Options:

A. Only unbounded solution

B. Degenerate solution

C. Non degenerate solution

D. Either unbounded solution or no solution

Answer: Either unbounded solution or no solution

437.

Question: For x∈ R, let function $f(x) = x^2 + 5x + 1$, then -

Options:

A. f is onto but not one-one in R

B. f is one-one but not onto in R

C. f.is one-one and onto both in R

D. f is neither one-one onto in R

Answer: f is neither one-one onto in R

438.

Question: π^2
200
f sin√x dx is equal to -
0

Options:

A. 1

B. π^2

C. 4

D. 2

E. -2.

Answer: 2

439.

Question: If 7 77√7√7= 7*, then value of x is -

Options:

A. 1

B. 32

C. 15

D. 16

E. 31

F. 32

G. 32

H. 31

Answer: 15 / 16

440.

Question: The value of the line integral
[[(x3 + 2y)dx + (4x-3y²)dy]
C
x2, y2
Where C is+
b2
Cis+= 1, is equal to -

Options:

A. nab

B. π

C. ab

D. 2

E. 2nab

F. 4nab

Answer: 2πab

441.

Question: Incorrect statement is -

Options:

A. Newton's first law of motion is law of

B. inertia.

C. Newton's laws of motion are under

D. kinematics.

E. Relation between force and motion

F. produced by it are established by Newton's

G. laws of motion.

H. Newton's laws of motion are under

I. kinetics.

Answer: Newton's laws of motion are under kinematics.

442.

Question: If
cos-1x - cos-1 = a, then
4x2 - 4xy cosa + y² is equal to -

Options:

A. $4\sin^2 x$

B. $-4\sin^2 a$

C. -2sin2x

D. 2sin2x

Answer: $-4\sin^2 a$

443.

RajTest

Question: If $x^2 + x - 6$ is a factor of a polynomial $2x4 + x^3 - ax2 + bx + a + b - 1$, then the values of a and b are respectively -

Options:

A. 5 and 6

B. 4 and 3

C. 16 and-3

D. 16 and 3

Answer: 16 and 3

444.

Question: A firm manufactures 3 products A, B and C. The
profits on these are ₹3, 2 and ₹4
respectively, the firm has 2 machines and below is the required processing time in minutes for each machine on each product:
Product
ABC
Machine M14 3 5.
M2 2 2 4
Machine M1 and M2 have 2000 and 2500 machine minutes respectively. The firm must 6)
manufacture 100 A's, 200 B's and 50 C's.but no more than 150 A's, its formulation as a linear programming problem is -

Options:

A. Max (z) = 3x + 2y + 4z

B. s.t. $4x + 3y + 5z \leq 2000$

C. $2x + 2y + 4z \leq 2500$

D. $0 \leq x \leq 150$, $y \geq 0$, $z \geq 0$

E. Max (z) = 3x + 2y + 4z

F. s.t. $4x + 3y + 5z \geq 2000$

G. $2x + 3y + 4z. \geq 2500$

H. $100 \leq x \leq 150, 0 \leq y \leq 200, 0 \leq z \leq 50$

I. Max (z) = 3x + 2y + 4y

J. s.t. $4x + 3y + 5z \leq 2000$

K. $2x + 2y + 4z \leq 2500$

L. $100 \leq x \leq 150$, $0 \leq y \leq 200, 0 \leq z \leq 50$

M. Max (z) = 3x + 2y + 4z

N. s.t. $4x + 3y + 5z \leq 2000$

O. $2x + 2y + 4z \leq 2500$

P. $100 \leq x \leq 150$, $y \geq 0$, $z \geq 10$

Answer: Max (z) = 3x + 2y + 4z
s.t. $4x + 3y + 5z \leq 2000$
$2x + 2y + 4z \leq 2500$
$100 \leq x \leq 150$, $y \geq 0$, $z \geq 10$

445.

Question: If G and G' are centroid of triangles ABC and A'B'C' respectively, then AA' + BB' + CC' is equal to -

Options:

A. GG/3

B. GG'

C. 3GG'

D. 2GG'

Answer: 3GG'

446.

Question: Direction cosines of two lines are given by $l + m + n = 0$ and $2lm + 2nl - mn = 0$, The acute angle between these two lines is -

Options:

A. 60°

B. 75°

C. 45°

D. 30°

Answer: 60°

447.

Question: If S = {a, b, c, d, e}, then the total number of subsets of S, which contains element c but not d, is -

Options:

A. 6

B. 4

C. 8

D. 10

Answer: 8

448.

Question: Complementary Function of differential equation $x^2 \frac{d^2y}{dx^2} - x \frac{dy}{dx} - 3y = x^2 \log x$, is -

Options:

A. C1 e^-3x + c2 ex

B. (C1/x^2)+C2X

C. C1 e^3x + c2e^x

D. C1 X^3+(C2/X)

Answer: C1 X^3+(C2/X)

RajTest

449.

Question: If P= [[1, α, 3], [1, 3, 3], [2, 4, 4]] is the adjoint of a 3 x 3 matrix A and |A| = 4, then value of α is -

Options:

A. 5

B. 4

C. 7

D. 11

Answer: 11

450.

Question: Period of function f(x) = sin(5x/3) + cos(3x/7) + tan(2x/7) is -

Options:

A. 42π

B. 7π/5

C. 24π

D. 11π/15

Answer: 42π

451.

Question: Area bounded by the curve $x = a\cos^3 t$; $y = b\sin^3 t$ is -

Options:

A. πab/4

B. 3πab/8

C. 3πab/8

D. πab

Answer: 3πab/8

452.

Question: Differential equation (2y dx + 3x dy) + 2xy (3y dx + 4x dy) = 0 is exact; if -

Options:

A. xy = -1/4

B. xy = 1/4

C. xy = -4

D. xy = -1/2

Answer: xy = -1/4

453.

Question: The transformation w = (z-1)/(z+1) maps the circle $x^2+y^2=1$ is to which of the following straight line - (w = x + iv, z = x + iy)

Options:

A. u+v=0

B. v=0

C. u-v=1

D. u=0

Answer: u=0

454.

Question: The series sin x + (1/3)sin 3x + (1/5)sin 5x + ... is uniformly convergent in the interval -

Options:

A. (π/4, π/2)

B. (0, π/2)

C. (0, π)

D. (0, 2π)

Answer: (π/4, π/2)

455.

Question: If coordinates of circumcentre and orthocentre of a triangle are (2, 3) and (4, 7) respectively, then coordinates of the centroid is -

Options:

A. (8/3, 13/3)

B. (10/3, 17/3)

C. (0, 1)

D. (3, 5)

Answer: (8/3, 13/3)

456.

Question: $d/dx\ [\sin^2(\cot^{-1}\sqrt{(1+x)/(1-x)})]$, $0 < x < 1$, is equal to-

Options:

A. -1

B. 0

C. 1/2

D. -1/2

Answer: -1/2

457.

RajTest

Question: With usual notations, using Stokes' theorem, ∫c f(∇g).dr is equal to -

Options:

A. ∬S (∇f x ∇g).nds

B. ∬S fx (fxg).nds

C. ∬S (∇f)(∇g)ds

D. ∬S ∇x(∇fg).nds

Answer: ∬S (∇f x ∇g).nds

458.

Question: With usual notations, if the line r/2 = A cos θ + B sin θ touches the circle r = 2 cos θ, then -

Options:

A. $B^2+4A+4=0$

B. $B^2+4A-4=0$

C. B2-4A-4=0

D. B2-4A+4=0

Answer: $B^2+4A-4=0$

459.

Question: Let R = {(3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (3, 9), (3, 12), (3, 6)} be a relation on the set A = {3, 6, 9, 12), then the relation 'R' is -

Options:

A. an equivalence relation

B. reflexive and symmetric only

C. reflexive only

D. reflexive and transitive only

Answer: reflexive and transitive only

460.

Question: The normal at the point (a, 2a) meets the parabola $y^2 = 4ax$ again at $(at^2, 2at)$, then 't' equals -

Options:

A. -1

B. 3

C. -3

D. 1

Answer: -3

461.

Question: The maximum value of the function f(x) = (x/e)^x is -

Options:

A. e^e

B. e-1

C. 1/e - 1

D. 1/e

Answer: 1/e

462.

Question: The number of numbers greater than 10 lakh be formed from digits 2, 5, 0, 5, 4, 2, 5 is -

Options:

A. 360

B. 300

C. 420

D. 400

Answer: 360

463.

Question: A cannonball has a range R on the horizontal plane, and if h and h' be the greatest heights in the two path for which this is possible, then value of R is -

Options:

A. h + h'

B. 4√hh'

C. h - h'

D. 2hh'

Answer: 4√hh'

464.

Question: The polar planes of all the points of straight line (x-1)/1 = (y-2)/3 = (z-3)/4 with respect to sphere $x^2 + y^2 + z^2 = 8$ passes through another line, equation of that line is -

Options:

A. x+2y+3z = 8, x + 3y + 4z = 0

B. x+2y + 3z = 4, x + 3y + 4z = 0

C. x + 2y + 3z = 8, x + 3y + 4z = 2

D. x+2y + 3z = 2, x + 3y + 4z = 0

Answer: x+2y+3z = 8, x + 3y + 4z = 0

465.

Question: The series 1 - 1/2^p + 1/3^p - 1/4^p + ... + (-1)^(n-1) / n^p +... is absolutely convergent, if -

RaiTest

Options:

A. $0<p\leq1$

B. $p=0$

C. $p<0$

D. $p>1$

Answer: $p>1$

466.

Question: From a window 15 m high above the ground in a street, the angles of elevation and depression of the top and the foot of a building on the opposite side of the street are 30° and 45° respectively, then height of the building is - ($\sqrt{3} = 1.732$)

Options:

A. 33.66 m

B. 18.66 m

C. 28.66 m

D. 23.66 m

Answer: 23.66 m

467.

Question: If $P(A) = 3/8$, $P(B) = 1/2$ and $P(A \cap B) = 1/4$, then value of $P(A/B)$ is -

Options:

A. 3/4

B. 3/5

C. 1/3

D. 3/8

Answer: 3/4

468.

Question: The teacher decided to give grace marks of 10 to each of students for their poor performance. Which of the following statistical measure will not change even after the grace marks will given?

Options:

A. Median

B. Mode

C. Mean

D. Variance

Answer: Variance

469.

Question: The pair of generators of the cyclic group G = [{1, 2, 3, 4, 5, 6}, X7] are -

Options:

A. 4 and 5

B. 3 and 5

C. 2 and 3

D. 3 and 4

Answer: 3 and 5

470.

Question: If $\int \sin x/(\sin(x-a))\, dx = Ax + B \log \sin(x-a) + c$, then the value of (A, B) is -

Options:

A. (sina, cosa)

B. (cosa, sina)

C. (-cosa, sina)

D. (-sina, cosa)

Answer: (cosa, sina)

471.

Question: In a plane, out of 10 given points, 6 are in a straight line. The number of the triangles formed by joining any three of them is -

Options:

A. 80

B. 120

C. 150

D. 100

Answer: 100

472.

Question: A particle describes a plane curve with a constant speed and its acceleration is constant in magnitude, then its path is-

Options:

A. Cycloid

B. Parabola

C. Circle

D. Ellipse

Answer: Circle

473.

RajTest

Question: Given Uo = 1, U_1 = 11, U2 = 21, U3 = 28 and U4 = 29, then value of Δ^4 Uo is - '

Options:

A. 23

B. 0

C. -1

D. 1

Answer: 0

474.

Question: The minimum radius vector of the curve $a^2/x^2 + b^2/y^2 = 1$ in length, is -

Options:

A. (1/3)(a+b)

B. (1/4)(a+b)

C. 2 (a + b)

D. (1/3)(a+b)

Answer: (1/3)(a+b)

475.

Question: If $S_1 = \int e^2$ to e^3 (log x)^-2 dx. and $S_2 = \int e^2$ to e^3 dx/x^2, then -

Options:

A. S1+S2 = 0

B. 2S1 = S2

C. S1 = 2S2

D. S1 = S2

Answer: S1 = S2

476.

Question: $\lim (x\to\infty) [\sqrt{(x + \sqrt{(x + \sqrt{x})}) - \sqrt{x}}] =$

Options:

A. 0

B. 1/2

C. 1/2

D. 1

Answer: 1/2

477.

Question: For any vector a, the value of $(\tilde{a} \times \hat{i})^2 + (\tilde{a} \times \hat{j})^2 + (\tilde{a} \times k)^2$ is equal to -

Options:

A. $2a^2$

B. $4a^2$

C. a^2

D. $3a^2$

Answer: $2a^2$

478.

Question: If 'a' is a double root of the auxiliary equation of the differential equation $d^2y/dx^2 + \alpha\, dy/dx + ßy =$ e^ax, then its particular integral is - (α, ß are constants)

Options:

A. $(1/2)x^2e^{ax}$

B. xe^ax / (2a+a)

C. $x^2e^{ax} / (2a^2)$

D. e^ax / (a^2+aa+β)

Answer: $(1/2)x^2e^{ax}$

479.

Question: Solution of difference equation 2yx+2-5yx+1+2yx = 0; yo = 0, y_1 = 1 is -

Options:

A. yx = (1/2)^x - (2/3) + 2^x

B. yx = (2/3)^x + 2^x

C. yx = (1/3)^x - (2/3)^x

D. yx = (1/3)^x - (2/5)^x

Answer: yx = (1/2)^x - (2/3) + 2^x

480.

Question: Number of conjugate classes in the symmetric group S3 is'-

Options:

A. 4

B. 3

C. 1

D. 2

Answer: 3

481.

Question: The area of the region bounded by the curve y = x^3 and the lines y = x + 6 and x = 0 is -

Options:

A. 10 sq. unit

B. 18 sq. unit

C. 12 sq. unit

RajTest

D. 9 sq. unit

Answer: 10 sq. unit

482.

Question: The complex mapping that maps the disc | z-1 |≤ 1 of the z-plane into the disc | w | ≤ 2 in the w-plane is -

Options:

A. w = (z-1)

B. w = 2 (z - 1)

C. w=(z-1)/2

D. w = 2 (z + 1)

Answer: w = 2 (z - 1)

483.

Question: The enveloping cylinder to the surface $ax^2+by+cz^2=1$ with generators perpendicular to z-axis meet the plane z=0 in -

Options:

A. a parabola

B. a circle

C. a straight line

D. an ellipse

Answer: an ellipse

484.

Question: The asymptotes of the hyperbola xy = hx + ky are -

Options:

A. x-k = 0, y + h=0

B. x + h = 0, y + k = 0

C. x-k=0, y-h=0

D. x+k= 0, y - h = 0

Answer: x-k=0, y-h=0

485.

Question: The sequence 1/(n^P+n^9x^2), ∀x ∈ R is uniformly convergent, if -

Options:

A. p<1

B. p>1

C. p=0

D. p=1/2

Answer: p>1

486.

Question: The asymptotes of the curve $(x^2-3x + 2) (x + y - 2) + 1 = 0$ parallel to y -- axis are -

Options:

A. x = 2, x = 3

B. x = 1, x = -1

C. x = 1, x = 2

D. x = 2, x= -1

Answer: x = 1, x = 2

487.

Question: Which of the following curve will cut the parabola y2 = 4ax at right angle ?

Options:

A. x2 + y2 = a2

B. x2 = 4ay

C. y = ax

D. y = e-x/2a

Answer: y = e-x/2a

488.

Question: If P and Q be the ends of the conjugate diameters of the ellipse x2/a2 + y2/b2 = 1, and the locus of the middle points of PQ be x2/a2 + y2/b2 = λ, then λ is :

Options:

A. 1/4

B. 1/2

C. 2

D. 4

Answer: 1/2

489.

Question: For the hyperbola 9x2 – 16y2 = 144, the true statement is :

Options:

A. its foci are (0, ± 5).

B. length of semi-minor axis is 4.

C. length of latus-rectum is 9/4.

D. its eccentricity is 5/4.

Answer: its eccentricity is 5/4.

RajTest

490.

Question: Locus of the point of intersection of mutually perpendicular tangents to the ellipse x2/a2 + y2/b2 = 1 is:

Options:

A. x2a2 y2 - b2

B. x2 + a2 = y2 + b2

C. x2 + y2 = a2 + b2

D. x2 + y2 / (a2 + b2) = 2

Answer: x2 + y2 = a2 + b2

491.

Question: At a point (1, √3) on the curve y2 = 4-x2, tangent and normal are drawn. The area of the triangle formed by tangent, normal and x-axis in square units is :

Options:

A. 4/√3

B. √3/2

C. 2√3

D. √3

Answer: 2√3

492.

Question: The image (or reflection) of the point (1, 2, -1) in the plane 3x – 5y + 4z = 5 is

Options:

A. (73,-30,39)

B. (73/25, -30/25, 39/25)

C. (-1,-2, 1)

D. (0,0,0)

Answer: (73/25, -30/25, 39/25)

493.

Question: The projection of the line segment on the axes of co-ordinates are 2, 3, 6, the length of the line segment is :

Options:

A. √7

B. 1

C. 7

D. 11

Answer: 7

494.

Question: A perpendicular PN is drawn from P(5, 9, 3) upon a line NL given by x-1/2 = y-2/3 = z-3/4 the co-ordinates of foot N of perpendicular PN are :

Options:

A. (3,5,7)

B. (2, 3, 4)

C. (1, 2, 3)

D. (-5, -9, -3)

Answer: (3,5,7)

495.

Question: A plane passes through a fixed point (a, b, c). The locus of the foot of the perpendicular from origin is :

Options:

A. x2 + yz - ax - by - cz = 0

B. xyz-ax - by - cz = 0

C. x/a + y/b + z/c = 3

D. x2 + y2 + z2 – ax - by - cz = 0

Answer: x2 + y2 + z2 – ax - by - cz = 0

496.

Question: If l_1, m_1, n_1 and l2, m2, n_2 are the direction cosines of two concurrent lines, then the direction cosines of the lines bisecting the angles between them are proportional to :

Options:

A. ± l1/l2, ± m1/m2, ± n1/n2

B. ± √l1l2, ± √m1m2, ± √n1n2

C. l1 ± l2, m1 ± m2, n1 ± n2

D. ± l1/√l2, ± m1/√m2, ± n1/√n2

Answer: $l_1 \pm l_2$, $m_1 \pm m_2$, $n_1 \pm n_2$

497.

Question: The angle between the line $\vec{r} = (\hat{i} - \hat{j} + \hat{k}) + \lambda(2\hat{i} - \hat{j} + 3\hat{k})$ and plane $\vec{r}.(2\hat{i} + \hat{j} - \hat{k}) = 4$ is :

Options:

A. 0

B. π/6

C. π/3

D. π/2

Answer: 0

RajTest

498.

Question: In the following distribution, the value of median is 46, then the values of x and y are:
Class interval 10-20 20-30 30-40 40-50 50-60 60-70 70-80
Frequency 12 30 x 65 y 25 18

Options:

A. 40,39

B. 42,37

C. 34,45

D. 38,41

Answer: 34,45

499.

Question: The mean deviation from the median of the following series is :
Serial number 1 2 3 4 5 6 7 8 9
Marks out of 100 68 49 32 21 54 38 59 66 41

Options:

A. 12.1

B. 13.2

C. 12.78

D. 14.5

Answer: 12.78

500.

Question: Daily wages of 10 workers in a company are given below : Wages in ₹ : 15, 20, 22, 19, 16, 10, 17, 18, 13, 20 The variance in rupees is :

Options:

A. 11.7

B. 11.8

C. 12.2

D. 12.8

Answer: 11.8

501.

Question: A person speaks truth in 60% cases and another person B speaks false in 30% cases. In what percentage of cases they are likely to contradict each other in stating the same fact ?

Options:

A. 56%

B. 46%

C. 36%

D. 66%

Answer: 46%

502.

Question: The plane $lx + my = 0$ is rotated about its line of intersection with the plane $z = 0$ through an angle α. The equation of plane in its new position is $lx + my \pm z\sqrt{(l^2 + m^2)}.\ \lambda = 0$, then λ equals

Options:

A. $\cos \alpha$

B. $\sin \alpha$

C. $\tan \alpha$

D. $\cot \alpha$

Answer: $\tan \alpha$

503.

Question: The probability that a bulb produced by a factory will fuse after 300 days of use is 0.05. The probability that out of 5 such bulbs not more than one will fuse after 300 days of use is :

Options:

A. $(19/20)^5$

B. $(6/20)(19/20)^4$

C. $1 - 5(6/20)^4$

D. $1 - (19/20)^5$

Answer: $(6/20)(19/20)^4$

504.

Question: A pair of 6 face dice is thrown 6 times. If getting a total of 7 is considered a success, the probability of getting at least 5 successes is :

Options:

A. $31/6^6$

B. $5/6^5$

C. $1-(5/6^5)$

D. $1-(31/6^6)$

Answer: $31/6^6$

505.

Question: Let $a = \hat{i} + 2\hat{j} + 3\hat{k}$, $b = -\hat{i} + 2\hat{j} + \hat{k}$, $c = 3\hat{i} + \hat{j}$, then $a + \lambda b$ will be perpendicular to c if λ equals :

Options:

A. 1

RajTest

B. 3

C. 5

D. 7

Answer: 5

506.

Question: For vectors (pî + qĵ) and (qî – pĵ), the true statement is :

Options:

A. magnitudes of their scalar and vector product are equal.

B. they are non-coplanar.

C. they are mutually perpendicular.

D. they are parallel.

Answer: they are mutually perpendicular.

507.

Question: A problem in physics is given to three students whose chances of solving it are 1/2, 1/3, 1/4. What is the probability that problem will not be solved ?

Options:

A. 3/4

B. 12/13

C. 1-(12/13)

D. 1/4

Answer: 1/4

508.

Question: If the points A (11î + 3ĵ + 7k̂), B (5î – 2k̂) and C (î - 2ĵ - 8k̂) are collinear, then the ratio in which B divides AC is:

Options:

A. 3:1

B. 3:2

C. 2:3

D. 1:3

Answer: 3:2

509.

Question: If the sum of two unit vectors is a unit vector, then the magnitude of their difference will be :

Options:

A. 1

B. √2

C. √3

D. 0

Answer: √3

510.

Question: The adjacent sides of a parallelogram are represented by the vectors (î + 2ĵ + 3k̂) and (-3î + 2ĵ + k̂); then the area of the parallelogram in square units is :

Options:

A. 6√5

B. 5√6

C. √148

D. √20

Answer: 6√5

511.

Question: For any non-zero vector a, [(a x î) x î + (a x ĵ) x ĵ + (a x k̂) x k̂] equals

Options:

A. 2a

B. -a

C. 3a

D. -2a

Answer: -2a

512.

Question: The point P divides the line segment AB in the ratio 3:2 and position vectors of A and P are (a + b) and (a - (1/5)b) respectively. The position vector of B will be :

Options:

A. -a-b

B. -a+b

C. (1/3)(a+b)

D. a-b

Answer: a-b

513.

Question: Let (G) be a cyclic group of n roots of unity under multiplication, then its generator is :

Options:

A. e^(2πi/n)

RajTest

B. e^(πi/n)

C. e^(4πi/n)

D. e^(πi/2n)

Answer: e^(2πi/n)

514.

Question: Let (H, *) be a normal subgroup of the group (G, *), and the system (G/H, *) forms a group. The false statement is :

Options:

A. (G/H, *) is quotient group.

B. Operation * is associative in G/H.

C. G/H has an identity element H = e * H for *.

D. a^{-1} * H is not the inverse of a * H.

Answer: a^{-1} * H is not the inverse of a * H.

515.

Question: Let G be the set of non-zero positive rational numbers and * be the binary operation on G defined by a * b = (1/2)(ab), then the false statement is :

Options:

A. (G, *) is a group.

B. * is associative.

C. 2 is the identity element for operation *.

D. (G, *) is not an abelian group.

Answer: (G, *) is not an abelian group.

516.

Question: Operation * is defined on set P = {e, a, b, c} as per given table, then which property does not hold good?

*	e	a	b	c
e	e	a	b	c
a	a	e	c	b
b	b	c	e	a
c	c	b	a	e

Options:

A. Associative law.

B. e is an identity.

C. P is a cyclic group.

D. Commutative law.

Answer: P is a cyclic group.

517.

Question: The true statement for function f(x, y) = (xy + $a^3/x + a^3/y$) is:

Options:

A. the maximum value is $3a^2$.

B. the minimum value is $3a^2$.

C. no maxima or minima exists.

D. the extreme value exists at (-a, -a).

Answer: the minimum value is $3a^2$.

518.

Question: Asymptote of curve $y^2 (2a - x) = x^3$ is

Options:

A. y = 0

B. x = 0

C. x = 2a

D. y = x

Answer: x = 2a

519.

Question: The value of ∫(from x=0 to x=y) ∫(from y=0 to y=z) ∫(from z=0 to z=2) xyz dz dy dx is

Options:

A. 15/2

B. 9/2

C. 7/2

D. 8

Answer: 8

520.

Question: -5/2 equals:

Options:

A. -8√π / 15

B. 8√5 / 15

C. -1/2

D. Cannot be evaluated.

Answer: -8√π / 15

521.

Question: Let (G, *) be a group, then the false statement is :

Options:

A. If a, b ∈ G, then the linear equations a * x = b and y * a = b may have many solutions.

RajTest

B. For every $a \in G$, there is only one element a^{-1} such that $a^{-1} * a = a * a^{-1} = e$

C. a, b, c $\in$ G, then $a * b = a * c \Rightarrow b = c$

D. $(b * a)^{-1} = a^{-1} * b^{-1}$

Answer: If a, b $\in$ G, then the linear equations $a * x = b$ and $y * a = b$ may have many solutions.

522.

Question: For the set $S = \{x: 0 \leq x \leq 1, x \in Q\}$, the true statement is :

Options:

A. the set S has infinite elements hence unbounded.

B. the supremum of S does not exist.

C. the infimum of S is zero.

D. the infimum and supremum do not belong to S.

Answer: the infimum of S is zero.

523.

Question: The following series $14/1^3 + 24/2^3 + 34/3^3 + ...$ is

Options:

A. oscillatory convergent

B. convergent

C. divergent

D. None of these

Answer: convergent

524.

Question: The true statement for the series $\sum$ (n=1 to ∞) (x^(n-1)) / (n * 3^n) is

Options:

A. Convergent if $x < 3$

B. Convergent if $x > 3$

C. Divergent if $x > 1$

D. Divergent if $x > 0$

Answer: Convergent if $x < 3$

525.

Question: If P* is a refinement of a portion P, then for a bounded function f, the true statement is :

Options:

A. $L(P^*, f) < L(P, f)$

B. $L(P^*, f) \leq U(P, f)$

C. $L(P^*, f) > L(P, f)$

D. $U(P^*, f) > U(P, f)$

Answer: $L(P^*, f) \leq U(P, f)$

526.

Question: The series $1 + x + x^2 + x^3 + ...$ converges to $(1-x)^{-1}$ in the interval :

Options:

A. $0 < x \leq 1$ only

B. $-1 < x < 0$ only

C. $-1 < x < 1$ only

D. $-1 \leq x \leq 1$ only

Answer: $-1 < x < 1$ only

527.

Question: Find the point x = c on the curve $y = \log_e x$, tangent at which is parallel to the chord joining the points (1, 0) and (e, 1).

Options:

A. c = e + 1

B. c = e - 1

C. c = e

D. c = 1

Answer: c = e - 1

528.

Question: Out of the following, which one is not the purpose of Mathematics club ?

Options:

A. It initiates and develops mathematical expression among the students.

B. The mathematics club will be a medium of developing student's interest in the subject.

C. The students get opportunities of recreational Mathematics.

D. It provides opportunity of listening experts to gifted children only.

Answer: It provides opportunity of listening experts to gifted children only.

529.

Question: Out of the following, which one is not the characteristics of gifted students in Mathematics?

Options:

RajTest

A. Grasp new ideas quickly.

B. Do work logically and accurately.

C. Shows poor communication skills, when asked to justify their method

D. Have a curiosity that ask "what would happen if .... ?"

Answer: Shows poor communication skills, when asked to justify their method

530.

Question: Out of the following, which of the option below not shows the characteristics of pupils with creativity in Mathematics?

Options:

A. Combining understanding, experiences, imagination and reasoning to construct new knowledge.

B. Using existing mathematical knowledge to create new solutions to unfamiliar problems.

C. Posing questions and developing convincing arguments.

D. Solving mathematical problems in routine manner.

Answer: Solving mathematical problems in routine manner.

531.

Question: If a test measures those traits for which it purports to measure; then the test possess which of the following quality?

Options:

A. Validity

B. Reliability

C. Objectivity

D. Discrimination

Answer: Validity

532.

Question: Who was the propounder of "Mathetics Programmed Instruction"?

Options:

A. Robert Mager

B. T.F. Gilbert

C. Lawrence Stalurow

D. Norman A. Crowder

Answer: T.F. Gilbert

533.

Question: Who was the propounder of "cone of experiences" based on Audio-visual aids for multi sensory instruction ?

Options:

A. Edger Dale

B. Robert Mager

C. Robert Miller

D. Gronland

Answer: Edger Dale

534.

Question: The approach of lesson plan which is prepared to develop various skills of Mathematics teaching and to bring out the modification in their behaviour and prepared to teach 5 or 7 pupil in 5 to 10 minutes is known as

Options:

A. Macro Teaching Approach

B. Micro Teaching Approach

C. Herbertian Approach

D. Morrison Approach

Answer: Micro Teaching Approach

535.

Question: Which of the following is not an approach of writing instructional objectives ?

Options:

A. Robert Mager's Approach

B. Robert Miller's Approach

C. RCEM Approach

D. NIPD Approach

Answer: NIPD Approach

536.

Question: Out of the following, which one is the example of open question in Mathematics?

Options:

A. What are the factors of 10 ?

B. What is the perimeter of rectangle having side 20 and 10 cm ?

C. Find a set of 6 numbers with a median of 4.

D. What do the interior angles of a triangle add up to ?

PaTest

Answer: Find a set of 6 numbers with a median of 4.

537.

Question: $(0.623)^2 - (0.623 \times 0.377) + (0.377)^2 / (0.623)^3 + (0.377)^3$ equals :

Options:

A. 4

B. 3

C. 2

D. 1

Answer: 1

538.

Question: If $a = \sqrt{5}+1 / \sqrt{5}-1$ and $b = \sqrt{5}-1 / \sqrt{5}+1$, then $1+b+b^2 / 1-b+b^2$ equals:

Options:

A. 5/4

B. 7/3

C. 4/3

D. 1

Answer: 4/3

539.

Question: $\sqrt{0.289} / 0.00121$ equals :

Options:

A. 341/11

B. 339/11

C. 289/11

D. 170/11

Answer: 170/11

540.

Question: Product of two numbers is equal to :

Options:

A. sum of their L.C.M. and G.C.D.

B. difference of their L.C.M. and G.C.D.

C. product of their L.C.M. and G.C.D.

D. ratio of their L.C.M. and G.C.D.

Answer: product of their L.C.M. and G.C.D.

541.

Question: The total number of divisors of 6480 are:

Options:

A. 50

B. 40

C. 30

D. 20

Answer: 50

542.

Question: 0.23 is equal to :

Options:

A. 123/5

B. 23/99

C. 230/999

D. 23/101

Answer: 23/99

543.

Question: A boy of height 90 cm starts walking away from the base of a lamp post at a speed of 1.2 m/s. If the lamp is 4.5 m above the ground, the length of his shadow after 4 seconds is

Options:

A. 1.6 m

B. 1.2 m

C. 1.5 m

D. 1.4 m

Answer: 1.2 m

544.

Question: In the adjoining figure, the line segment PQ is parallel to side AC of triangle ABC and it divides the triangle into two parts having equal area, then the ratio AP/AB equals :

Options:

A. $1/\sqrt{2}$

B. 1/2

C. $1/\sqrt{3}$

D. $2-\sqrt{2} / 2$

Answer: $2-\sqrt{2} / 2$

545.

Question: Which of the following statements is true?

Options:

RajTest

A. If corresponding angles of two quadrilaterals are equal, then their corresponding sides are in the same ratio.

B. If corresponding sides of two quadrilaterals are equal, then their corresponding angles are equal.

C. If polygon A is similar to polygon B, & polygon B is similar to polygon C, then polygon A is similar to polygon C.

D. The ratio of any two corresponding sides in two equilateral triangles is always not the same.

Answer: If polygon A is similar to polygon B, & polygon B is similar to polygon C, then polygon A is similar to polygon C.

546.

Question: In the given figure; if radius of the circle is 21 cm and ∠POQ is 120°, then area of segment PRQ in $(cm)^2$ is:

Options:

A. $21/4 (44-21\sqrt{3})$

B. $21/4 (88-21\sqrt{3})$

C. $21/4 (88\sqrt{3}-21)$

D. $21/4 (88\sqrt{2}-21)$

Answer: $21/4 (88-21\sqrt{3})$

547.

Question: In the given figure, find the perimeter of the shaded region, where ADC, AEB and BFC are semi-circles on diameters AC, AB and BC respectively. Given AB = 2.8 cm, BC = 1.4 cm.

Options:

A. 13.2 cm

B. 26.4 cm

C. 2.1π cm

D. 6.3π cm

Answer: 13.2 cm

548.

Question: In the given figure, PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T, then the length TP in cm is

Options:

A. 20/3

B. $\sqrt{20/3}$

C. $\sqrt{\pi}$

D. 16/3

Answer: 20/3

549.

Question: The set of linear equations : $6x-9y = 12$, $8-4x+6y=0$ has

Options:

A. unique solution

B. infinitely many solutions

C. no solution

D. only two solutions

Answer: infinitely many solutions

550.

Question: If p and q are the roots of $5x - 7 = 2x^2$, then the equation whose roots are $(2p-5)^{-1}$ and $(2q - 5)^{-1}$ is:

Options:

A. $14x^2 + 5x + 1 = 0$

B. $14x^2 - 5x + 1 = 0$

C. $x^2 + 5x + 14 = 0$

D. $x^2 - x - 14 = 0$

Answer: $14x^2 + 5x + 1 = 0$

551.

Question: The number of roots, the equation $\sqrt{3y+1} + 1 = \sqrt{y}$ has :

Options:

A. two unequal roots

B. infinite roots

C. no root

D. exactly one root

Answer: no root

552.

Question: For real values of x, $(6 - x - x^2) > 0$ if

Options:

A. $x<-3$

B. $x>2$

C. $3<x<-2$

D. $-3<x<2$

Answer: $-3<x<2$

RajTest

553.

Question: If roots of 1/(x+p) + 1/(x+q) = 1/r are equal in magnitude and opposite in sign, then which of the following is true?

Options:

A. p + q = 2r

B. p + q = -2r

C. p + q = 0

D. p = r - q

Answer: p + q = 2r

554.

Question: In the given figure, a square OABC is inscribed in a quadrant of the circle OPBQ. If OA = 20 cm, then shaded area in sq. cm is :

Options:

A. 228 5/7

B. 220π

C. 110π

D. 228 4/7

Answer: 228 4/7

555.

Question: Taking the first term of an A.P. to be a, the sum of first m terms is zero, then the sum of next n terms will be

Options:

A. na (n-m) / (m-1)

B. na (n+m) / (m-1)

C. na (n-m) / (n-1)

D. na (m+n) / (1-m)

Answer: na (m+n) / (1-m)

556.

Question: If 1/(b-c) + 1/(b-a) = 1/a + 1/c, then a, b, c are in

Options:

A. A.P.

B. G.P.

C. H.P.

D. A.G.

Answer: H.P.

557.

Question: In an A.P. the m times of mth term is equal to n times the nth term, its (m + n)th term will be

Options:

A. 0

B. mn

C. m+n / mn

D. (1+m+n)

Answer: 0

558.

Question: Between two quantities if a is one arithmetic mean, and β and γ are two geometric means, then which of the following is true?

Options:

A. $\beta/\gamma + \gamma/\beta = 2\alpha$

B. $\beta\gamma = \alpha$

C. $\beta + \gamma = 2\alpha$

D. $\beta^2/\gamma + \gamma^2/\beta = 2\alpha$

Answer: $\beta^2/\gamma + \gamma^2/\beta = 2\alpha$

559.

Question: The co-efficient of x^6 in the expansion of $(1 + x^2 + x)^{-3}$ is

Options:

A. 9

B. 3

C. 1

D. 0

Answer: 3

560.

Question: In the expansion of $(x + a)^n$, the sum of odd terms is P and sum of even terms is Q, $n \in I^+$, then $\{(x + a)^{2n} + (x - a)^{2n}\}$ equals :

Options:

A. $2(P^2-Q^2)$

B. 4PQ

C. $P^2 + Q^2$

D. $2(P^2 + Q^2)$

Answer: $2(P^2 + Q^2)$

561.

RajTest

Question: In the expansion of $(2x^3-1 / x)^{12}$, which term is independent of x ?

Options:

A. 10

B. 8

C. 9

D. 11

Answer: 10

562.

Question: The roots of equation $9x^2 - \sqrt{72}x + 1 = 0$ are :

Options:

A. rational

B. irrational

C. imaginary

D. equal

Answer: irrational

563.

Question: The true statement is:

Options:

A. $\nabla \times (V) = 0$

B. $\nabla (f) = \$(Vf) + \bullet (\nabla ¢)$

C. V. $(xg) = g(\nabla x) - f \bullet (\nabla \times g)$

D. $\nabla \times (\nabla \times F) = \nabla(\nabla \bullet F) + \nabla^2 F$

Answer: $\nabla \times (\nabla f) = 0$

564.

Question: The value of $\int B$ A (r x dr) from A (a, 0,0) to B (a, 0, 2πb) along r = (a cos t) i + (a sin t) j + bt k is

Options:

A. πα (bj+ak)

B. 2πa (ai + bj + abk)

C. 2πα (aj + bk)

D. 2πα (bj + ak)

Answer: 2πα (bj + ak)

565.

Question: Let R be a closed region in the xy plane bounded by a simple closed curve C, and if Ψ(x, y) and Φ(x, y) are continuous functions having continuous partial derivatives in R, then $\int C$ (Ψ dx + Φ dy) equals :

Options:

A. $\iint R (\partial\Phi/\partial x + \partial\Psi/\partial y)$ dx dy

B. $\iint R (\partial\Psi/\partial y - \partial\Phi/\partial x)$ dx dy

C. $\iint R (\partial\Phi/\partial y - \partial\Psi/\partial x)$ dx dy

D. $\int C (\partial\Phi/\partial x - \partial\Psi/\partial y)$ dx

Answer: $\iint R (\partial\Phi/\partial y - \partial\Psi/\partial x)$ dx dy

566.

Question: $\iint S$ n x (ā x r) dS equals, where V is the volume of body having surface S :

Options:

A. Vā

B. 1/2 Vā

C. 2 Vā

D. Zero vector

Answer: 2 Vā

567.

Question: The solution of differential equation xdy - ydx = $\sqrt{x^2 + y^2}$ dx is

Options:

A. x + $\sqrt{x^2 + y^2}$ = cx2

B. y + $\sqrt{x^2 + y^2}$ = cy2

C. y - $\sqrt{x^2 + y^2}$ = cx

D. y + $\sqrt{x^2 + y^2}$ = cx2

Answer: y + $\sqrt{x^2 + y^2}$ = cx2

568.

Question: The solution of the following differential equation $\sec^2 y$ dy/dx + 2 x tan y = x^3 is :

Options:

A. tan y = 1/2 (x^2 + 1) + c e^(-x2)

B. tan y = 1/2 (x^2 - 1) + c e^(x2)

C. cot y = 1/2 (x^2 + 1) + c e^(-x2)

D. tan y = 1/2 (x^2 - 1) + c e^(x2)

Answer: tan y = 1/2 (x^2 - 1) + c e^(x2)

569.

Question: The solution of x^2 d^2y/dx^2 - x dy/dx + y = 2 log x is y = (c_1 + c_2 log x) x + 2g(x), then g(x) is

Options:

A. (2 + log x)

B. (1 + log x)

C. (2 - log x)

RajTest

D. log x

Answer: (2 + log x)

570.

Question: The value of ∫C [(cos x sin y - xy) dx + sin x cos y dy], where C is the circle $x^2 + y^2 = 1$, is

Options:

A. 0

B. 1

C. π/2

D. π

Answer: 0

571.

Question: If p=dy/dx ,then for $y = 2px + y^2p^3$, we have

Options:

A. $y^2 = cx + 1/3\ c^3$

B. $y = x^2 + 1/3\ c^3$

C. $xy = cx + 1/3\ c^3$

D. $y^2 = cxy + 1/3\ c^3$

Answer: $y^2 = cx + 1/3\ c^3$

572.

Question: The resultant of two forces acting at a point O in directions OA and OB are represented in magnitude by λ. OA and μ. OB, is represented by (λ + μ) · OC, where C is a point on AB such that :

Options:

A. λ. CA = μ· CB

B. CA/λ = CB/μ

C. $\lambda^2 \cdot CA = \mu^2 \cdot OB$

D. CA/λ + CB/μ = 1

Answer: λ. CA = μ· CB

573.

Question: Two forces P and Q act at O and R is their resultant. If a transversal intersects their lines of action at L, M and N respectively, then

Options:

A. P·OL + Q·OM = R·ON

B. P/OL + Q/OM = R/ON

C. (P+Q) (OL + OM) = R·ON

D. $P/OL^2 + Q/OM^2 = R/ON^2$

Answer: P/OL + Q/OM = R/ON

574.

Question: For a projectile, the true statement is :

Options:

A. the equation of path is $y = x \tan \alpha - g x^2/(2 u^2 \sin^2 \alpha)$

B. the latus rectum of path is $2u^2 \cos^2 \alpha / g$

C. time upto highest point is $2u \sin \alpha / g$

D. maximum range is $u^2 \sin \alpha / g$

Answer: the latus rectum of path is $2u^2 \cos^2 \alpha / g$

575.

Question: One of the solution of $(4D^2 - 4D + 1)\ y = e^{(x/2)}$ (D = d/dx) is

Options:

A. $x^2/2\ e^{(x/2)}$

B. $x^2/16\ e^{(x/2)}$

C. $x^2/8\ e^{(x/2)}$

D. $x^2/8\ e^{(x/2)}$

Answer: $x^2/8\ e^{(x/2)}$

576.

Question: A particle moves vertically under gravity, then the true statement is :

Options:

A. greatest height attained is u^2/g.

B. time taken to the greatest height is u/2g.

C. if body is simply dropped from rest, then velocity attained after falling a height h is √2gh

D. time taken to attain a given height h is $(ut+1/2\ gt^2)$

Answer: if body is simply dropped from rest, then velocity attained after falling a height h is √2gh

577.

Question: If the convex set of all the feasible solutions of Ax = b, x > 0, is a convex polyhedron, then _____ extreme points give an extremal solution. Fill the blank correctly among the following:

Options:

A. any one of the

B. atleast one of the

C. atleast two of the

D. all the

RajTest

Answer: atleast one of the

578.

Question: The initial simplex table for some L.P.P. is as follows:
Cj -1 3 -2 0 0 0
CB B XB b y1 y2 y3 y4 y5 y6 XBi/yij >0
0 a4 x4 7 3 -1 3 1 0 0
0 a5 x5 12 -2 4 0 0 1 0 3
0 a6 x6 10 4 3 8 0 0 1 10/3
z*=0 Zj*-Cj 1 -3 2 0 0 0
Now, the false statement is :

Options:

A. the departing vector is a5

B. the entering vector is a2

C. the key element is 8

D. the vectors corresponding to variables X4, X5, X6 form an identity matrix.

Answer: the key element is 8

579.

Question: If the unit of force is newton, then unit of moment is:

Options:

A. newton metre

B. newton $(metre)^2$

C. newton/metre

D. $(newton)^2$ metre

Answer: newton metre

580.

Question: If we have a basic feasible solution consisting of (m + n - 1) independent positive allocations and a set of arbitrary number ui (i = 1, 2, ..., m) and Vj (j = 1, 2, ..., n) satisfying Crs = ur + us for all occupied cells (r, s) then the evaluation Aij corresponding to each empty cell (i, j) is given by

Options:

A. Aij = Cij + (ui - vj)

B. Aij = Cij + 1/2 (ui + vj)

C. Aij = Cij - 1/2 (ui + vj)

D. Aij = Cij - (ui + vj)

Answer: Aij = Cij - (ui + vj)

581.

Question: Using Newton Gregory forward interpolation formula, compute y (3.62) from the following table :
x 3.60 3.65 3.70 3.75
y 36.598 38.475 40.447 42.521

Options:

A. 37.001

B. 37.222

C. 37.338

D. 37.312

Answer: 37.338

582.

Question: By the following table, find dy/dx at x = 1.1:
X 1.0 1.2 1.4 1.6 1.8 2.0
y 0 0.128 0.544 1.296 2.432 4.0

Options:

A. 0.63

B. 0.61

C. 0.59

D. 0.57

Answer: 0.63

583.

Question: By the bisection method one of the root of $x^3-9x + 1 = 0$ lies between 2 and 4; a better approximation is :

Options:

A. between 1.9 and 2

B. between 2 and 2.81

C. between -2.96 and 3

D. between 2.75 and 3

Answer: between 2.75 and 3

584.

Question: For the primal problem. Zp = CX, s.t. $AX \leq b$, and $X \geq 0$, its dual is:

Options:

A. ZD = wbT, $ATw \geq CT$, $w \geq 0$

B. ZD = btw, $ATw \leq CT$, $w \geq 0$

C. ZD < btw, $ATw \geq CT$, $w \leq 0$

D. ZD = btw, $ATw \geq CT$, $w \geq 0$

Answer: ZD = btw, $ATw \geq CT$, $w \geq 0$

585.

RajTest

Question: After eliminating the constants A and B from yn = A 2n + B 3n, the corresponding difference equation is :

Options:

A. 6yn-5yn+1+ yn+2 = 0

B. 5yn-6yn+1+yn+2 = 0

C. yn+5yn+1+6yn+2 = 0

D. yn-yn+1 + 6yn+2 = 0

Answer: 6yn-5yn+1+ yn+2 = 0

586.

Question: The general solution of difference equation yk+1 = Ayk + B, where k = 0, 1, 2, ... A and B are constants, and A ≠ 1 is:

Options:

A. yk = Byk + yo

B. yk = A^k yo + B(1 - A^k)/(1-A)

C. yk = A y^(k-1) + B(1-A^k)/(1-A)

D. A yk = A^k yo + B(1-A^k)/(1-A)

Answer: yk = A^k yo + B(1 - A^k)/(1-A)

587.

Question: Out of the following which component is not related to the "skill" objective of Mathematics teaching?

Options:

A. Computation

B. Drawing geometrical figures and diagrams.

C. Reading and drawing tables and charts.

D. Verifying conclusions

Answer: Verifying conclusions

588.

Question: To find the real root of equation f(x) = 0, by Newton – Raphson method, the formula of successive approximation is given by (given that f'(x) ≠ 0 and f "(x) ≠ 0) :

Options:

A. Xn+1 = Xn + f(x)/f'(x)

B. Xn+1=Xn - f(x)/f"(x)

C. Xn+1=Xn - f(x)/f'(x)

D. Xn+1=Xn - f'(x)/f"(x)

Answer: Xn+1=Xn - f(x)/f'(x)

589.

Question: Which of the following point is not essential to be kept in mind while deciding instructional objectives?

Options:

A. Level of students

B. Psychology of students

C. Size of the class

D. Teaching-learning situation

Answer: Size of the class

590.

Question: Which of the following is the correct sequence of steps of Inductive Method?

Options:

A. Specific Example → Observation → Testing → Generalization

B. Observation → Specific Example → Testing → Generalization

C. Observation → Specific Example → Generalization → Testing

D. Specific Example → Observation → Generalization → Testing

Answer: Specific Example → Observation → Generalization → Testing

591.

Question: Which of the following principle is not related to the laboratory method ?

Options:

A. From concrete to abstract

B. From indefinite to definite

C. From known to unknown

D. Learning by doing

Answer: From indefinite to definite

592.

Question: "A method of study in which students do their work/study individually or in a group under observation of teacher. During this, they take regular guidance from teacher and inform their progress to teacher" is known as:

Options:

A. Supervised study method

B. Analytical method

C. Inductive method

RajTest

D. Deductive method

Answer: Supervised study method

593.

Question: Which of the following personality characteristics could not be developed through 'study of Mathematics' ?

Options:

A. Problem solving

B. Faith in craming

C. Abstract thinking

D. Logical thinking

Answer: Faith in craming

594.

Question: Which of the following is not the characteristics of oral work in Mathematics?

Options:

A. It develops accuracy, exactness and precision.

B. It quickens wit and sharpens intelligence.

C. In case of error, mental cancellation is difficult.

D. It is a good mental exercise.

Answer: In case of error, mental cancellation is difficult.

595.

Question: Out of the following, which course is best suitable for Mathematics teacher to understand the overall picture of the theory and practice of teaching ?

Options:

A. Distance Education System

B. Educational System and Society

C. Principles and Philosophy of Teaching

D. Educational Administration

Answer: Principles and Philosophy of Teaching

596.

Question: "A test which is used to measure the degree of mastery of skills, fundamental concepts, process and general knowledge of a subject attained by the student" is known as

Options:

A. Prognostic test

B. Achievement test

C. Diagnostic test

D. Survey test

Answer: Achievement test

597.

Question: Out of the following, which one is the example of essay type question in Mathematics?

Options:

A. The sum of all angles of a triangle is (i) 170° (ii) 180°.

B. Intersecting circles are concentric circles (true / false).

C. How many sides a triangle has ?

D. Define a straight line and from its defination prove that any two sides of triangle taken together are greater than the third.

Answer: Define a straight line and from its defination prove that any two sides of triangle taken together are greater than the third.

598.

Question: "A project is a whole-hearted purposeful activity proceeding in a social environment." This definition of project is given by:

Options:

A. Stevenson

B. Kilpatrik

C. Ballard

D. John Dewey

Answer: Kilpatrik

599.

Question: The question "write three examples of non-empty sets", measures which of the following level of cognitive domain?

Options:

A. Analysis

B. Evaluation

C. Application

D. Understanding

Answer: Understanding

600.

Question: In an achievement test, a teacher gave the following question :

RajTest

'A number divisible by 2 is known as odd number'.
True/False,
It is an example of

Options:

A. Subjective type question

B. Objective type question

C. Short answer type question

D. Essay type question

Answer: Objective type question

601.

Question: Consider the following question included in an achievement test:
The area of square whose side is equal to 8 meters is
(p) 74 sq m
(r) 64 sq m
(q) 32 sq m
(s) 81 sq m
The above question is an example of

Options:

A. Short answer questions

B. Multiple choice questions

C. Essay type question

D. Objective question

Answer: Multiple choice questions

602.

Question: The enrichment programme for gifted learners does not include

Options:

A. asking to solve more difficult question

B. asking for deep study

C. reducing & simplifying curriculum

Answer: reducing & simplifying curriculum

603.

Question: The rational form of the number 18.971 is

Options:

A. 9381

B. 495

C. 9391

D. 495

E. 9281

F. 495

G. 9291

H. 495

Answer: 9391 / 495

604.

Question: If
$3^2 \times 9^y \times (3^{-9/2})^{-2} - (27)^y = 1$
$2^3 \times 3^{3x}$
27
then (x - y) is equal to

Options:

A. -1

B. 1

C. 0

D. 3

Answer: 1

605.

Question: If 3 is the least prime factor of a number x and 7 is the least prime factor of number y, then the least prime factor of (x + y) is equal to

Options:

A. 2

B. 3

C. 7

D. 10

Answer: 2

606.

Question: Unit digit of the number $(52)^{97} \times (43)^{72}$ is

Options:

A. 2

B. 1

C. 6

D. 0

Answer: 2

607.

Question: If AB, BC and CD are equal chords of a circle with O as a centre and AD diameter, then $\angle AOB$ is equal to

Options:

A. 45°

B. 60°

RajTest

C. 90°

D. 120°

Answer: 60°

608.

Question: If five times complement of an angle is equal to two times of its supplement, then the angle is

Options:

A. 30°

B. 36°

C. 44°

D. 60°

Answer: 30°

609.

Question: In given figure, if line L1 is parallel to line L2 and Line L3 is parallel to line L4, then which of the following is correct?

Options:

A. $y° = 90° + x°/2$

B. $y° = 180° - x°$

C. $y° = 90° - x°/2$

D. $y° = 90°+ x°$

Answer: $y° = 90° + x°/2$

610.

Question: In triangle ABC, if $\angle A = 66°$ and the internal bisectors of $\angle B$ and $\angle C$ intersect at point 'O', then the measure of $\angle BOC$ is

Options:

A. 57°

B. 60°

C. 114°

D. 123°

Answer: 123°

611.

Question: If the diagonals of a quadrilateral ABCD bisect each other at right angles and $\angle A = 90°$, then quadrilateral ABCD is a

Options:

A. trapezium

B. rectangle

C. square

D. rhombus

Answer: square

612.

Question: In a quadrilateral ABCD, P, Q, R and S are mid-points of sides AB, BC, CD and. DA respectively, then which of the following is not true ?

Options:

A. PS = QR

B. PQ || RS

C. PR and QS bisect each other.

D. PR ⊥ QS

Answer: PR ⊥ QS

613.

Question: O is any point in the interior of ΔABC, then which of the following statement is correct?

Options:

A. (OA + OB + OC) > 1/2 (AB + BC + CA)

B. (OA + OB + OC) < 1/2 (AB + BC + CA)

C. (OA + OB + OC) = 1/2 (AB + BC + CA)

D. (OA + OB + OC) > 1/2 (AB + BC + CA)

Answer: (OA + OB + OC) > 1/2 (AB + BC + CA)

614.

Question: In the figure, 'O' is the centre of circle, the angle subtended by the arc BCD at the centre is 140°. BC is produced to P, $\angle DCB$ is equal to

Options:

A. 70°

B. 110°

C. 100°

D. 120°

Answer: 110°

615.

Question: The perimeter of a rhombus is 146 cm and one of its diagonal is 55 cm, then its area is

Options:

A. 1120 sq. cm.

B. 1320 sq. cm.

C. 1420 sq. cm.

RajTest

D. 1330 sq. cm.

Answer: 1320 sq. cm.

616.

Question: In the given figure, ∠AOB = 90°, AC = BC, OA = 12 cm and OC = 6.5 cm, then area of ΔAOB is

Options:

A. 60 cm²

B. 78 cm²

C. 32.5 cm²

D. 30 cm²

Answer: 30 cm²

617.

Question: In a circle with centre "O" and radius 5 cm, AB is a chord of length 5√3 cm, then area of sector AOB is

Options:

A. 25/3 π cm²

B. 25/3 cm²

C. 25/2 π cm²

D. 5π/3 cm²

Answer: 25/3 π cm²

618.

Question: The long and short hands of a clock are 6 cm and 4 cm long respectively. The sum of the distance travelled by their tips in 24 hours is equal to (π = 3.14)

Options:

A. 956.54 cm

B. 864.56 cm

C. 954.56 cm

D. 856.54 cm

Answer: 954.56 cm

619.

Question: The ratio of the volume of a cube to that of the largest sphere which will fit inside the cube, is

Options:

A. 36: π

B. π: 6

C. 6: π

D. 4: π

Answer: 6: π

620.

Question: A vessel is in the form of a hollow hemisphere mounted by hollow cylinder. The diameters of the cylinder and hemisphere is 7 cm each and the total height of the vessel is 10.5 cm, then the surface area of the vessel is

Options:

A. 231 cm²

B. 77 cm²

C. 154 cm²

D. 210 cm²

Answer: 231 cm²

621.

Question: A copper rod of diameter 1 cm and length 4 cm is drawn into a wire of length 9 m of uniform thickness, then the diameter of the wire is

Options:

A. 1/6 cm

B. 1/30 cm

C. 1/6 cm

D. 1/15 cm

Answer: 1/15 cm

622.

Question: The surface area of a sphere is same as the curved surface area of a right circular cylinder whose height and diameter are 12 cm each. The radius of the sphere is

Options:

A. 4 cm

B. 8 cm

C. 6 cm

D. 12 cm

Answer: 6 cm

623.

Question: The zeroes of a quadratic polynomial $x^2 + 99x + 127$ are

Options:

A. both positive

B. both negative

RajTest

C. one positive and one negative

D. both equal

Answer: both negative

624.

Question: If the equation $x^3 + px^2 + qx + r = 0$ has the roots α, β, γ, then the roots of the equation $x^3 - qx^2 + prx - r^2 = 0$ are

Options:

A. $1/\alpha, 1/\beta, 1/\gamma$

B. $(\alpha+\beta), (\beta+\gamma), (\gamma+\alpha)$

C. $\alpha\beta, \beta\gamma, \gamma\alpha$

D. $\alpha + 1/\beta, \beta + 1/\gamma, \gamma + 1/\alpha$

Answer: $\alpha\beta, \beta\gamma, \gamma\alpha$

625.

Question: Consider a polynomial $f(x) = ax^3 + bx^2 + x + 3$. If $(x + 3)$ is a factor of $f(x)$ and if $f(x)$ is divided by $(x + 2)$, then remainder is 5, then a : b is equal to

Options:

A. 457:143

B. 143:108

C. 143:457

D. 457:108

Answer: 143:457

626.

Question: If one root of equation $x^2 + ax + 4 = 0$ is twice the other root, then the value of a is

Options:

A. $\pm 3\sqrt{2}$

B. $\pm\sqrt{2}$

C. $\pm 8\sqrt{2}$

D. $\pm 2\sqrt{2}$

Answer: $\pm 3\sqrt{2}$

627.

Question: If a, b, c are in arithmetic progression and one root of the equation $ax^2 + bx + c = 0$ is 2, then the other root is

Options:

A. 5/2

B. -5/4

C. 5/2

D. -5/4

Answer: -5/4

628.

Question: If (1+i)/(1-i)^m = 1, then the least positive integer value of m is

Options:

A. 4

B. 2

C. 3

D. 1

Answer: 4

629.

Question: The sum of 'n' terms of an A.P. is $4n^2 + 5n$. Then the nth term is

Options:

A. 9n-1

B. 4n+9

C. 8n+1

D. 4n-3

Answer: 8n+1

630.

Question: If α and β are two non zero complex numbers such that $|\alpha| = |\beta|$ and $\arg(\alpha) + \arg(\beta) = \pi$, then α is equal to

Options:

A. β

B. β

C. $-\beta$

D. $-\beta$

Answer: $-\beta$

631.

Question: nCr + n-1Cr + ... + rCr (n > r) is equal to

Options:

A. 2^n

B. n+1Cr+1

C. n+1Cr

D. n+2Cr

Answer: n+1Cr+1

RajTest

632.

Question: The sum of the series 1 + 4/7 + 10/25 + 7/125 + ... infinite terms is equal to

Options:

A. 35/16

B. 16/35

C. 5/4

D. 7/4

Answer: 35/16

633.

Question: In the expansion of (x + 1/x^2)^12, which term is independent of x?

Options:

A. 4th

B. 5th

C. 6th

D. 3rd

Answer: 5th

634.

Question: The middle term in the expansion of $(2x^2/3 + 3/(2x^2))^{10}$ is

Options:

A. 156

B. 260

C. 252

D. 180

Answer: 252

635.

Question: If square of the matrix
[α β]
[γ -α]
is a unit matrix then α, β and γ satisfy the relation

Options:

A. $1 - \alpha^2 + \beta\gamma = 0$

B. $\alpha^2 + \beta\gamma - 1 = 0$

C. $\alpha^2 + \beta\gamma + 1 = 0$

D. $1 + \alpha^2 - \beta\gamma = 0$

Answer: $\alpha^2 + \beta\gamma - 1 = 0$

636.

Question: Incorrect statement is

Options:

A. $x^2 + y^2 + 2z2 - 2x + 3y = 0$ is not equation of sphere.

B. $x2 + y2 + z^2 - 2yz + 4x + 2z = O$ is not equation of sphere.

C. $x^2 + y2 + z^2 - 2x + 4y - 6z - 11 = 0$ is not equation of sphere.

D. $x2 + y2 + z^2 + 2x + 4y + 6z + 15 = 0$ is not equation of sphere.

Answer: $x^2 + y2 + z^2 - 2x + 4y - 6z - 11 = 0$ is not equation of sphere.

637.

Question: Polar plane of point A(-2, 3, 4) with respect to a sphere S is 3x - 2y - 4z + 1 = 0 and centre of sphere is (1, 1, 0), then radius of sphere is

Options:

A. 2

B. √2

C. 3

D. 1

Answer: √2

638.

Question: Lines passing through the point (α, β, γ), whose direction cosines satisfy $al^2 + bm^2 + cn^2 = 0$, generate the cone

Options:

A. $ax + by^2 + cz^2 = 0$

B. $a(x^2\text{-}x) + b(y2 - \beta) + c(22 - \gamma) = 0.$

C. $a2(x\text{-}x)^2 + b^2(y - 3)2 + c^2(z - \gamma)2 = 0$

D. $a(x\text{-}x)^2 + b(y - 3)2 + c(z - y)2 = 0$

Answer: $a(x\text{-}x)^2 + b(y - 3)2 + c(z - y)2 = 0$

639.

Question: In the equation of cylinder, generators are parallel to z axis and intersect curve $ax^2 + by2 = 2cz$, lx + my + nz = p, the coefficients of x, y and constant terms are 2, 4 and -2 respectively, then (l + m): p is equal to

Options:

A. 3:1

B. 1:3

C. 2:3

RajTest

D. 3:2

Answer: 3:1

640.

Question: The resultant of two forces P and Q acting at an angle θ is equal to $(2m + 1)\sqrt{P^2 + Q^2}$. If both forces act at an angle $(\pi/2 - \theta)$, the resultant is $(2m - 1)\sqrt{P^2 + Q^2}$, then tan θ is equal to

Options:

A. 2m+1 / 2m-1

B. m+1 / m-1

C. m-1 / m+1

D. 2m+1 / 2m-1

Answer: m-1 / m+1

641.

Question: If the components of tangential and normal acceleration be equal, then the velocity is directly proportional to

Options:

A. e^(w^2)

B. e^(w/2)

C. e^(2w)

D. 2w

Answer: e^(2w)

642.

Question: A particle moving with simple harmonic motion has a period T, then the time taken to move from the position of maximum displacement to one in which the displacement is half the amplitude, is

Options:

A. T/6

B. T/3

C. T/2

D. 2T/3

Answer: T/6

643.

Question: Old hens can be bought at ₹ 2.5 each and young ones at ₹ 5.5 each. The old hens lay two eggs per week and young ones lay five eggs per week, each egg of old hen being worth 20 paisa and each egg of young hen being 40 paise. A hen costs 80 paisa per week to be fed, there only ₹ 90 available to spend on purchasing the hens and it is required to house at least 30 hens at a time. Formulation of linear programming problem for maximum profit is -

Options:

A. Max (Z) = 2.5 x1 + 5.5 x2

B. s.t. 2.5 x_1 + 5.5.x2≤90

C. x1 + x2≥30

D. and x1, x2≥0

E. Max (Z) = -0.4 x1 + 1.2 x2

F. s.t. 2.5 x1 + 5.5 x2 ≤ 90

G. x1 + x2 ≥30

H. and x1, x2≥0

I. Max (Z) = -0.6 x_1 + 1.2 x2

J. s.t. 2.5 x_1 + 5.5 x2 ≤ 90

K. X1 + x2 ≤30

L. and X1, X2≥ 0

M. Max (Z) = -0.4 x1 + 1.2 x2

N. s.t. 2.5 x1 + 5.5 x2 ≥ 90

O. X1 + x2 ≥30

P. X1, X2≥0

Answer: Max (Z) = -0.4 x1 + 1.2 x2
s.t. 2.5 x1 + 5.5 x2 ≤ 90
x1 + x2 ≥30
and x1, x2≥0

644.

Question: Suppose that the variables $x_1 \geq 0$ and $x_2 \geq 0$ satisfy the constraints $x_1 + x_2 \geq 3$ and $x_1 + 2x_2 \geq 4$, then which of the following is true?

Options:

A. The maximum value of 5x1+ 7x2 is 21 and it does not have any finite minimum.

B. The minimum value of 5x1 + 7x2 is 17 and it does not have any finite maximum.

C. The maximum value of 5x1 + 7x2 is 21 and its minimum value is 17.

D. 5x1 + 7x2 neither has a finite maximum nor a finite minimum.

Answer: The minimum value of 5x1 + 7x2 is 17 and it does not have any finite maximum.

645.

Question: The assignment problem

Options:

RajTest

A. requires that only one activity be assigned to each resource.

B. is a special case of transportation problem.

C. can be used to maximize resources.

D. All of these

Answer: All of these

646.

Question: If f(a) f(b) < 0 in the bisection method after n iteration, then the length of interval, in which root of f(x) = 0 lies, is

Options:

A. b-a / 2^n

B. b^n-a^n / 2^n

C. b-a / 2

D. (b-a)^n / 2^n

Answer: b-a / 2^n

647.

Question: Which of the following is Bessel interpolation formula?

Options:

A. $y = (y1+y0)/2 + (u-1/2)\Delta y0 + u(u-1)/12 (\Delta^2 y-1+\Delta^2 y0)/2 + (u-1/2)u(u-1)/3\ \Delta^3 y-1+...$

B. $y = (y0+y1)/2 + u(u-1/2)\Delta y0 + u(u-1/2)(u-1)/12 (\Delta^2 y-1+\Delta^2 y0)/2 + u(u-1/2)u(u-1)/3\ \Delta^3 y-2+...$

C. $y = y1+y0 + (u-1)\Delta y0 + u(u-1)/2\ (\Delta^2 y-1+\Delta^2 y-2)/2 + u(u-1)(u-1)/2\ \Delta^3 y-2+...$

D. $y = y0+y1 + (u-1)\Delta y0 + u(u-1)/12 (\Delta^2 y-1+\Delta^2 y-2)/2 + u(u-1/2)u(u-1)/3\ \Delta^3 y-1+...$

Answer: $y = (y1+y0)/2 + (u-1/2)\Delta y0 + u(u-1)/12 (\Delta^2 y-1+\Delta^2 y0)/2 + (u-1/2)u(u-1)/3\ \Delta^3 y-1+...$

648.

Question: Solution of difference equation Yx+1 - ayx = ax (x + 1)-2 is

Options:

A. ca^x + a^x / (x+1)

B. ca^x - a^x / (x+1)

C. ca^x - a^(x-1) / (x+1)

D. ca^x + a^(x-1) / (x+1)

Answer: ca^x - a^(x-1) / (x+1)

649.

Question: Value of $\delta^3 x^3 / \delta^2 x^2$ is equal to

Options:

A. 3

B. 2

C. 6

D. 1

Answer: 3

650.

Question: Which of the following is incorrect about nature of Mathematics?

Options:

A. Mathematics is logical.

B. Mathematics is systematic.

C. It is a study of patterns.

D. It does not proceed from undefined terms to theorems.

Answer: It does not proceed from undefined terms to theorems.

651.

Question: Which of the following is the simplest behaviour of psychomotor domain?

Options:

A. Precision

B. Articulation

C. Imitations

D. Manipulation

Answer: Imitations

652.

Question: Which of the following is not the component under cognitive domain of Bloom Taxonomy?

Options:

A. Comprehension

B. Valuing

C. Application

D. Evaluation

Answer: Valuing

653.

Question: Which of the following is incorrect about inductive method of teaching mathematics?

PaiTest

Options:

A. It is a psychological method.

B. Principles and laws drawn using this method are always true.

C. It discourages cramming.

D. It is scientific.

Answer: Principles and laws drawn using this method are always true.

654.

Question: Which of the following method of teaching mathematics follows the maxim 'Concrete to Abstract'?

Options:

A. Deductive method

B. Synthetic method

C. Problem solving method

D. Laboratory method

Answer: Laboratory method

655.

Question: Which of the following method of teaching mathematics, applies deductive reasoning?

Options:

A. Analytic method

B. Synthetic method

C. Laboratory method

D. Project method

Answer: Synthetic method

656.

Question: Which of the following is correct about supervised study?
a. It may be individual.
b. It may be collective.
c. Teacher act as a supervisor.
Choose the correct option from given options:

Options:

A. a and c

B. a, b and c

C. b and c

D. a and b

Answer: a, b and c

657.

Question: Linear programming is based on the theory of

Options:

A. Classical conditioning

B. Operant conditioning

C. Trial and error

D. Insightful learning

Answer: Operant conditioning

658.

Question: A lesson plan includes
a. Instructional objectives
b. Teaching methods
c. Evaluation strategies
Choose correct answer from given options:

Options:

A. a only

B. a, b and c

C. c only

D. b and c only

Answer: a, b and c

659.

Question: In unit planning, units should be
a. well defined
b. meaningful
c. complete sub-division of syllabus
Choose the correct answer from options below:

Options:

A. a and b only.

B. a and c only

C. b and c only

D. a, b and c

Answer: a, b and c

660.

Question: Which of the following are essential considerations while selecting audio-visual media for mathematics teaching?
a. Relevance
b. Availability
c. Physical condition
Choose correct answer from below options:

Options:

A. a and b

B. a, b and c

RajTest

C. b only

D. a only

Answer: a, b and c

661.

Question: The relationship of mathematics with social science is an example of

Options:

A. Co-lateral correlation

B. Multi-lateral correlation

C. Bilateral correlation

D. Negative correlation

Answer: Multi-lateral correlation

662.

Question: An effective mathematics teacher
a. need not require teacher training
b. require proper adjustment
c. require depth knowledge of maths
Choose correct answer from given below options:

Options:

A. a and c

B. b and c

C. a, b and c

D. c only

Answer: b and c

663.

Question: While designing a curriculum of mathematics there is a need of taking decisions regarding
a. syllabus
b. classroom experience
c. evaluation
Choose correct answer from given below options:

Options:

A. a and b

B. b and c

C. a and c

D. a, b and c

Answer: a, b and c

664.

Question: 'Ganitpada' written by the Indian Mathematician Aryabhatta, contains
a. Geometrical concepts
b. Arithmetical concepts
c. Algebraic concepts
Choose correct answer from the options below:

Options:

A. a, b and c

B. only a and b

C. only b and c

D. only a

Answer: a, b and c

665.

Question: For evaluating a mathematics. lesson a teacher gave the following question. 'Define a universal set'. This question measures which level of cognitive domain ?

Options:

A. Application

B. Understanding

C. Knowledge

D. Analysis

Answer: Knowledge

666.

Question: If A and B are matrices of order 3 × 2 and matrix C is of order 2 x 3, then which of the following matrice is not defined?

Options:

A. AT + C

B. B+CT

C. AT + B

D. AT + BT

Answer: AT + B

667.

Question: If
x+1 3 5
2 x+2 5 = 0, then
2 3 x+4
values of x are equal to

Options:

A. 1, 9

B. -1, 9

C. 1, -9

D. -1, -9

RajTest

Answer: 1, -9

668.

Question: If A= [1 2; 2 3] and A^2-KA-I_2 = 0, then k is equal to

Options:

A. 4

B. -4

C. 2

D. 1

Answer: 4

669.

Question: Values of K for which following system of equations has non trivial solution, will be
x + Ky + 3z = 0
Kx+2y+2z = 0
2x + 3y + 4z=0

Options:

A. K=-2,-5/4

B. K=2, 5/4

C. K=2, -2/2

D. K=1, 5/4

Answer: K=2, 5/4

670.

Question: If P(X) is the power set of X = {0, φ, {0}}, then incorrect statement is

Options:

A. φ∈ P(X)

B. {0} ∈ P(X)

C. {{0}} ∈ P(X)

D. 0 ∈ P(X)

Answer: 0 ∈ P(X)

671.

Question: Which of the following is not De' Morgan's law?

Options:

A. (A∪A)' = A'

B. (A∪B∪C)' = (A'∩B'∩C')

C. (A∩B)'= (A'∪B')

D. (A∪B)'= (A'∪B')

Answer: (A∪B)'= (A'∪B')

672.

Question: For any two real numbers ξ and η, a relation R is defined as follows:
"ξη ⇔ $\sin^2 \xi + \cos^2 \eta = 1$", then relation R is -

Options:

A. Reflexive.but not symmetric

B. Symmetric but not transitive

C. Transitive but not symmetric

D. Equivalence

Answer: Equivalence

673.

Question: Range of real function f(x) = |x|/x is, where [·] is greatest integer function

Options:

A. (0,2)

B. (2,∞)

C. [0,2]

D. R-[0,1)

Answer: R-[0,1)

674.

Question: Which of the following function defined on set R is not one – one ?

Options:

A. (e^x-e^{-x})

B. (e^x-e^{-x})/(e^x+e^{-x})

C. (e^x+e^{-x})

D. e^{-2x}

Answer: (e^x+e^{-x})

675.

Question: The number of solutions of equation sin x = sin 2x lying between -π/2 and π/2 is

Options:

A. 0

B. 1

C. 2

D. 3

RajTest

Answer: 3

676.

Question: If A+B = 90°, then
tan A tan B + tan A cot B $\sin^2$ B
sin A sec B
$\cos^2$ A
is equal to

Options:

A. cot A

B. sin B

C. tan A

D. tan A / cot B

Answer: tan A

677.

Question: If θ and φ are angles in the first quadrant such that tan θ = 1/7 and sin φ = $1/\sqrt{10}$ then θ + 2φ is equal to

Options:

A. 30°

B. 45°

C. 60°

D. 90°

Answer: 45°

678.

Question: If sin θ + $\sin^2$ θ + $\sin^3$ θ = 1, then 4 $\cos^4$ θ - $\cos^6$ θ is equal to

Options:

A. cos 2θ

B. 2 cos 2θ

C. 4 cos 2θ

D. 8 cos 2θ

Answer: 4 cos 2θ

679.

Question: If $\sin^{-1}$ x + $\sin^{-1}$ y = 2π/3, then the value of $\cos^{-1}$ x + $\cos^{-1}$ y is

Options:

A. 2π/3

B. π/6

C. π/2

D. π/3

Answer: π/3

680.

Question: Solutions of equation sin 2θ = cos 3θ are

Options:

A. (2n+1/2)π; (2n-1/2)π

B. (2n+1/2)π; (2n-1/2)π

C. (2n+1)π/2; (2n-1)π/2

D. (2n+1)π/2; (2n-1)π/2

Answer: (2n+1)π/2; (2n-1)π/2

681.

Question: From the top of a 7m high building, the angle of elevation of the top of a tower is 60° and the angle of depression of its foot is 30°. The height of the tower is equal to

Options:

A. 21 m

B. 28 m

C. $(7\sqrt{3}+7)$ m

D. 14 m

Answer: 28 m

682.

Question: The lines 2x-3y = 5 and 3x-4y=7 are diameters of a circle whose area is equal to 154 square units. The equation of the circle is

Options:

A. $x^2+y^2+2x+2y=47$

B. $x^2+y^2-2x+2y+47=0$

C. $x^2+y^2-2x+2y=47$

D. $x^2+y^2+2x+2y+47=0$

Answer: $x^2+y^2-2x+2y=47$

683.

Question: If $x^2 + y^2 + 2(2k + 3)x - 2ky + (2k + 3)^2 + k^2 – r^2 = 0$ represents- the family of circles, then their centres lie on the line :

Options:

A. x-2y+3=0

RajTest

B. x-2y-3=0

C. x+2y-3=0

D. x+2y+3=0

Answer: x+2y+3=0

684.

Question: Coordinates P(p, 0), Q(q, 0), R(0, p) and S(0, q) form quadrilateral PQSR, then quadrilateral is

Options:

A. Parallelogram

B. Rhombus

C. Cyclic quadrilateral

D. Rectangle

Answer: Cyclic quadrilateral

685.

Question: Two sides of a square lie on the lines x+y-1=0 and x+y+2=0, then the area of the square is

Options:

A. $3/\sqrt{2}$

B. 9/2

C. $3/\sqrt{3}$

D. 9/4

Answer: 9/2

686.

Question: The orthocentre of ΔABC with vertices A(1, 0), B(-2, 1) and C(5, 2) is

Options:

A. (2, 7)

B. (-2, 7)

C. (2, -7)

D. (-2, -7)

Answer: (2, -7)

687.

Question: Equation of common tangent/s to the circle $x^2 + y^2 = 2$ and the parabola $y^2 = 8x$ is

Options:

A. x+y-2=0

B. x+y+2=0

C. 2x-y-2=0

D. 2x+y-2=0

Answer: x+y+2=0

688.

Question: A(6,3); B(-3, 5); C(4, 2); D(x, 3x) are four points. If the areas of ΔDBC and ΔABC are in the ratio 1: 2, then x is equal to

Options:

A. 8/11

B. 11/8

C. 1/8

D. 8/7

Answer: 11/8

689.

Question: If normals drawn from any point to the parabola $y^2 = 4ax$ meet the parabola at points (ξ_1,η_1), (ξ_2,η_2) and (ξ_3,η_3), then which of the following is true?

Options:

A. $\xi_1 + \xi_2 + \xi_3 = 0$.

B. $\eta_1 + \eta_2 + \eta_3 = 0$

C. $\eta_1 + \eta_2 + \eta_3$ = Constant

D. $\xi_1 + \xi_2 + \xi_3 = \eta_1 + \eta_2 + \eta_3$

Answer: $\eta_1 + \eta_2 + \eta_3 = 0$

690.

Question: Locus of mid points of focal chords of the ellipse $x^2/a^2 + y^2/4 = 1$ is

Options:

A. $x^2/a^2 + y^2/4 = e/a$

B. $x^2/a^2 + y^2/4 = ex/a^2$

C. $x^2+y^2= a^2+4$

D. $x^2/a^2 + y^2/4 = ex/2$

Answer: $x^2/a^2 + y^2/4 = ex/a^2$

691.

Question: Equation of asymptotes to the conic $r = 1 + e \cos\theta$ are

Options:

RajTest

A. $\sqrt{(e^2-1)}\ [\cos\theta \pm \sin\theta] = le/r$

B. $(e^2-1)\cos\theta \pm \sqrt{(e^2-1)}\sin\theta = le/r$

C. $\sqrt{(e^2-1)}\cos\theta + (e^2-1)\sin\theta = le/r$

D. $(e^2-1)\cos\theta + \sqrt{(e^2-1)}\sin\theta = rl/e$

Answer: $(e^2-1)\cos\theta \pm \sqrt{(e^2-1)}\sin\theta = le/r$

692.

Question: If coordinates of points A, B, C, D are (1, 2, 5), (-2, 1, 3), (4, 4, 2) and (2, 1, -4) respectively and projection of AB on CD is $\xi^2 + 4$, then ξ will be equal to

Options:

A. 1

B. -1

C. 0

D. No real value is possible

Answer: No real value is possible

693.

Question: Equation of a plane which bisect the angle between the planes $\vec{r}\cdot(i+2j+2k) = 19$ and $\vec{r}\cdot(4i-3j+12k) + 3 = 0$ is

Options:

A. $\vec{r}\cdot(25i+17j-62k) = 238$

B. $\vec{r}\cdot(i-35j+10k) = 256$

C. $\vec{r}\cdot(i+35j-10k) = 256$

D. $\vec{r}\cdot(25i+17j+62k) = 256$

Answer: $\vec{r}\cdot(i+35j-10k) = 256$

694.

Question: $\lim (e^x-3^x)/(3\{\sqrt{(1+x)}-1\})$ is equal to

Options:

A. 3 log(e/3)

B. log(e/3)

C. 3 log(3/e)

D. 3 log(e)

Answer: 3 log(e/3)

695.

Question: If $f(x) = \{ x^2, \text{if } x \in Q; -x^2, \text{if } x \notin Q \}$, then f is

Options:

A. Continuous at x = 1

B. Continuous at x = 0

C. Continuous at x = -1

D. Discontinuous everywhere

Answer: Continuous at x = 0

696.

Question: If function $f(x) = x^3 + e\sqrt{x}$ and $f(x)=g^{-1}(x)$ for some values of x then value of g'(1) is -

Options:

A. 2

B. 3

C. 1

D. 0

Answer: 2

697.

Question: A value of C, for which the conclusion of Lagrange's mean value theorem holds for the function. $f(x) = \log_e x$ on the interval [1, 4], is

Options:

A. Clog 4

B. loge 4

C. 3 loge 4

D. 1/2 loge 4

Answer: loge 4

698.

Question: Function $f(x) = x^3e^x$ is monotonically increasing

Options:

A. only for $-3 < x < 0$

B. for $x < 3$

C. for $x > 3$

D. Never

Answer: for $x > 3$

699.

Question: Slope of tangent at any point of a curve is thrice the slope of the

RajTest

line joining that point with origin, then that curve is

Options:

A. Circle ($x^2 + y^2 = c^2$)

B. Parabola ($y^2 = 4cx$)

C. Semi cubical parabola ($y = cx^3$)

D. Hyperbola ($x^2 - y^2 = c^2$)

Answer: Semi cubical parabola ($y = cx^3$)

700.

Question: In interval [0, 6], maximum value of function $f(x) = x^3 - 12x^2 + 45x + 10$ is

Options:

A. 64

B. 80

C. 60

D. 0

Answer: 64

701.

Question: In the Herbartian lesson plan, which steps involves the teacher connecting new material to previous knowledge?

Options:

A. Association

B. Preparation

C. Generalisation

D. Application

E. Question not attempted

Answer: Preparation

702.

Question: Which of the following best describes the importance of audio-visual aids in Mathematics teaching?

Options:

A. They enhance abstract thinking but limit the

B. scope of practical understanding.

C. They focus mainly on theoretical aspects of

D. mathematics without practical engagement.

E. They provide concrete experiences and help

F. in the better retention of mathematical

G. concepts.

H. They reduce the need for teacher intervention

I. by fully automating learning processes.

J. Question not attempted

Answer: They provide concrete experiences and help in the better retention of mathematical concepts.

703.

Question: Which of the following is a general objective of teaching Mathematics as per Educational Psychology?

Options:

A. Students will differentiate between linear and

B. quadratic functions.

C. Students will develop logical reasoning skills

D. applicable in real-life situations.

E. Students will calculate the area of a circle

F. using the correct formula.

G. Students will apply the Pythagoras Theorem

H. to solve geometric problem.

I. Question not attempted

Answer: Students will develop logical reasoning skills applicable in real-life situations.

704.

Question: Which of the following are explanation of logical reasoning in Mathematics?
(a) Following a series of steps to solve a complex equation.
(b) Arranging data in a table to identify trends and patterns.
(c) Making a guess at the answer to a problem without employing reasoning.
Choose the correct option -

Options:

A. (a) and (b)

B. Only (a)

C. (a) and (c)

D. (b) and (c)

E. Question not attempted

Answer: (a) and (b)

705.

RajTest

Question: Which of the following is a key feature of supervised-study method in Mathematics?

Options:

A. Students' solve mathematical problem

B. collaboratively in groups.

C. The teacher provides direct instruction

D. without any student involvement.

E. The teacher assigns tasks and leaves the

F. students to work independently.

G. The teacher guides and monitors students'

H. progress during their independent study

I. sessions.

J. Question not attempted

Answer: The teacher guides and monitors students' progress during their independent study sessions.

706.

Question: In evaluating the psychomotor domain of a student in Mathematics, which activity would be most relevant?

Options:

A. Memorising multiplication table.

B. Drawing accurate geometric shapes using a

C. ruler and protractor.

D. Explaining the concept of probability

E. verbally.

F. Solving a problem using mental calculations

G. only.

H. Question not attempted

Answer: Drawing accurate geometric shapes using a ruler and protractor.

707.

Question: The affective domain in Mathematics education
mainly focuses on which of the following?

Options:

A. Mastering the use of various mathematical

B. tools.

C. Achieving accuracy in solving equations.

D. Encouraging students to solve mathematical

E. problems faster.

F. Developing a positive attitude and

G. appreciation for mathematics.

H. Question not attempted

Answer: Developing a positive attitude and appreciation for mathematics.

708.

Question: Match List-I with List-II and select the correct answer by using the code given below the lists
List-I
(A) Who discovered the right triangle?
(B) Who is known as the father of Indian Mathematics?
(C) Who invented numbers?
(D) Whose life is the film. The Man Who Knew Infinity primarily focuses on?
List-II
(i) Brahmagupta
(ii) Ramanujan
(iii) Aryabhata
(iv) Pythagoras
Code -

Options:

A. A-(iv), B-(iii), C-(i), D-(ii)

B. A-(i), B-(ii), C-(iii), D-(iv)

C. A-(iv), B-(iii), C-(ii), D-(i)

D. A-(i), B-(ii), C-(iv), D-(iii)

E. Question not attempted

Answer: A-(iv), B-(iii), C-(i), D-(ii)

709.

Question: What are some potential challenges associated with integrating Mathematics with other subjects in the curriculum?

Options:

A. It can help the students see the relevance of

B. mathematics in the real world.

C. It can require teachers to have understanding

D. of both subjects.

E. It can make it easier to assess student

F. learning.

G. It can make teaching and learning' more

H. engaging & meaningful.

I. Question not attempted

Answer: It can require teachers to have understanding of both subjects.

RajTest

710.

Question: The deductive method in Mathematics teaching
emphasises on -

Options:

A. using projects to solve real-world problem.

B. moving from specific instances to general

C. rules.

D. deriving

E. specific

F. conclusions

G. from

H. established general principles.

I. encouraging students to experiment and find

J. their own solutions.

K. Question not attempted

Answer: deriving
specific
conclusions
from
established general principles.

711.

Question: The project method in Mathematics teaching focuses on -

Options:

A. Solving real-world problems through

B. student-centered projects.

C. Theoretical understanding of mathematical

D. concepts.

E. Deriving conclusions based on empirical

F. evidences.

G. Memorisation of mathematical formulas and

H. procedures.

I. Question not attempted

Answer: Solving real-world problems through
- student-centered projects.

712.

Question: Which method of teaching Mathematics emphasises on students
discovering
mathematical concepts through exploration and experimentation?

Options:

A. Heuristic Method

B. Inductive Method

C. Deductive Method

D. Lecture Method

E. Question not attempted

Answer: Heuristic Method

713.

Question: What is the major difference between the Herbartian Approach and the Morrison
Approach in lesson planning?

Options:

A. Morrison Approach places more importance

B. on student feedback compared to Herbartian

C. Approach.

D. Herbartian Approach focuses on teaching

E. methods, while Morrison Approach

F. emphasises curriculum design.

G. Herbartian Approach follows a linear lesson

H. structure, whereas Morrison Approach is

I. unit-based.

J. Morrison Approach limits lesson planning to

K. theoretical concepts, unlike the Herbartian

L. Approach.

M. Question not attempted

Answer: Herbartian Approach follows a linear lesson
- structure, whereas Morrison Approach is
- unit-based.

714.

Question: What is the primary characteristic of an Achievement Test in Mathematics?

Options:

A. It measures students' ability to apply

B. mathematical knowledge in real-life

C. situations.

D. It evaluates student's performance after

E. completing a course or curriculum.

F. It is used to analyse the student's cognitive

G. and affective development.

H. It is designed to identify specific learning

I. gaps in students.

J. Question not attempted

RajTest

Answer: It evaluates student's performance after
- completing a course or curriculum.

715.

Question: Assertion (A): Mathematics teachers should foster a positive and supportive learning environment:
Reason (R) : A positive classroom climate can help students feel comfortable in asking questions.

Options:

A. Both (A) and (R) are true and Reason (R) is

B. correct explanation for Assertion (A).

C. Assertion (A) is true but Reason (R) is false.

D. Both (A) & (R) are true but Reason (R) is not

E. the correct explanation for Assertion (A).

F. Assertion (A) is false but Reason (R) is true.

G. Question not attempted

Answer: Both (A) and (R) are true and Reason (R) is
- correct explanation for Assertion (A).

716.

Question: A general objective of Mathematics teaching that
aligns with Bloom's "Application" level is -

Options:

A. evaluate mathematical arguments

B. to memorise mathematical facts

C. use mathematical knowledge to solve

D. problems

E. understand mathematical concepts

F. Question not attempted

Answer: use mathematical knowledge to solve
- problems

717.

Question: Item discrimination is a measure of which of the
following?

Options:

A. How well an item distinguishes between

B. difficult & easy questions?

C. How well an item distinguishes between high

D. and low achieving students?

E. The effectiveness of distractors.

F. The reliability of the test.

G. Question not attempted

Answer: How well an item distinguishes between high
- and low achieving students?

718.

Question: What is the main purpose of a remedial programme for children with
difficulties in Mathematics?
learning

Options:

A. To introduce advanced mathematical

B. concepts.

C. To provide additional support in areas where

D. they have shown difficulties.

E. To prepare students for competitive exams.

F. To help students revise topics they have

G. already mastered.

H. Question not attempted

Answer: To provide additional support in areas where
- they have shown difficulties.

719.

Question: Which of the following is a characteristic of programmed learning in Mathematics?

Options:

A. It promotes social learning through peer

B. interaction.

C. It follows a linear path with immediate

D. feedback for students.

E. It allows students to explore topics without

F. guidance.

G. It focuses on open-ended exploration of

H. mathematical concepts.

I. Question not attempted

Answer: It follows a linear path with immediate
- feedback for students.

720.

Question: Which of the following statement is not true?

Options:

A. Every Cauchy sequence is bounded.

B. Every convergent sequence is bounded.

RaTest

C. The sequence (2n-7), Vne Niconverges to

D. 2

E. 3n+2)

F. 3

G. Every bounded sequence has at least two

H. limit points.

I. Question not attempted

Answer: Every bounded sequence has at least two - limit points.

721.

Question: If (x - 1) and (x + 3) are two factors of (x^3 + ax + b), then remaining factor is -

Options:

A. x + 2.

B. x-3

C. x + 1

D. x-2

E. Question not attempted

Answer: x-2

722.

Question: If z = x + iy, x, y ∈ R; i = √-1 and
z-2
z+21
π
=
6'
then the locus of z is -

Options:

A. a parabola

B. a circle

C. a line

D. an ellipse

E. Question not attempted

Answer: a circle

723.

Question: Domain of the function f(x) = √2-x-
1
is
√9-x2

Options:

A. [2, 3)

B. (-3,3)

C. (-3,4)

D. (-3,2]

E. Question not attempted

Answer: (-3,2]

724.

Question: [x2]
S
J3 [x^2 - 14x+49] + [x2]
dx, where [x] denotes the
greatest integer less than or equal to x, is equal to -

Options:

A. -1.

B. 3-21-2

C. 0

D. Question not attempted

Answer: 0

725.

Question: If ΔABC is similar to ADEF, such that BC = 3 cm, EF = 4 cm and area of AABC = 54 square cm, then the area of ADEF is -

Options:

A. 96 square cm

B. 27 square cm

C. 69 square cm

D. 108 square cm

E. Question not attempted

Answer: 96 square cm

726.

Question: General solution of the differential equation y2dx + (3xy - 1) dy = 0 is -

Options:

A. $2xy^3 - y^2 = c$

B. 2xy2 - $y^2 = c$

C. $x^2y^3 - y^2 = c$

D. $2xy^3 - y = c$

E. Question not attempted

Answer: $2xy^3 - y^2 = c$

727.

RajTest

Question: Four jobs are to be done on four different machines. The cost (in rupees) of producing ith job on the jth machine is given below -
Machines
M1 M2 M3 M4
J1 15 11 13 15
J2 17 12 12 13
Jobs
J3 14, 15 10 14
J4 16 13 11 17
The minimum assignment cost is -

Options:

A. ₹ 42

B. ₹55

C. ₹45

D. ₹49

E. Question not attempted

Answer: ₹49

728.

Question: If a, b, c are unit vectors such that a-b+c = 0, then angle between a and c is -

Options:

A. π/3

B. π/6

C. π/2

D. 2π/3

E. Question not attempted

Answer: 2π/3

729.

Question: J-1 (x^3 + x cos x + sinx + 1) dx /2

Options:

A. 2π

B. (0

C. π/2

D. π

E. Question not attempted

Answer: π

730.

Question: The series Σ-1(1+) is -

Options:

A. Divergent

B. Convergent

C. Infinitely oscillatory

D. None of these

E. Question not attempted

Answer: Divergent

731.

Question: If sin sin-1 sin-1 (3) + cosx = 1, then x =

Options:

A. 0

B. 1

C. 1/5

D. 4/5

E. Question not attempted

Answer: 0

732.

Question: In the first quadrant, area of the region bounded
by y = √x, x = 2y + 3 and x-axis is -

Options:

A. 18 sq. unit

B. 2√2 sq. unit,

C. 34/3 sq. unit.

D. 9 sq. unit

E. Question not attempted

Answer: 9 sq. unit

733.

Question: Area of the smaller region bounded by the curve
$4x^2$ + 9y2 = 36 and the line 2x + 3y = 6 is -

Options:

A. 3(3π/2+1) sq. unit

B. 3π/2-1 sq. unit

C. 3(3π/2-1) sq. unit

D. 3π/2+1 sq. unit

E. Question not attempted

Answer: 3π/2-1 sq. unit

734.

RajTest

Question: In the set of all straight lines lying in a plane, the
relation defined by "mutually perpendicular" is -

Options:

A. Anti - symmetric

B. Transitive

C. Reflexive

D. Symmetric

E. Question not attempted

Answer: Symmetric

735.

Question: The sphere x2 + y2 + z^2 = 25 is cut by the plane
2x + 3y6z = 28, the radius of the circle so obtained is

Options:

A. 3 units

B. 13 units

C. 4 units

D. 5 units

E. Question not attempted

Answer: 3 units

736.

Question: A 20 m deep well with diameter 7 m is dug and
the soil from digging is evenly spread out to form a platform of size 22 m by 14 m. The height of the platform is – (n = 22)

Options:

A. 3.0 m

B. 3.5 m

C. 2.5 m

D. 7.5 m

E. Question not attempted

Answer: 2.5 m

737.

Question: Sum of 'n' terms of 8 + 88 +888+ ..... is equal to -

Options:

A. 8/81[10n+1 – 9n +10]

B. 8/81[10n+1 + 9n -10]

C. 8/81[10n+1-9-10]

D. 8/81[10] - 9n-10]

E. Question not attempted

Answer: 8/81[10n+1 – 9n +10]

738.

Question: The angle, which is double of its supplementary
angle, is -

Options:

A. 75°

B. 120°

C. 130°

D. 80°

E. Question not attempted

Answer: 120°

739.

Question: Let 2111 x2 = 990. If M is the mean and ois the
Li=1
Xi
standard deviation of X1, X2, ..., X11, then the value of $M^2 + \sigma^2$ is

Options:

A. 100

B. 90

C. 95

D. 85

E. Question not attempted

Answer: 90

740.

Question: How many words can be formed by taking four
letters from the letters of the word 'JAIPUR',
while A and I are always included?

Options:

A. 72

B. 6

C. 24

D. 144

E. Question not attempted

Answer: 144

RajTest

741.

Question: The height of a tower is 100 m. When the angle
of elevation of the sun changes from 30° to 45°,
the shadow of the tower becomes x metres less.
The value of x is -

Options:

A. 100√3 m

B. 100/√3 m

C. 100(√3-1) m

D. 100 m

E. Question not attempted

Answer: 100(√3-1) m

742.

Question: f(x) = -2x39x2 - 12x + 1 is strictly increasing in interval -

Options:

A. (-∞, – 2) (-1,0∞)

B. (-2; ∞)

C. (-2,-1)

D. (-∞, – 1)

E. Question not attempted

Answer: (-2,-1)

743.

Question: The nature of the origin of the curve
$y^2 = a^2x^2 + bx^3 + cxy^2$ is -

Options:

A. a cusp

B. a conjugate

C. a node

D. both cusp and node

E. Question not attempted

Answer: a node

744.

Question: If the number 1.27 is expressed in the form
q
of, where p and q are integers; HCF(p, q) = 1
q'
and q ≠ 0, then p + q-25 =

Options:

A. 0

B. 3

C. 2

D. 1

E. Question not attempted

Answer: 0

745.

Question: The singular solution of the differential equation
dy
$y = px + p - p^3$, (where p =), is -
dx"

Options:

A. y = 2[x+1/2

B. 3

C. y=

D. 1 [x-113/2

E. 23

F. y = []/2

G. 23

H. $y = 2[*]^3/2$

I. 3

J. Question not attempted

Answer: Question not attempted

746.

Question: If sum of $1 + 4x + 7x^2 + 10x3 +$
35
where lxl < 1, is, then x equals to -
16'
.....

Options:

A. 1/7

B. 1/9

C. 3/5

D. 1/5

E. Question not attempted

Answer: 1/5

747.

Question: In usual notations, Cauchy – Riemann equations
in polar form are

RajTest

Options:

A. ди dv

B. =r and r

C. ar dө

D. ди 1 ди

E. 1 ди

F. and

G. θv

H. дг г dө

I. r 00

J. dr

K. ди 1 dv

L. 1 ди

M. dv

N. =

O. and

P. dr

Q. r 20

R. г dө

S. dr

T. ди

U. ди

V. dv

W. =-r

X. and r

Y. dr

Z. Question not attempted

Answer: ди/dr = 1/r dv/dθ and 1/r du/dθ = -dv/dr

748.

Question: If f(x) is differentiable in the interval [2, 5], 1
where f(2) = and f(5) =, then there exists a number c, 2 <c< 5 for which f '(c) is equal to -

Options:

A. 1/2

B. 1

C. 1/10

D. None of these

E. Question not attempted

Answer: 1/10

749.

Question: In three dimensional geometry, which of the following angles made by a line with co-ordinate axes are not possible?

Options:

A. 30°, 60°, 90°

B. 45°, 90°, 45°

C. 60°, 45°, 60°

D. 30°, 45°, 60°

E. Question not attempted

Answer: 30°, 45°, 60°

750.

Question: General solution of differential equation dy
x + y loge y = xyex ex is -
dx

Options:

A. logey = xex + c

B. logey = ex (x + 1) + c

C. x logey = ex (x-1)+c

D. logey = ex (x-1) + c

E. Question not attempted

Answer: x logey = ex (x-1)+c

751.

Question: If V is the volume enclosed by any closed surface
S, then ff (F.n)ds (where F = xî + 3zk) is equal to -

Options:

A. 3V

B. 1V

C. 6V

D. 4V

E. Question not attempted

Answer: 4V

752.

Question: If AD, BE and CF are medians of a triangle ABC, then which of the following statement is true?

Options:

A. (AD + BE + CF) > 1/2 (AB + BC + CA)

RajTest

B. (AD + BE +CF) = (AB + BC + CA)

C. (AD + BE + CF) < (AB + BC + CA)

D. None of these

E. Question not attempted

Answer: (AD + BE + CF) < (AB + BC + CA)

753.

Question: If y = 1 + cos0 ; x = 0 + sine, then
dy
d2y
π
at 0 =
dx2
is equal to -

Options:

A. 1/4

B. -1/4

C. -1

D. 1

E. Question not attempted

Answer: -1

754.

Question: If f = xî + y + zk, then div ř is -

Options:

A. 3

B. 1

C. 0

D. 2

E. Question not attempted

Answer: 3

755.

Question: A plane meets the co-ordinate axes at points
A,
B and C such that the centroid, of AAABC is
(2, 3, 4). The equation of the plane is -

Options:

A. 4x + 3y + z = 18

B. 4x - 3y + 6z = 23

C. 6x + 4y + 3z = 36

D. 6x + 4y + 3z = 18

E. Question not attempted

Answer: 6x + 4y + 3z = 36

756.

Question: So √xex dx is equal to -
08
-x3

Options:

A. sqrt(pi)/2

B. √π

C. sqrt(pi)/3

D. 0

E. Question not attempted

Answer: sqrt(pi)/3

757.

Question: Set: n ∈ N} is -

Options:

A. Open but bounded

B. Neither open nor closed but bounded

C. Closed and bounded

D. Unbounded

E. Question not attempted

Answer: Neither open nor closed but bounded

758.

Question: If the line
x-3 y+2
=
2
-1
=
z+4
3
is contained in the
plane px + qy - z = 9, then the value of p^2 + q2
is -

Options:

A. 5.

B. 2

C. 18

D. 26

E. Question not attempted

Answer: 2

759.

RajTest

Question: If the difference between the circumference and
radius of a circle is 74 cm, then the area of the circle is – (π =)

Options:

A. 516 sq. cm

B. 1048 sq. cm,

C. 524 sq. cm

D. 616 sq. cm

E. Question not attempted

Answer: 616 sq. cm

760.

Question: If (Z, +) be a group and let function f: (Z, +) $\rightarrow$ (Z, +) be defined as f(x) = 2x, $\forall$ x $\in$ Z, then function f is -

Options:

A. not homomorphism

B. onto homomorphism

C. one-one homomorphism

D. None of these

E. Question not attempted

Answer: one-one homomorphism

761.

Question: AABC is similar to APQR, such that the perimeters of AABC and APQR are 36 cm and 24 cm respectively. If PQ = 10 cm, then AB =

Options:

A. 15 cm

B. 10 cm

C. 18 cm

D. 12 cm

E. Question not attempted

Answer: 15 cm

762.

Question: The area bounded by the curve $y = x^4 - 2x^2$, x-axis and ordinates of its two minimum points is -

Options:

A. 7/15

B. 14/15

C. 2/3

D. 1/15

Answer: 14/15

763.

Question: The area between circle $x^2 + y^2 = 4\pi^2$ and the curve y = sin(x/2) which lies in the first quadrant is

Options:

A. $(\pi^2 - 4)$

B. $(\pi^3 - 4)/2$

C. $(\pi^3 + 4)$

D. $(\pi^3 - 4)$

Answer: $(\pi^3 - 4)$

764.

Question: Let A and B be two points and point P divides line segment AB in the ratio 2:3. If position vectors of A and P be a + 2b and a respectively, then position vector of B will be

Options:

A. a +3b

B. 3a + b

C. a-3b

D. 3a-b

Answer: a-3b

765.

Question: If (3i - 2j + 2k) and (-i - 2k) represents two adjacent sides of a parallelogram, then angle between its diagonals is equal to

Options:

A. $\pi/4$

B. $\pi/3$

C. $\pi/2$

D. $\pi/6$

Answer: $\pi/4$

766.

Question: If a = i - j + k and c = -i - j and a $\times$ b = c; |a b| =1, then vector b is equal to

Options:

A. i-j+k

B. i

C. j

D. k

RajTest

Answer: k

767.

Question: If a = (1/√10)(3i + k) and b = (1/7)(2i + 3j - 6k), then the value of (2a - b) · [(a × b) × (a + 2b)] is equal to

Options:

A. -3

B. 3

C. 5

D. -5

Answer: -5

768.

Question: If a = 3i - j - 2k and b = 2i + 3j + k, then (a + b) × (a - b) is equal to

Options:

A. -10i + 14j - 22k

B. 10i - 14j - 22k

C. -10i + 14j + 22k

D. -10i - 14j - 22k

Answer: -10i + 14j - 22k

769.

Question: The projection of the vector i - 2j + k on the vector 4i - 4j + 7k is

Options:

A. 19/9

B. 19/√6

C. 5/√6

D. 9/√6

Answer: 19/9

770.

Question: If a, b and c are non-coplanar unit vectors such that a ×, (b × c) = (b+c)/√2, then angle between a and b is equal to

Options:

A. π/4

B. π/2

C. 3π/4

D. π

Answer: 3π/4

771.

Question: The vector a · [(b + c) × (a + b + c)] is equal to

Options:

A. 0

B. [a b c]

C. -[a b c]

D. 2[a b c]

Answer: 0

772.

Question: If the standard deviation of the numbers 2, 3, a and 11 is 3.5, then which of the following is correct?

Options:

A. $3a^2 - 26a + 55 = 0$

B. $3a^2 - 32a + 84 = 0$

C. $3a^2 - 34a + 91 = 0$

D. $3a^2 - 23a + 44 = 0$

Answer: $3a^2 - 32a + 84 = 0$

773.

Question: The mean of 16 observations is 16. If one of the observation value 16 is deleted and three new observations 3, 4 and 5 are added to data. Then the mean of new data is

Options:

A. 16.0

B. 16.2

C. 15.8

D. 14.0

Answer: 14.0

774.

Question: The probability that at least one of the events A and B happens, is 0.6. If probability of their simultaneous happening is 0.2, then P(A) + P(B) is equal to

Options:

A. 0.4

B. 0.8

C. 1.2

D. 1.8

Answer: 0.8

RajTest

775.

Question: If two events A and B are such that P(A) = 0.7, P(B|A) = 0.5, P(B) = 0.4, then P(B/AUB) is equal to

Options:

A. 1/2

B. 1/3

C. 1/4

D. 1/5

Answer: 1/2

776.

Question: The mode of the following distribution is approximately equal to
Class: 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80
Frequency: 5, 8, 7, 12, 28, 20, 10, 10

Options:

A. 40.67

B. 43.67

C. 46.67

D. 50.67

Answer: 46.67

777.

Question: The mean of n observations is x. If the first observation is increased by 1, second by 2, the third by 3 and so on, then the new mean is equal to

Options:

A. x - (n + 1)/2

B. x + (2n + 1)

C. x + (n + 1)/2

D. x - (2n + 1)

Answer: x + (n + 1)/2

778.

Question: The mean and variance of binomial distribution are 4 and 4/3 respectively, then $P(x \geq 1)$ is equal to

Options:

A. 342/343

B. 80/81

C. 728/729

D. 8/9

Answer: 728/729

779.

Question: For which of following definition of *, the algebraic structure (Z, *) is a group?

Options:

A. a*b=a

B. a*b= |ab|

C. a*b=a+b+ab

D. None of these

Answer: None of these

780.

Question: Incorrect statement is -

Options:

A. There can be finite number of cosets of an infinite subgroup of an infinite group.

B. There can be infinite number of cosets of an infinite subgroup of an infinite group.

C. There can be infinite number of cosets of finite subgroup of an infinite group.

D. There is no coset of the group (G = {0}, +)

Answer: There is no coset of the group (G = {0}, +)

781.

Question: If permutation f = (1 3 4 2) (5 8 7) (9 6), then order of f is

Options:

A. 6

B. 9

C. 4

D. 12

Answer: 12

782.

Question: If G = [a] is a cyclic group of order 8, then the quotient group corresponding to the sub-group generated by a^2 is

Options:

A. $\{a^2, a^4, a^6, a^8 = e\}, \{a^3, a^5, a^7, a\}$

B. $\{a^4, a^8=e\}, \{a^5, a\}, \{a^6, a^2\}, \{a^7, a^3\}$

C. $\{a^2, a^4, a^8=e\}, \{a^3, a^5, a\}$

D. $\{a^2, a^4, a^6, a^8 = e\}, \{a, a^3, a^5, a^7, a^2\}$

RajTest

Answer: $\{a^2, a^4, a^6, a^8 = e\}, \{a^3, a^5, a^7, a\}$

783.

Question: Kernel of homomorphism f: (C, +) → (C, +); f(x + iy) = iy is -

Options:

A. C

B. {i}

C. R

D. N

Answer: R

784.

Question: Incorrect statement is

Options:

A. An ordered field is an infinite field.

B. The set of rational numbers is not a complete ordered field.

C. The set of real numbers is an Archimedean field.

D. The set of rational numbers is not an Archimedean ordered field.

Answer: The set of rational numbers is not an Archimedean ordered field.

785.

Question: If ξn = [1/n] ∀n∈N, then for U_{n=1}^{∞} ξn, correct statement will be

Options:

A. a closed set

B. an open set

C. Its limit point will be "0"

D. Its limit point does not exist

Answer: Its limit point will be "0"

786.

Question: Incorrect statement is

Options:

A. If sequence is <xn>, then <x2n> will be its subsequence.

B. If sequence is <xn>, then <x2n-1> will be its subsequence.

C. If sequence is <xn> = <0,1,2,3,4,...>, then <yn> = <0,2,0,2,...> will be its subsequence.

D. If sequence is <xn>, then <xn^2> will be its subsequence.

Answer: If sequence is <xn> = <0,1,2,3,4,...>, then <yn> = <0,2,0,2,...> will be its subsequence.

787.

Question: For series $1-2x + 3x^2-4x^3+...$; correct statement is

Options:

A. divergent for x < -1 only

B. Absolute convergent for |x|<1 only

C. Infinitely oscillatory for x ≥ 1 only

D. All of these

Answer: Absolute convergent for |x|<1 only

788.

Question: At which point the function f(z) = 2iy is analytic function?

Options:

A. z=0

B. z=1

C. z=2

D. nowhere

Answer: nowhere

789.

Question: For which values of z do the function w = u + iv defined by z = sinh u cos v + i cosh u sin v ceases to be analytic?

Options:

A. z=0

B. z=±1

C. z=±i

D. z=∞

Answer: z=±i

790.

Question: Conjugate harmonic function of U(x, y) = $(1/2)\log(x^2 + y^2)$ is equal to

Options:

A. v=x+c

B. $v=\tan^{-1}(y/x)+c$

C. v=log(y/x)+c

RajTest

D. $v=\cos^{-1}(y/x)+c$

Answer: $v=\tan^{-1}(y/x)+c$

791.

Question: The image area of the triangular region of the Z-plane bounded by the lines x = 0, y = 0 and √3 x + y = 1 under the transformation w = e^(iπ/3) Z in W-plane is bounded by lines which are -

Options:

A. $v = -u/\sqrt{3}, v = \sqrt{3}\ u, v = 1$

B. $v = u/\sqrt{3}, v = -\sqrt{3}\ u, v = 1/2$

C. $v = -u/\sqrt{3}, v = \sqrt{3}\ u, v = 1/2$

D. $v = u/\sqrt{3}, v = -\sqrt{3}\ u, v = 1$

Answer: $v = -u/\sqrt{3}, v = \sqrt{3}\ u, v = 1/2$

792.

Question: If length of perpendicular from pole on tangent is 2 and length of radius vector is 3, then ds/dr is equal to

Options:

A. 3/5

B. $3\sqrt{5}$

C. 3/2

D. $3\sqrt{5}/5$

Answer: $3\sqrt{5}/5$

793.

Question: Points on the parabola $y^2 = 8x$, at which the radius of curvature is 713/16, is

Options:

A. (3, 9/8)

B. (3, 3/2)

C. (9/8, -3)

D. (0, 0)

Answer: (9/8, -3)

794.

Question: If function f(x, y) = { 2^(x+y), if x+y ≠ 0; 1, if x+y = 0, then (∂f/∂x)(1,-1) is equal to

Options:

A. does not exist

B. log 2

C. 0

D. 2

Answer: log 2

795.

Question: The entire length of the curve r = a (1-cos θ) is

Options:

A. 4 a

B. 32 a

C. 16 a

D. 8 a

Answer: 8 a

796.

Question: $\int_0^1 \int_0^x \int_0^{(x+y)} 2y\ dx\ dy\ dz$ is equal to

Options:

A. 1/30

B. 1/15

C. 1/10

D. 1/6

Answer: 1/6

797.

Question: The length of the arc of the curve y = log sec x between x = 0 and x = π/6 is equal to

Options:

A. 2 log 3

B. -2 log 3

C. (1/2)log 3

D. -(1/2)log 3

Answer: (1/2)log 3

798.

Question: Differential equation $(d^2y/dx^2)^{(3/2)} - (dy/dx)^{(1/2)} - 4 = 0$ is of

Options:

A. order 2 and degree 4

B. order 2 and degree 3

C. order 4 and degree 6

D. order 2 and degree 6

Answer: order 2 and degree 6

799.

RajTest

Question: The solution of differential equation $(y^2 e^x + 2xy)\,dx - x^2\,dy = 0$ is

Options:

A. $y^2 e^x/x = c$

B. $e^x + y^2/x = c$

C. $e^{(-x)}\, y^2/x = c$

D. $e^x + x^2/y = c$

Answer: $e^x + x^2/y = c$

800.

Question: Particular integral of differential equation $dy/dx + 2y = e^x / (1-e^x)^2$ is

Options:

A. $(1 / (e^x - 1))\, e^{(-2x)}$

B. $e^{(-x)} / (1-e^x)$

C. $e^{(-2x)} / (e^x - 1)$

D. $e^{(-x)} / (e^{(2x)} - 3)$

Answer: $e^{(-2x)} / (e^x - 1)$

801.

Question: If u and v are the two solutions of differential equation $d^2y/dx^2 + P\,dy/dx + Qy = 0$, then $(u\,dv/dx - v\,du/dx)$ is equal to - (P, Q are functions of x and a is arbitrary constant)

Options:

A. $-a\, e^{\int P dx}$

B. $a\, e^{(-\int P dx)}$

C. $-a \int P dx$

D. $e^{(-a\int P dx)}$

Answer: $a\, e^{(-\int P dx)}$

802.

Question: If $f(x, y) = \log \sqrt{x^2 + y^2}$, then grad f is equal to

Options:

A. $(xi + yj)/\sqrt{(x^2+y^2)}$

B. $(xi + yj)/(x^2+y^2)$

C. $2(xi + yj)/(x^2+y^2)$

D. $(1/2)(xi + yj)/\sqrt{(x^2+y^2)}$

Answer: $(xi + yj)/(x^2+y^2)$

803.

Question: Let φ is a scalar point function and f is a vector point function, then curl $(\varphi\, f)$ is equal to

Options:

A. φ (curl f) - f x (grad φ)

B. φ (div f) - f x (grad φ)

C. φ (curl f) + f x (grad φ)

D. φ (div f) + f x (grad φ)

Answer: φ (curl f) - f x (grad φ)

804.

Question: If $F = xi - yj + (z^2 - 1)K$ and s is the cylinder formed by the surface $z = 0$, $z = 1$, $x^2 + y^2 = 4$, then value of $\iint_S F \cdot n\, ds$ is equal to

Options:

A. π

B. 2π

C. 3π

D. 4π

Answer: 4π

805.

Question: The median BE and AD of a triangle with vertices A(0, b), B(0, 0) and C(a, 0) are perpendicular to each other if:

Options:

A. $a = -b/2$

B. $b = -a/2$

C. $ab = 1$

D. $a = \pm\sqrt{2}b$

Answer: $a = \pm\sqrt{2}b$

806.

Question: If the system of equations $2x + 3y + 5 = 0$, $x + ky + 5 = 0$, $kx - 12y - 14 = 0$ be consistent, then the values of k are -

Options:

A. -2, 12/5

B. -1, 1/5

C. -6, 17/5

D. 6, -12/5

Answer: -6, 17/5

807.

Question: Integrating factor of the differential equation $(1-x^2)dy/dx - xy = 1$ is-

RajTest

Options:

A. -x

B. $-x/(1-x^2)$

C. $\sqrt{(1-x^2)}$

D. $1/2 \log(1-x^2)$

Answer: $\sqrt{(1-x^2)}$

808.

Question: If A=[[1,1],[1,1]], then A^100 is equal to –

Options:

A. 2^100 A

B. 2^99 A

C. 100 A

D. 2^99 A

Answer: 2^99 A

809.

Question: Two forces P and 2P act on a particle at 120° to each other. Then the resultant makes an angle with the direction of force P is -

Options:

A. 60°

B. 30°

C. 90°

D. 45°

Answer: 90°

810.

Question: Given

X	0	1	2	3	4
y	4	8	15	7	6

then the value of dy/dx at x=0 will be equal to -

Options:

A. -13.5

B. -27.5

C. 0

D. 57.6667

Answer: -13.5

811.

Question: Basic feasible solution of an LPP is called degenerate BFS, if -

Options:

A. Atleast one basic variable is zero

B. All basic variables are zero

C. None of the basic variables is zero

D. None of these

Answer: Atleast one basic variable is zero

812.

Question: Which of the following number is rational?

Options:

A. sin15°

B. cos15°

C. sin15°cos15°

D. sin15° cos75°

Answer: sin15°cos15°

813.

Question: Interpolation formulae are based on the fundamental assumption that the data can be expressed as -

Options:

A. A linear function

B. A quadratic function

C. A polynomial function

D. None of these

Answer: A polynomial function

814.

Question: Every extreme point of the convex set of all feasible solutions of the system AX = b is a -

Options:

A. Feasible solution

B. Basic feasible solution

C. Optimum solution

D. None of these

Answer: Basic feasible solution

815.

Question: A bag contains 3 black, 4 white and 2 red balls. The number of selections of at most 6 balls containing balls of all the colours is:

Options:

A. 42×4!

B. 2^6×4!

RajTest

C. (2^6-1)×4!

D. None of these

Answer: None of these

816.

Question: The number of elements in the set : {(a, b): $2a^2 + 3b^2 = 35$; a, b ∈ Z} where Z is the set of all integers, is:

Options:

A. 2

B. 8

C. 4

D. 12

Answer: 8

817.

Question: For Bernoulli distribution with probability p of success and q of a failure, the relation between mean and variance is

Options:

A. Mean < Variance

B. Mean > Variance

C. Mean = Variance

D. Mean ≤ Variance

Answer: Mean > Variance

818.

Question: A large solid metallic cylinder whose radius and height are equal to each other is to be melted and 48 identical solid balls are to be recasted from the liquid metal so obtained. What is the ratio of the radius of a ball to the radius of cylinder?

Options:

A. 1:16

B. 1:12

C. 1:8

D. 1:4

Answer: 1:4

819.

Question: Which interpolation formula does not have any difference operator?

Options:

A. Newton - forward Interpolation formula

B. Bessel's Interpolation formula

C. Stirling's Interpolation formula

D. Lagrange's Interpolation formula

Answer: Lagrange's Interpolation formula

820.

Question: The coefficient of x^4 in $(x^2 - 3/(2x^2))^{10}$ is-

Options:

A. 406/256

B. 504/259

C. 450/263

D. 806/456

Answer: 406/256

821.

Question: In which ratio does the line y - x + 2 = 0 divide the line joining the points (3, -1) and (8, 9)?

Options:

A. 1:2

B. 2:1

C. 2:3

D. 3:4

Answer: 2:3

822.

Question: If $d^2y/dx^2 + \sin x = 0$, then the solution of this differential equation is -

Options:

A. $y = \sin x + C_1X + C_2$

B. $y = \cos x + C_1x^2 + C_2$

C. $y = \tan x + c$

D. $y = \log \sin x + cx$

Answer: $y = \sin x + C_1X + C_2$

823.

Question: For the curve $x^2/a^2 - y^2/b^2 = 1$, the asymptotes parallel to y - axis are -

Options:

A. $x = \pm b$

B. $y = \pm a$

C. $x = \pm a$

D. x = a+b

RajTest

Answer: x = ±a

824.

Question: If a+b+c=0 and |a|=√37, |b|=3, |c|=4 then the angle between b and c is :

Options:

A. 30°

B. 45°

C. 60°

D. 90°

Answer: 60°

825.

Question: A problem in mathematics is given to four students A, B, C and D whose chances of solving it are 1/2, 1/3, 1/4 and 1/5 respectively. What is the chance that the problem will be solved?

Options:

A. 1/120

B. 1/15

C. 119/120

D. 4/5

Answer: 4/5

826.

Question: If the mth term of HP be n and nth term be m then the rth term will be :

Options:

A. mn/r

B. r/mn

C. mn/(r+1)

D. mn/(r-1)

Answer: mn/r

827.

Question: The value of determinant
| b+c a+b a |
| c+a b+c b |
| a+b c+a c |
equal to -

Options:

A. abc (a + b + c)

B. 0

C. (a + b + c) (b^2 - c^2 - a^2)

D. $a^3 + b^3 + c^3 - 3abc$

Answer: $a^3 + b^3 + c^3 - 3abc$

828.

Question: Assessment for learning uses the ideas of –

Options:

A. Summative Assessment

B. Formative Assessment

C. Norm Referenced Assessment

D. Assessment of learning

Answer: Formative Assessment

829.

Question: A particle starts at the origin and moves along the x - axis in such a way that its velocity at the point (x, 0) is given by the formula dx/dt = $\cos^2 \pi x$. Then the particle never reaches the point on -

Options:

A. x = 1/4

B. x = 3/4

C. x = 1/2

D. x = 1

Answer: x = 1/2

830.

Question: If z = x + iy then area of the triangle whose vertices are z, iz and z + iz is :

Options:

A. $2|z|^2$

B. 1/2 $|z|^2$

C. $|z|^2$

D. 3/2 $|z|^2$

Answer: 1/2 $|z|^2$

831.

Question: In how many ways can 15 members of a council sit along a circular table, when the secretary is to sit on one side of the chairman and the deputy secretary on the other side?

Options:

A. 24

B. 2×15!

C. 2×12!

RajTest

D. None of these

Answer: 2×12!

832.

Question: lim (a^x - b^x) / (e^x - 1) is equal to:
x→0

Options:

A. log(a/b)

B. log(b/a)

C. log (ab)

D. log (a + b)

Answer: log(a/b)

833.

Question: If tan x = a/b, then √(a+b)/(a-b) + √(a-b)/(a+b) is equal to:

Options:

A. 2sinx/√sin2x

B. 2cosx/√cos2x

C. 2cosx/√sin2x

D. 2sinx/√cos2x

Answer: 2sinx/√cos2x

834.

Question: The number of values of k, for which the system of equations: (k + 1) x + 8y = 4k and kx + (k + 3)y = 3k - 1 have infinitely many solutions, is -

Options:

A. 0

B. 1

C. 2

D. Infinite

Answer: 1

835.

Question: If A = {1,4}, B = {2, 3}, C ={3, 5} then (A × B) ∩ (A × C) is equal to -

Options:

A. {(1, 3), (4, 3)}

B. {(1, 3), (2, 5)}

C. {(1, 3), (1, 5), (2,5)}

D. None of these

Answer: {(1, 3), (4, 3)}

836.

Question: A card is drawn from a well shuffled pack of 52 cards. A gambler bets that it is either a heart or an ace. What are odds against his winning this bet?

Options:

A. 9:4

B. 4:9

C. 35:52

D. 1:3

Answer: 9:4

837.

Question: If p, p+4, p+14 all three numbers are prime. How many different values can 'p' take?

Options:

A. 1

B. 2

C. 3

D. 4

Answer: 1

838.

Question: Who was the Propounder of five steps approach of Lesson Planning?

Options:

A. Herbart

B. Crowder

C. Bloom

D. Bossing

Answer: Herbart

839.

Question: A question was asked in Unit Test of Mathematics that -
In the expression $4x^3 + 17y$, the coefficient of y is .....?
(a) 3 (b) 2 (c) 17y (d) 17.
The question assess -

Options:

A. Knowledge

B. Understanding

C. Application

D. Analysis

Answer: Knowledge

RajTest

840.

Question: The Newton - Cotes formula $I = nh["C_0y_0+^nC_1y_1+^nC_2y_2+.....+^nC_ny_n]$; for n = 2 gives -

Options:

A. Trapezoidal rule

B. Simpson's 1/3rd rule

C. Simpson's 3/8th rule

D. Euler - Maclaurin rule

Answer: Simpson's 1/3rd rule

841.

Question: If α, β are the roots of the equation $ax^2 + bx + c = 0$, then the equation whose roots are $\alpha + 1/\beta$ and $\beta + 1/\alpha$ is:

Options:

A. $ac\ x^2 + (a + c)\ bx + (a + c)^2 = 0$

B. $ab\ x^2 + (a + c)\ bx + (a + c)^2 = 0$

C. $ac\ x^2 + (a + b)\ cx + (a + c)^2 = 0$

D. None of these

Answer: $ac\ x^2 + (a + c)\ bx + (a + c)^2 = 0$

842.

Question: Value of $\int_0^2 \int_0^{x/2} \cos(x+y)dx\ dy$ is -

Options:

A. -2

B. 2

C. 0

D. 4

Answer: 0

843.

Question: Five points given by A, B, C, D, E are in a plane. Three forces AC, AD and AE act at A and three forces CB, DB, EB act at B. Then their resultant force is:

Options:

A. 2 AC

B. 3AB

C. 3 DB

D. 2BC

Answer: 3AB

844.

Question: To a man running at a speed of 20 km/h, the rain drops appears to be falling at an angle of 30° with the vertical. If the rain drops are actually falling vertically downwards, their velocity in km/h is -

Options:

A. $10\sqrt{3}$

B. 10

C. $20\sqrt{3}$

D. 40

Answer: $20\sqrt{3}$

845.

Question: If α, β, γ are the cube roots of any number p(p < 0), then for any three numbers x, y, z; xa + y + zy / xβ + yy + za is equal to :

Options:

A. $1/2\ (-1+i\sqrt{3})$

B. $1/2\ (1+i\sqrt{3})$

C. $1/2\ (1-i\sqrt{3})$

D. None of these

Answer: $1/2\ (-1+i\sqrt{3})$

846.

Question: Green's theorem is used to -

Options:

A. transform the line integral in xy - plane to a surface integral on the same xy - plane.

B. transform double integrals into triple integral in a region v.

C. transform surface integral into line integral.

D. None of these

Answer: transform the line integral in xy - plane to a surface integral on the same xy - plane.

847.

Question: A particle is thrown vertically upward with a velocity of 490 cm/s. It will return to this position after

Options:

A. 1 sec

B. 0.5 sec

C. 2 sec

D. 4 sec

Answer: 1 sec

RajTest

848.

Question: If $a + b + c = 0$ then the roots of the equation $4ax^2 + 3bx + 2c = 0$ are $(a, b, c \in R)$

Options:

A. Real

B. Equal

C. Imaginary

D. None of these

Answer: Real

849.

Question: Two circles touch each other internally. Their radii are 2 cm and 3 cm. The biggest chord of outer circle which is outside the inner circle is of length :

Options:

A. $2\sqrt{2}$ cm

B. $3\sqrt{2}$ cm

C. $4\sqrt{2}$ cm

D. $5\sqrt{2}$ cm

Answer: $4\sqrt{2}$ cm

850.

Question: Out of the following, which one does not express the view of pure mathematicians regarding mathematics

Options:

A. It is based on objective facts

B. It is a study of logic

C. It is a system of rigour, purity and beauty

D. It is a tool for solving problems

Answer: It is a tool for solving problems

851.

Question: Two forces P and Q have a resultant R. If P is increased, the new resultant bisects the angle between R and P. Then increase in P is -

Options:

A. P

B. 2P

C. Q

D. R

Answer: R

852.

Question: If $\cos^{-1} x + \cos^{-1} y + \cos^{-1} z = \pi$ then :

Options:

A. $x^2 + y^2 = z^2$

B. $x^2 + y^2 + z^2 = 0$

C. $x^2 + y^2 + z^2 = 1 - 2xyz$

D. None of these

Answer: $x^2 + y^2 + z^2 = 1 - 2xyz$

853.

Question: $v = yz\,\hat{i} + 3xz\,\hat{j} + zk$, then Curl v is :-

Options:

A. 3xi-yj+2zk

B. -(3xi+yj+2zk)

C. -3xi+yj+2zk

D. None of these

Answer: -3xi+yj+2zk

854.

Question: The length of three medians of a triangle are 9 cm, 12 cm and 15 cm. Then the area of triangle is :

Options:

A. 24 cm^2

B. 72 cm^2

C. 48 cm^2

D. 144 cm^2

Answer: 72 cm^2

855.

Question: Find the distance between two parallel chords of lengths 24 cm and 32 cm if radius of the circle is 20 cm.

Options:

A. 10 cm

B. 28 or 4 cm

C. 5 cm

D. 16 or 12cm

Answer: 28 or 4 cm

856.

Question: Which one of the following is an Autocratic Teaching strategy of Teaching Mathematics?

RajTest

Options:

A. Problem Solving Strategy

B. Lecture Strategy

C. Heuristic Strategy

D. Group Discussion Strategy

Answer: Lecture Strategy

857.

Question: If 2.5 is the initial root of the equation $x^3 - x - 10 = 0$ then by method of Newton - Raphson, the next approx root will be equal to -

Options:

A. 2.3089

B. 2.5395

C. 2.6760

D. 2.6657

Answer: 2.3089

858.

Question: The unit vector normal to the surface $x^2y + 2zx = 4$ at the point (2, -2, 3) is -

Options:

A. 1/3 (-i+2j+2k)

B. -1/3 (i+2j+2k)

C. 1/3 (i-2j+2k)

D. 1/3 (2i+j-k)

Answer: 1/3 (-i+2j+2k)

859.

Question: The equation of straight line through the intersection of the lines x - 2y = 1 and x + 3y = 2 and parallel to 3x + 2y = 0 is:

Options:

A. 3x+2y+5=0

B. 3x+2y+23/5 = 0

C. 3x+2y-23/5 = 0

D. 3x+2y+23/10 = 0

Answer: 3x+2y-23/5 = 0

860.

Question: Let y = f(x) be the function for which f(1) = 14, f(2)= 12, f(5) = 6 and f(8) = 21, then f(7) is -

Options:

A. 2

B. 12

C. -8

D. None of these

Answer: 12

861.

Question: Which one of the following is the first step of Morrison's Unit Approach?

Options:

A. Presentation

B. Assimilation

C. Organisation

D. Exploration

Answer: Exploration

862.

Question: The equation of the plane passing through(2, 3, 4) and parallel to the plane 5x - 6y + 7z = 3 is -

Options:

A. 5x-6y+7z + 20 = 0

B. 5x-6y+7z-20 = 0

C. -5x+6y-7z+3=0

D. 5x+6y+7z+3=0

Answer: 5x-6y+7z-20 = 0

863.

Question: If equation $2x^2 + 3x + 5\lambda = 0$ and $x^2 + 2x + 3\lambda = 0$ have a common root then λ is equal to:

Options:

A. 2

B. 1

C. 0,-1

D. 2,-1

Answer: 0,-1

864.

Question: Out of the following statements, which one is not related to Nature of Mathematics?

Options:

A. Mathematics has its own language from which terms, concept, sign, formula etc develops.

RajTest

B. Scope of Generalisation in Mathematics is very limited.

C. Mathematics is a Universal Subject.

D. Predictions are possible on the basis of conclusion drawn in Mathematics.

Answer: Scope of Generalisation in Mathematics is very limited.

865.

Question: The mean of seven numbers is 8. A new number 16 is added. The mean of eight numbers is :

Options:

A. 12

B. 9

C. 8

D. 24

Answer: 9

866.

Question: "Sikander attacks on India 327 BC" this example indicates -

Options:

A. correlation of Mathematics with Life Sciences

B. Correlation of Mathematics with Social Studies

C. Correlation of the different branches of Mathematics among themselves.

D. Correlation of Mathematics with Basic crafts

Answer: Correlation of Mathematics with Social Studies

867.

Question: If the nth term of an AP be (2n - 1), then the sum of its first n terms will be :

Options:

A. n^2-1

B. $(2n - 1)^2$

C. n^2

D. $n^2 + 1$

Answer: n^2

868.

Question: The radius of a cylinder is increasing at the rate of 3m/s and its altitude is decreasing at the rate of 4m/s. The rate of change of volume when radius is 4m and altitude is 6m is :

Options:

A. 80 m^3/s

B. 144π m^3/s

C. 64 m^3/s

D. 80π m^3/s

Answer: 80π m^3/s

869.

Question: In a school, out of 50 students, 25 have scooters and 35 cycles for coming to school. Then the number of students who have scooter and cycle both are -

Options:

A. 15

B. 18

C. 10

D. 12

Answer: 10

870.

Question: Relation between beta and gamma functions is -

Options:

A. B (m, n) = (m+n) / (m) (n)

B. B(m, n) (m+n)= (m)

C. B(m, n) = (m) (n) / (m+n)

D. B(m, n) = (m) (m + n) / (n)

Answer: B(m, n) = (m) (n) / (m+n)

871.

Question: If $v = 3xzi+2xyj-yz^2k$ then div v is -

Options:

A. 3x+2y+2z

B. 2x + 3y + 2z

C. x + 2y + z

D. 3z+2x - 2yz

Answer: 3z+2x - 2yz

872.

Question: The equation x = x-1 / x+1 is a -

Options:

RajTest

A. Linear equation

B. Non-linear equation

C. Transcendental equation

D. None of these

Answer: Non-linear equation

873.

Question: O is the origin and OP = 3 with direction ratios -1, 2, -2, then co - ordinates of P are -

Options:

A. (1, 2, 2)

B. (-1, 2, -2)

C. (-3, 6, -9)

D. (-1/3, 2/3, -2/3)

Answer: (-1, 2, -2)

874.

Question: If a^(n+1) + b^(n+1) / a^n + b^n be the harmonic mean of a and b then value of n is:

Options:

A. 1

B. -1

C. 0

D. 2

Answer: -1

875.

Question: If the points (-2, - 5), (2, -2) and (8, a) are collinear, then the value of a is:

Options:

A. 5/2

B. 5/2

C. 3/2

D. 1/2

Answer: 5/2

876.

Question: In a given ΔABC, DEIIBC and If AC = 5.6 cm, then AE is -

Options:

A. 2.0 cm

B. 3.0 cm

C. 2.8 cm

D. 2.1 cm

E. Question not attempted

Answer: 2.8 cm

877.

Question: If y(0) = 3, y(1) = 10, y(2) = 18, y(3) = 30 and y(4) = 50, then the value of A4 y(0) is -

Options:

A. 2

B. 1

C. 0

D. -1

E. Question not attempted

Answer: 1

878.

Question: If a particle moves in a straight line such that its displacement x, from a point on the line at time "t', is given by $x = t^3 - 6t^2 - 15t$, then the time interval (in sec) during which the velocity is negative and the acceleration is positive, is -

Options:

A. 0<t<2

B. 2<t<5

C. 5<t<7

D. t>7

E. Question not attempted

Answer: 2<t<5

879.

Question: The solution of the differential equation x2 day + 3x + y = 0 is -
dx2
dx

Options:

A. $y = (c_1 + c2x)ex$

B. $y = (c_1 + c2\ logex)/X$

C. $y = (c_1 + c2x)\ logex$

D. $y = (c_1 + C2X)e2x$

E. Question not attempted

Answer: $y = (c_1 + c2\ logex)/X$

880.

RajTest

Question: An arc of a circle is of length 5 cm and the sector it bounds has an area of 20 cm². The radius of the circle is -

Options:

A. 16 cm

B. 4 cm

C. 8 cm

D. 1/2 cm

E. Question not attempted

Answer: 8 cm

881.

Question: If f(z) = 4x + y + i (-x + 4y), where z = x + iy, x, y ∈ R, i = √-1, then df/dz =

Options:

A. 4+ i

B. 4-i

C. 1 + 4i

D. 1-4i

E. Question not attempted

Answer: 4-i

882.

Question: 'sin12° sin48° is equal to --

Options:

A. (√5-1)/4

B. (√5-1)/8

C. (√5+1)/8

D. (√5+1)/4

E. Question not attempted

Answer: (√5-1)/8

883.

Question: Let A and B be two square matrices of the same order. If A and B are symmetric matrice's, then which of the following is a skew-symmetric matrix?

Options:

A. AB + BA

B. 5 (A + B)

C. AB - BA

D. 3.(A - B)

E. Question not attempted

Answer: AB - BA

884.

Question: The resultant of two forces P and Q acting at a point, is of the magnitude R. If P and Q are equal and angle between them is α, then R =

Options:

A. P cos α

B. P cos(α/2)

C. 2P cos(α/2)

D. 2P cos α

E. Question not attempted

Answer: 2P cos(α/2)

885.

Question: A particle is projected with a velocity u so that. its range on horizontal plane is twice the greatest height attained, then the range is (Where 'g' is the constant acceleration due to gravity) -

Options:

A. 2u²/g

B. 4u²/5g

C. u²/2g

D. 2u²/3g

E. Question not attempted

Answer: 4u²/5g

886.

Question: Decimal expansion of the number 441 / (2² x 5⁷ x 7²) is -

Options:

A. Non-terminating recurring

B. Terminating

C. Non-terminating non-recurring

D. None of these

E. Question not attempted

Answer: Terminating

887.

Question: A group contains elements a and b such that O(a) = 4, O(b) = 2 and ab = ba, then O(ab) is (where, O(x) = order of x) -

Options:

A. 3

B. 4

RajTest

C. 1

D. 2

E. Question not attempted

Answer: 4

888.

Question: A line passes through point (2, 2) and is perpendicular to the line 3x - y = 2. Its intercept on y-axis is -

Options:

A. 8/3

B. 5/3

C. 8

D. 4/3

E. Question not attempted

Answer: 8/3

889.

Question: A square and an equilateral triangle have equal perimeters. If length of the diagonal of the square is $12\sqrt{2}$ cm, then area of the triangle is -

Options:

A. $48\sqrt{3}$ sq. cm

B. $64\sqrt{3}$ sq. cm

C. $24\sqrt{2}$ sq. cm

D. $24\sqrt{3}$ sq. cm

E. Question not attempted

Answer: $64\sqrt{3}$ sq. cm

890.

Question: For what value of the angle between the vectors a and b, the quantity $|a.b|+ |a \times b|$ is maximum? (Where $|a|, |b| >0$)

Options:

A. 30°

B. 45°

C. 60°

D. 0°

E. Question not attempted

Answer: 45°

891.

Question: Box I contains 2 white and 3 red balls and Box II contains 4 white and 5 red balls. One ball is drawn at random from one of the boxes and is found to be red, then the probability that it was from Box II is -

Options:

A. 25/52

B. 21/52

C. 7/52

D. 15/52

E. Question not attempted

Answer: 25/52

892.

Question: The intercept on the line y = x by the circle $x^2 + y^2 - 2x = 0$ is AB. Equation of circle with AB as diameter is -

Options:

A. $x^2 + y^2 - x - y = 0$

B. $x^2 + y^2 - x + y = 0$

C. $x^2 + y^2 - 3x - 3y + 4 = 0$

D. $x^2 + y^2 - x = 0$

E. Question not attempted

Answer: $x^2 + y^2 - x - y = 0$

893.

Question: If ${}^nP_r = 720\ {}^nC_r$, then r is equal to -

Options:

A. 4

B. 8

C. 6

D. 5

E. Question not attempted

Answer: 6

894.

Question: The semi-vertical angle of a right circular cone admitting set of three mutually perpendicular generators is -

Options:

A. $\tan^{-1} 1$

B. $\tan^{-1} \sqrt{3}$

C. $\tan^{-1} \sqrt{2}$

D. $\tan^{-1} 2$

RajTest

E. Question not attempted

Answer: $\tan^{-1}\sqrt{2}$

895.

Question: The angles of depression of the top and foot of a tower from the top of a hill of height h are 30° and 60° respectively, then the height of the tower is -

Options:

A. h/3

B. 2h/3

C. h

D. h/2

E. Question not attempted

Answer: 2h/3

896.

Question: If the system of equations x+y-z=0, 3x - ay - 3z = 0, x-3y+z=0 has non - zero solution, then a =

Options:

A. -3

B. 3

C. -1

D. -9/2

E. Question not attempted

Answer: -3

897.

Question: For the group (Z, *), where Z is the set of all integers and * is defined by: a*b = a + b + 1, $\forall a, b \in Z$, then the inverse of $a \in Z$ is -

Options:

A. 2 + a

B. 2-a

C. -2 + a

D. -2-a

E. Question not attempted

Answer: -2-a

898.

Question: If vector A is such that $\nabla \times A = 0$, then A is called -

Options:

A. Irrotational vector

B. Solenoidal vector

C. Rotational vector

D. None of these

E. Question not attempted

Answer: Irrotational vector

899.

Question: The nature of roots of the equation $x^2-2\sqrt{3}\,x + 3 = 0$ is -

Options:

A. Imaginary

B. Rational and equal

C. Irrational and different

D. Irrational and equal

E. Question not attempted

Answer: Irrational and equal

900.

Question: For the permutation p = (1 2 3 4 5 6 7 8 9 \n 2 3 4 5 1 6 7 9 8) the number of transpositions are -

Options:

A. 5

B. 2

C. 3

D. 4

E. Question not attempted

Answer: 5

901.

Question: The length of the sub-normal to the curve $y^2 = x^3$ at the point (4, 8) is -

Options:

A. 24.

B. 8/3

C. 3/8

D. None of these

E. Question not attempted

Answer: 24.

902.

Question: The straight lines 3x - 4y + 4 = 0 and 6x - 8y + 13 = 0 are two tangent lines to the same circle. The radius of the circle is -

RajTest

Options:

A. 1/4

B. 1/2

C. 2

D. 3/2

E. Question not attempted

Answer: 1/4

903.

Question: $\int e^x(x-1)/(x+1)^3\ dx$ is equal to -

Options:

A. $e^x/(x+1)^2 + c$

B. $e^x/(x+1) + c$

C. $-e^x/(x+1)^2 + c$

D. $e^x/(x-1)^2 + c$

E. Question not attempted

Answer: $e^x/(x+1)^2 + c$

904.

Question: Centre of the conic $x^2 - xy - y^2 - 6x + 3y + 5 = 0$ is -

Options:

A. (3, -1)

B. (3,3)

C. (3,0)

D. (-1, 3)

E. Question not attempted

Answer: (3,0)

905.

Question: The solution of the difference equation $u_{n+3} - 2u_{n+2} - 5u_{n+1} + 6u_n = 0$ is -

Options:

A. $u_n=c_1(1)^n + c_2(2)^n + c_3(3)^n$

B. $u_n=c_1(-1)^n + c_2(-2)^n + c_3(-3)^n$

C. $u_n=c_1(-1)^n + c_2(-2)^n + c_3(3)^n$

D. $u_n=c_1(1)^n + c_2(-2)^n + c_3(3)^n$

E. Question not attempted

Answer: $u_n=c_1(1)^n + c_2(-2)^n + c_3(3)^n$

906.

Question: Which of the following statement is not true?

Options:

A. Every subgroup of cyclic group is cyclic.

B. Every Abelian group is cyclic.

C. Non-cyclic group may have cyclic subgroup.

D. Every cyclic group is an Abelian.

E. Question not attempted

Answer: Every Abelian group is cyclic.

907.

Question: If â, 6 and c are unit coplanar vectors, then the value of Scalar Triple Product [2a-b 26-c 2ĉ - â] is equal to -

Options:

A. 1

B. 0

C. $-\sqrt{3}$

D. $\sqrt{3}$

E. Question not attempted

Answer: 0

908.

Question: For two events A and B, it is given that P(A) = P(A/B)=1/4 and P(B/A)=1/2, then -

Options:

A. P(A/B) does not exist

B. A and B are dependent events

C. P(A/B) = 3/4

D. None of these

E. Question not attempted

Answer: None of these

909.

Question: $\Sigma^n_{r=0}\ 3^n.\ {}^nC_r$ is equal to -

Options:

A. 3^n

B. 1

C. 4^n

D. 2^n

E. Question not attempted

Answer: 4^n

910.

RajTest

Question: If the value of the determinant | 1+a 1 1 \n 1 1+b 1 \n 1 1 1+c | = 0 and abc = - 3, then the value of ab + bc + ca is -

Options:

A. -3

B. 3

C. 0

D. 1

E. Question not attempted

Answer: 3

911.

Question: If the equation $Px^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$ represents a pair of lines, then the value of 'P' is -

Options:

A. 3

B. 2

C. 1

D. -2

E. Question not attempted

Answer: 2

912.

Question: The maximum value of $5\cos\theta + 3\cos(\theta+\pi/3) +3$ is -

Options:

A. 7

B. 10

C. 8

D. 11

E. Question not attempted

Answer: 10

913.

Question: If a_i is demand units and b_j are available units in a transportation problem, then the condition of balanced transportation problem is -

Options:

A. $\Sigma a_i + \Sigma b_j = 0$

B. $\Sigma a_i + \Sigma b_j = 1$

C. $\Sigma a_i \neq \Sigma b_j$

D. $\Sigma a_i - \Sigma b_j = 0$

E. Question not attempted

Answer: $\Sigma a_i - \Sigma b_j = 0$

914.

Question: The eccentricity of the ellipse $25x^2 + 16y^2 - 150x - 175 = 0$ is -

Options:

A. 2/5

B. 4/5

C. 3/5

D. 1/5

E. Question not attempted

Answer: 3/5

915.

Question: The length of perpendicular from point (1, 2, 3) to the line (x-6)/3 = (y-7)/2 = (z-7)/(-2) is equal to -

Options:

A. 3

B. $\sqrt{66}$

C. 7

D. 5

E. Question not attempted

Answer: 7

916.

Question: A line is passing through the points (1, 2, - 1) and (3, -1, 2). At which point does it meet the yz - plane?

Options:

A. (0, 7/2, 5/2)

B. (0, 1/2, -5/2)

C. (0, 7/2, -5/2)

D. (0, 1/2, 5/2)

E. Question not attempted

Answer: (0, 7/2, -5/2)

917.

Question: Let OA = i + 3j - 2k and OB = 3i + j - 2k. If vector OC bisects ∠AOB, where C is a point on the line AB, then vector OC =

Options:

A. $4(\hat{i}+\hat{j}+k)$

B. $2(\hat{i}+\hat{j}-k)$

C. $\hat{i}+\hat{j}+k$

RajTest

D. None of these

E. Question not attempted

Answer: 2(î+ĵ-k)

918.

Question: The series $\Sigma_{n=0}^{\infty} 1/(n+1)^p$ is divergent, if -

Options:

A. p> 1

B. p≤1

C. 2<p<3

D. None of these

E. Question not attempted

Answer: p≤1

919.

Question: A paper is in the form of a rectangle ABCD in which AB = 20 cm and BC = 14 cm. A semi-circular portion with BC as diameter is cut off. The area of the remaining part of the paper is - (π=22/7)

Options:

A. 302 sq. cm

B. 213 sq. cm

C. 280 sq. cm

D. 203 sq. cm

E. Question not attempted

Answer: 203 sq. cm

920.

Question: In the given figure, if AB||CD, then the value of x is -

Options:

A. 140°

B. 68°

C. 72°

D. 100°

E. Question not attempted

Answer: 140°

921.

Question: Argument of the complex number (1-i)/(1+i), where i = √-1 is -

Options:

A. 3π/2

B. -π/4

C. π/2

D. -π/2

E. Question not attempted

Answer: -π/2

922.

Question: In a regular hexagon ABCDEF, (AB+ AC + AD+AE + AF) is equal to -

Options:

A. 3AD

B. 4AD

C. 0

D. 2AD

E. Question not attempted

Answer: 3AD

923.

Question: If lim (loge(3+x) - loge(3-x))/x = k, then the value of k is -

Options:

A. -1/2

B. 2/3

C. 0

D. -2/3

E. Question not attempted

Answer: 2/3

924.

Question: In binomial expansion of (a - b)", n ≥ 5, the sum of the 5th and 6th terms is zero. Then a/b is equal to -

Options:

A. n-5 / 6

B. n-4 / 5

C. 5 / n-4

D. 6 / n-5

Answer: n-4 / 5

925.

Question: Which of the following is a null set?

Options:

A. {x: |x|<1, x ∈ N}

RajTest

B. {x: |x| = 5, x ∈ N}

C. {x: $x^2 + 2x + 1 = 0$, x ∈ R}

D. {x: $x^2 = 1$, x ∈ Z}

Answer: {x: |x|<1, x ∈ N}

926.

Question: sin θ = -4/5 and θ lies in the third quadrant, then cos θ/2 is equal to :

Options:

A. 1/√5

B. -1/√5

C. 2/√5

D. -2/√5

Answer: -1/√5

927.

Question: The number $\log_2 7$ is -

Options:

A. An integer

B. A rational number

C. An irrational number

D. A prime number

Answer: An irrational number

928.

Question: Solution set of $x \equiv 3 \pmod 7$, p∈ Z is given by:

Options:

A. {3}

B. {7p-3: p∈ Z}

C. {7p+3: p∈ Z}

D. None of these

Answer: {7p+3: p∈ Z}

929.

Question: Two light strings support a weight W kg and are inclined to the vertical at angles 30° and 60°. Then the tensions in the strings are -

Options:

A. √3 W/2, W/2

B. √3 W/2, W

C. √3 W/2, W/2

D. None of the these

Answer: √3 W/2, W/2

930.

Question: The solution of second order difference equation Pn+2-(1+a)pn+1+apn =0, n≥0 is-

Options:

A. pn =$(1-a)a^n$

B. pn = $(1+a)a^n$

C. pn=$(1+a^2)a^n$

D. pn=$(2+a)a^n$

Answer: pn =$(1-a)a^n$

931.

Question: Following are the stages of Project Method in Teaching of Mathematics without any logical order
a. Choosing and purposing the Project
b. Executing the Project
c. Providing a situation
d. Planning of the Project
e. Recording of the Project
f. Evaluation of the Project
Out of the following which alternative shows correct sequence of the above mentioned stages of Project Method?

Options:

A. abcdef

B. bcdefa

C. cadbfe

D. cadbef

Answer: cadbfe

932.

Question: If | 2x-3|<|x + 5 | then x belongs to -

Options:

A. (-3,5)

B. (5,9)

C. (-8/3, 8/3)

D. (-8/3, 3)

Answer: (-8/3, 3)

933.

Question: If z is a complex number, then $(z)^{-1}(z)$ is equal to :

Options:

A. 1

RajTest

B. -1

C. 0

D. None of these

Answer: 1

934.

Question: Let f be a function defined on the interval [0, 1] as f(x) = {0, if x is rational; 1, if x is irrational
Then f is -

Options:

A. Not R-integrable on [0, 1]

B. R-integrable on [0, 1]

C. May or may not be R - integrable on [0, 1]

D. None of these

Answer: Not R-integrable on [0, 1]

935.

Question: Let ABCD be the parallelogram whose sides AB and AD are represented by the vectors 2i+4j-5k and i+2j+3k respectively. If a is a unit vector parallel to AC, then a is equal to:

Options:

A. 1/3 (3i-6j-2k)

B. 1/3 (3i+6j+2k)

C. 1/7 (3i-6j-3k)

D. 1/7 (3i+6j-2k)

Answer: 1/7 (3i+6j-2k)

936.

Question: The variance of first n natural numbers is :

Options:

A. $n^2+1 / 12$

B. $n^2-1 / 12$

C. $(n+1)^2 / 12$

D. $2n^2-1 / 8$

Answer: $n^2-1 / 12$

937.

Question: To obtain the non - degenerate BFS of an m×n transportation problem, the number of occupied cells should be -

Options:

A. Equal to m+n-1

B. Less than m + n-1

C. Equal to m+n+1

D. More than m + n + 1

Answer: Equal to m+n-1

938.

Question: If the function $f(x) = (2x - \sin^{-1}x) / (2x + \tan^{-1}x)$, $x \neq 0$ is continuous at each point of its domain, then the value of f(0) is:

Options:

A. 2

B. 1/3

C. 2/3

D. 1/3

Answer: 1/3

939.

Question: The differential equation of system of concentric circles with centre (1, 2) is -

Options:

A. (x-2)+(y-1)dy/dx =0

B. (x-1)+(y-2)dy/dx =0

C. (x-1)dy/dx+(y-2)=0

D. (x+2)dy/dx+(y-1)=0

Answer: (x-1)+(y-2)dy/dx =0

940.

Question: Correlation among topics to the same branch of Mathematics is known as .....?

Options:

A. Co-Lateral Correlation

B. Multi- Lateral Correlation

C. Uni-Lateral Correlation

D. Semi-Lateral Correlation

Answer: Uni-Lateral Correlation

941.

Question: The locus of a point whose difference of distance from points (3,0) and (-3, 0) is 4, is:

Options:

A. $x^2/4 - y^2/5 = 1$

B. $x^2/5 - y^2/4 = 1$

C. $x^2/2 - y^2/3 = 1$

RajTest

D. $x^2/3 - y^2/2 = 1$

Answer: $x^2/4 - y^2/5 = 1$

942.

Question: The sum of infinite series $1 + 2^2/2! + 3^2/3! + 4^2/4! +$..... is

Options:

A. ∞

B. e

C. 2e

D. 1 + 1/e

Answer: 2e

943.

Question: If A and B are square matrices of order 3 such that $|A| = -1$, $|B| = 3$ then $|3AB|$ is equal to -

Options:

A. -9

B. -81

C. -27

D. 81

Answer: -81

944.

Question: According to the utilitarian view of Mathematics, which of the following statement is not correct -

Options:

A. Mathematics is a tool for problem solving.

B. Mathematics provides ways to model real life situations.

C. Learning how to do Mathematics is more important than understanding underlying principles.

D. It is more important to learn underlying principles than learning how to do Mathematics.

Answer: It is more important to learn underlying principles than learning how to do Mathematics.

945.

Question: Match list - I with list - II and select the correct answer

List - I

A. A square matrix such that $A^2 = A$

B. A square matrix such that $A^m = 0$

C. A square matrix such that $A^2 = I$

D. A square matrix such that $A^T = A$

List - II

1. Nilpotent matrix
2. Involutory matrix
3. Symmetric matrix
4. Idempotent matrix

Options:

A. A-1, B-3, C-2, D-4

B. A-3, B-4, C-2, D-1

C. A-4, B-3, C-2, D-1

D. A-4, B-1, C-2, D-3

Answer: A-4, B-1, C-2, D-3

946.

Question: If a square matrix A is such that AAT = I= ATA, then $|A|$ is equal to -

Options:

A. 0

B. ± 1

C. ± 2

D. None of these

Answer: ± 1

947.

Question: For the following LPP -

Max. $Z = -0.1\ x1 + 0.5\ X2$

s. t. $2x1 + 5x2 \leq 80$

$X1 + X2 \leq 20$

$X1, X2 \geq 0$

to get the optimum solution, the values of X1, X2 are -

Options:

A. (20,0)

B. (20/3, 40/3)

C. (0,16)

D. None of these

Answer: (0,16)

948.

Question: The length of the common chord of the circles $x^2 + y^2 + 2x + 3y + 1 = 0$ and $x^2 + y^2 + 4x + 3y + 2 = 0$ is:

Options:

A. 9/2

B. $2\sqrt{2}$

C. $3\sqrt{2}$

D. 3/2

RajTest

Answer: $2\sqrt{2}$

949.

Question: The curve $f(x) = 3x^4-2x^3- 6x^2 + 6x + 1$ has maxima at the point -

Options:

A. $x = 1$

B. $x = -1$

C. $x = 1/2$

D. $x = 0$

Answer: $x = 1/2$

950.

Question: If roots of equation $(a – b) x^2 + (c - a) x + (b - c) = 0$ are equal, then a, b, c are in :

Options:

A. AP

B. HP

C. GP

D. None of these

Answer: AP

951.

Question: $2.4^2n+1 + 3^3n+1$ is divisible by: (for all $n \in N$)

Options:

A. 2

B. 9

C. 3

D. 11

Answer: 11

952.

Question: Which one of the following should not be a personality trait of Mathematics teacher?

Options:

A. Patience

B. Scientific Outlook

C. Stress on Cramming

D. Command on Mathematics Subject

Answer: Stress on Cramming

953.

Question: If ${}^nCr = {}^nCr-1$ and ${}^nPr = {}^nPr+1$, then the value of n is:

Options:

A. 3

B. 4

C. 2

D. 5

Answer: 3

954.

Question: If n is even, then the middle term in the expansion of $(x^2 + 1/x)^n$ is $924 x^6$. Find the value of n -

Options:

A. 10

B. 12

C. 14

D. None of these

Answer: 12

955.

Question: Which one of the following is considered as highest level sub-domain of cognitive domain of Bloom's Taxonomy of Educational objectives?

Options:

A. Knowledge

B. Comprehension / Understanding

C. Application

D. Evaluation

Answer: Evaluation

956.

Question: Out of the following which is not an example of Visual aids -

Options:

A. Real objects

B. Models

C. Pictures

D. Radio

Answer: Radio

957.

Question: The idea 'Effective learning can only take place in a social context' reflects the views of -

RajTest

Options:

A. Jean Piaget

B. J. B. Watson

C. J. Bruner

D. Lev Vygotsky

Answer: Lev Vygotsky

958.

Question: Out of 8 Americans and 5 Indians, in how many ways a committee of 6 members can be formed if it should have at least 3 Indians?

Options:

A. 560

B. 708

C. 140

D. None of these

Answer: 708

959.

Question: The centre of a regular polygon of n sides is located at the point z = 0 and one of its vertex Z1 is known. If z2 be the vertex adjacent to z_1, then Z2 is equal to :

Options:

A. $Z1(\cos(2\pi/n) \pm i\sin(2\pi/n))$

B. $Z1(\cos(\pi/n) \pm i\sin(\pi/n))$

C. $Z1(\cos(\pi/(2n)) \pm i\sin(\pi/(2n)))$

D. None of these

Answer: $Z1(\cos(2\pi/n) \pm i\sin(2\pi/n))$

960.

Question: If the curve $y=a\sqrt{x} + bx$ passes through the point (1, 2) and the area bounded by the curve, line x = 4 and x - axis is 8 sq. unit, then :

Options:

A. a = 3, b = -1

B. a = 3, b = 1

C. a = -3, b = 1

D. a = -3, b = -1

Answer: a = 3, b = -1

961.

Question: If $x = A \cos 4t + B \sin 4t$, then d^2x/dt^2 is equal to -

Options:

A. -16 x

B. 16x

C. x

D. -x

Answer: -16 x

962.

Question: A triangle with vertices (4, 0), (-1,-1) and (3, 5) is:

Options:

A. isosceles and right angled

B. isosceles but not right angled

C. right angled but not isosceles

D. neither right angled nor isosceles

Answer: isosceles and right angled

963.

Question: The sum of length, breadth and depth of a cuboid is 19 cm and the length of its diagonal is 11 cm. The total surface area of the cuboid is -

Options:

A. 121 cm^2

B. 240 cm^2

C. 120 cm^2

D. 361 cm^2

E. Question not attempted

Answer: 240 cm^2

964.

Question: If the function u(x, y) = ex cos y is harmonic, then its harmonic conjugate v (x, y) is -

Options:

A. e sin x + c

B. - ex cos y + c

C. ex sin y + c

D. ex cos x + c

E. Question not attempted

Answer: ex sin y + c

965.

Question: The value of 24. 28. 216.232.....is

Options:

RajTest

A. 8

B. 2

C. 1

D. 3/2

E. Question not attempted

Answer: 2

966.

Question: In the given figure, if AB = 8 cm and PE = 3 cm, then AE =

Options:

A. 5 cm

B. 3 cm

C. 7 cm

D. 11 cm

E. Question not attempted

Answer: 3 cm

967.

Question: The volume of the solid generated by the revolution of the cardioid r = 1 + cos 0 about the initial line is -

Options:

A. 2π

B. 8π/3

C. 2π

D. 4π/3

E. Question not attempted

Answer: 8π/3

968.

Question: A solid right circular cone is of height 8.4 cm and the radius of its base is 2.1 cm. It is melted and recast into a solid sphere. The radius of the sphere is -

Options:

A. 4.2 cm

B. 8.4 cm

C. 2.1 cm

D. 3.1.cm

E. Question not attempted

Answer: 2.1 cm

969.

Question: If α and β are roots of equation x2 + x + 1 = 0, then the equation whose roots are α7 and β4, is -

Options:

A. x2-x-1 = 0

B. x2 + x + 1 =0

C. x2+x-1=0

D. x2-x + 1 = 0

E. Question not attempted

Answer: x2 + x + 1 =0

970.

Question: For given value of x, the corresponding values of f(x) are given in the following table as

X | 0 | 0.5 | 1

f(x)| 1 | 0.8 | 0.5

Using Trapezoidal Rule, the value of ∫ f(x)dx is -

Options:

A. 0.575

B. 0.155

C. 0.115

D. 0.775

E. Question not attempted

Answer: 0.775

971.

Question: If determinant [[-a², ab, ac], [ab, -b², bc], [ac, bc, -c²]] = ka²b²c², then the value of k is -

Options:

A. 2

B. -4

C. 4

D. -2

E. Question not attempted

Answer: 4

972.

Question: Let F(x) = ∫ √tan x / (sin x cos x) dx and F(0) = 0, if F(π/4) = 2k/π, then k =

Options:

A. π

B. 2

C. π/4

D. π/2

RajTest

E. Question not attempted

Answer: π

973.

Question: The domain of the function f(x) = 1/√(x-[x]) (where [x] is greatest integer function) is -

Options:

A. Real numbers

B. R-Z

C. Integers

D. Ro

E. Question not attempted

Answer: R-Z

974.

Question: If 9x+2 = 720 + 9x, then the value of (x/2)x is -

Options:

A. 1/2

B. 1/8

C. 1

D. 1/4

E. Question not attempted

Answer: 1/2

975.

Question: The value of the integral ∫ from 0 to 1 of √(1-x)/(1+x) dx is -

Options:

A. -1

B. π/2 + 1

C. π - 1

D. 1

E. Question not attempted

Answer: π/2 + 1

976.

Question: If (2î + 6ĵ + 27k) x (î+aĵ+bk) is a null vector, then 2a + 4b =

Options:

A. 36

B. 54

C. 60

D. 33

E. Question not attempted

Answer: 60

977.

Question: Consider the following statements -
(I) Every real number is either rational or irrational.
(II) π is an irrational number.
(III) 43 / (2^4 x 5^3) will terminate after four places of decimals.
Which of the statements given above are correct?

Options:

A. All (I), (II) and (III)

B. (I) and (III) only

C. (I) and (II) only

D. (II) and (III) only

E. Question not attempted

Answer: All (I), (II) and (III)

978.

Question: For the matrices P = [[0, c, -b], [-c, 0, a], [b, -a, 0]] and Q = [[a², ab, ac], [ab, b², bc], [ac, bc, c²]] consider the following statements -
(I) PQ is a null matrix.
(II) QP is an identity matrix of order 3.
(III) PQ = QP
Which of the above statement/s is/are correct?

Options:

A. (II) only

B. (I) and (III)

C. (II) and (III)

D. (I) only

E. Question not attempted

Answer: (I) and (III)

979.

Question: Let α be the angle between two unit vectors a and b. If a + 2b and 5a - 4b are mutually perpendicular, then the value of sinα + sin2α is, (where 0° < α° < 90°) -

Options:

A. (√3+1)/2

B. √3

C. 1/2

D. 0

E. Question not attempted

RajTest

Answer: √3

980.

Question: On changing the order of integration of double integral ∫_0^∞ ∫_x^∞ f dxdy

Options:

A. ∫_0^∞ ∫_y^∞ f dydx

B. ∫_0^∞ ∫_0^x f dydx

C. ∫_0^∞ ∫_0^x f dydx

D. ∫_0^∞ ∫_0^x f dydx

E. Question not attempted

Answer: ∫_0^∞ ∫_0^x f dydx

981.

Question: $\cot^2(\sec^{-1}2) + \tan^2(\text{cosec}^{-1}3)$ is equal to -

Options:

A. 11/24

B. 11/12

C. 1/24

D. 7/24

E. Question not attempted

Answer: 11/24

982.

Question: The equation of the sphere through the circle $x^2+y^2+z^2= 9$; $2x + 3y + 4z = 5$ and the origin is-

Options:

A. 5(x2 + y2 + z²) + 9(2x + 3y + 4z) =.0

B. 5(x2+y2+z²) – 9(2x + 3y + 4z) = 0

C. 9(x2+y2+z²) + 5(2x + 3y + 4z) = 0

D. 9(x2+y2+z²) – 5(2x + 3y + 4z = 0

E. Question not attempted

Answer: 5(x2+y2+z²) – 9(2x + 3y + 4z) = 0

983.

Question: Two finite sets A and B have m and n elements respectively. If the total number of subsets of the first set 'A' is 12 more than the total number of subsets of the second set 'B', then (m, n) is equal to -

Options:

A. (4, 2)

B. (3,6)

C. (6,3)

D. (2, 4)

E. Question not attempted

Answer: (4, 2)

984.

Question: The equation of the right circular cylinder, whose axis is z-axis and radius is 3 units, is -

Options:

A. $y^2+z^2 = 9$

B. $z^2+x^2 = 9$

C. $x^2+y^2 = 9$

D. $x^2+y^2+z^2 = 9$

E. Question not attempted

Answer: $x^2+y^2 = 9$

985.

Question: If function $f(x) = \{x^2 + 3x + a, x \leq 1 ; bx + 2, x > 1$ is differentiable for all real x, then the values of a and b are respectively -

Options:

A. 3 and 5

B. 3 and 2

C. 2 and 3

D. 5 and 3

E. Question not attempted

Answer: 3 and 5

986.

Question: The oblique asymptote of $y = (x^2-4)/(x-1)$ is -

Options:

A. y = x - 1

B. y = x + 2

C. y = x - 2

D. y = x + 1

E. Question not attempted

Answer: y = x + 1

987.

Question: If 1, ω and ω^2 are cube roots of unity, then $(3 + 5\omega + 3\omega^2)^2 + (3+ 3\omega + 5\omega^2)^2 =$

Options:

A. 4

B. -1

RajTest

C. -4

D. 0

E. Question not attempted

Answer: -4

988.

Question: In the interval [0, 5π], the number of solutions of the equation, $3\sin^2x - 7\sin x + 2 = 0$ is -

Options:

A. 6

B. 5

C. 1

D. 10

E. Question not attempted

Answer: 6

989.

Question: The value of x for which the angle between $a = 2x^2\hat{i} + 4x\hat{j} + k$ and $b = 7\hat{i} - 2\hat{j} + xk$ is obtuse, is --

Options:

A. $x \in (0, 1/2)$

B. $x \in (1/2, 15)$

C. $x \in [(-\infty,0) \cup (1,\infty)]$

D. None of these

E. Question not attempted

Answer: $x \in (0, 1/2)$

990.

Question: If ten coins are tossed together, then the probability of getting at least 7 heads is equal to-

Options:

A. 76/1024

B. 175/1024

C. 166/1024

D. 176/1024

E. Question not attempted

Answer: 176/1024

991.

Question: Two dice are thrown. What is the probability that the sum of the numbers on the faces is neither 5 nor 7?

Options:

A. 13/18

B. 5/18

C. 1/36

D. 7/36

E. Question not attempted

Answer: 13/18

992.

Question: If function $f(x) = \{k\cos x/(\pi-2x) ; x \neq \pi/2 ; 3 ; x = \pi/2$ is continuous at point $x = \pi/2$, then value of k is -

Options:

A. 9

B. 6

C. 3

D. 12

E. Question not attempted

Answer: 6

993.

Question: AB is a line segment and line 'L' is its perpendicular bisector. If a point P lies on 'L', then which of the following is true?,

Options:

A. PA = PB

B. PA < PB

C. PA > PB

D. None of these

E. Question not attempted

Answer: PA = PB

994.

Question: In the given figure, 'O' is the centre and AD is diameter of the circle. If $\angle DAB = 50°$, then x + y =

Options:

A. 220°

B. 230°

C. 200°

D. 180°

E. Question not attempted

Answer: 220°

995.

RajTest

Question: If $x^2 + y^2 = m + 1/m$ and $x^4 + y^4 = m^2 + 1/m^2$, then the value of dy/dx is -

Options:

A. $-1/(x^3y)$

B. $1/(x^2y)$

C. $-1/(x^2y)$

D. $1/(x^3y)$

E. Question not attempted

Answer: $-1/(x^3y)$

996.

Question: In the usual notations, for the conformal transformation $w = z^2$, the angle of rotation at $z = 1 + i$ is-

Options:

A. $\pi/4$

B. $\pi/6$

C. $\pi/2$

D. $\pi/3$

E. Question not attempted

Answer: $\pi/4$

997.

Question: If the probability that a man will live 10 more years, is 1/4 and the probability that his wife will live 10 more years, is 1/3, then the probability that none of them will be alive after 10 years, is -

Options:

A. 5/12

B. 7/12

C. 1/2

D. 11/12

E. Question not attempted

Answer: 1/2

998.

Question: If function $f(x) = \log_e (x + \sqrt{1 + x^2})$, is one - one and onto function, then $f^{-1}(x) =$

Options:

A. (ex - e-x)/2

B. (ex + e-x)/2

C. (ex - e-x)/(ex + e-x)

D. (ex + e-x)/(ex - e-x)

E. Question not attempted

Answer: (ex - e-x)/2

999.

Question: Directrix of the parabola $y^2 + 4x + 4y - 3 = 0$ is-

Options:

A. $11x = 4y$

B. $4x = 11$

C. $4x = 11y$

D. $4y = 11$

E. Question not attempted

Answer: $4x = 11$

1000.

Question: In usual notations, the value of $(\Delta^2/h^2)(x^3)$ is, (where h = 1) -

Options:

A. 2x

B. 6x

C. 3x

D. 4x

E. Question not attempted

Answer: 6x

1001.

Question: Solution of LPP :
Max z = 3x1 + 4x2
Subject to
X1-X2≤-1
-X1+X2≤0
and
X1, X2 ≥ 0
is -

Options:

A. x1 = 2, x2 =3

B. x1 = 0, x2 = 1

C. x1 = 1, x2 = 2

D. does not exist

E. Question not attempted

Answer: does not exist

1002.

RajTest

Question: If the mean of the following distribution is 6, then the value of p is
X | 2 | 4 | 6 | 10 | p+5
f | 3 | 2 | 3 | 1 | 2

Options:

A. 8

B. 9

C. 14

D. 7

E. Question not attempted

Answer: 7

1003.

Question: Which of the following principles is essential for developing a Mathematics curriculum to ensure students understand concepts holistically?

Options:

A. Emphasis on rote memorisation.

B. Focus on interdisciplinary connections.

C. Avoidance of real-life application of mathematical concepts.

D. Teaching concepts in isolation without context.

E. Question not attempted

Answer: Focus on interdisciplinary connections.

1004.

Question: The nth term
13 13+33 13 +33 +53
+
1
1+3
+
1+3+5
of the
series
+
+
will be:

Options:

A. $n^3 +1$

B. 9

C. n^2-2n

D. 2n+1

E. 3n2+1

F. n+1

G. 2n2-1

Answer: 2n2-1

1005.

Question: If b^2, a^2, c^2 are in AP then a + b, b + c, c + a will
be in :

Options:

A. AP

B. GP

C. HP

D. None of these

Answer: HP

1006.

Question: A stone dropped from a certain height can reach
the ground in 5 seconds. If the stone is stopped after 3 seconds of its fall, then allowed to fall again, then the time taken by the stone to reach the ground for the remaining distance is -

Options:

A. 2 sec

B. 3 sec

C. 4 sec

D. None of these

Answer: 4 sec

1007.

Question: The mean and variance of a binomial distribution
are 8 and 4 respectively, then p(x = 1) is equal to

Options:

A. 1

B. 212

C. 1

D. 24

E. 1

F. 26

G. 1

H. 28

Answer: $1/2^{12}$

1008.

RajTest

Question: If a cos a + i sin a, b = cos ß + i sin ß,
b
C
=
C
a
cos y + i sin y and -=1 then
b
C
a
[cos (β- γ) + cos(γ - α) + cos(a - β)] is equal to
:

Options:

A. 3

B. 2

C. -3

D. 2

E. 0

F. 1

Answer: 1

1009.

Question: The angle between the
x+1 y-2z+3
=
2
5
and
4
straight lines
x-1 y+2 z-3
is -
1
2 -3

Options:

A. 45°

B. 30°

C. 60°

D. 90°.

Answer: 90°.

1010.

Question: If z = tan
-1 y then the value of
X
equal to -
dz dz
2+
дx² дy²

Options:

A. - y

B. x² + y²

C. X

D. x² + y²

E. 2xy

F. x² + y²

G. 0

Answer: 0

1011.

Question: Out of the following which maxims of Teaching
is comparatively less appropriate while using
Audio - Visual Aids in Teaching of
Mathematics

Options:

A. Multisensory Experience

B. From Simple to Complex

C. From Known to Unknown

D. From Indefinite to Definite.

Answer: From Known to Unknown

1012.

Question: Who was the propounder of Unit Approach?

Options:

A. Jerome Bruner

B. B. S. Bloom

C. H. C. Morrison

D. Ziller

Answer: H. C. Morrison

1013.

Question: The centroid of a triangle is (2, 7) and two of its
vertices are (4, 8) and (-2, 6). Then third vertex
is:

Options:

A. (0,0)

B. (4,7)

C. (7,4)

D. (7,7)

RajTest

Answer: (4,7)

1014.

Question: How many words can be formed with the letters
of the word "POSTMAN", if every word begins with P and ends with N?

Options:

A. 720

B. 5040

C. 120

D. 4320

Answer: 120

1015.

Question: The area bounded by y = logx, x axis and ordinates x = 1, x = 2 is :

Options:

A. 1

B. (log2)2 sq. unit

C. 2

D. log (2) sq. unit

E. log() sq. unit

F. log 4 sq. unit

Answer: log (2) sq. unit

1016.

Question: Given that P(A) = P(B)=P(A)=1/then the probability P
B
A
is equal to :

Options:

A. 1

B. 4

C. 3

D. 4

E. 1

F. 8

G. None of these

Answer: None of these

1017.

Question: If A=010 then A^1 is -
100

Options:

A. - A

B. A

C. I

D. 0

Answer: I

1018.

Question: When 340 is divided by 19, the remainder is:

Options:

A. 3

B. 7

C. 5

D. 17

Answer: 5

1019.

Question: The method for determination of a root of a non
linear equation which uses two initial guess roots but does not require that they must bracket the root, is?

Options:

A. Bisection method

B. Regula - falsi method

C. Secant method

D. Newton - Raphson method

Answer: Secant method

1020.

Question: Out of the following statements, which one is not
the General objective of Teaching of Mathematics at Primary level?

Options:

A. Develops an interest in Mathematics so that

B. he gets ready to study it by keen efforts.

C. Develops ability to solve problems of

D. daily life of various professions.

E. Gets a chance to enter the world of

F. Mathematics with pleasure

G. Learn to calculate quickly with clarity.

RajTest

Answer: Develops ability to solve problems of daily life of various professions.

1021.

Question: If log2x + log2y≥6 then the least value of (x + y)
is:

Options:

A. 4

B. 9

C. 32

D. 16

Answer: 16

1022.

Question: The directional derivative of in the direction of
r is

Options:

A. 1

B. r2

C. 1

D. r2

E. 1

F. r3

G. 1

H. r3

Answer: -1
- r2

1023.

Question: m
-; (m≠-1) and
If tana =
m+1
tanß= 2m+1: (m-1) then a + ß is equal to:

Options:

A. π

B. 4

C. π

D. 3

E. π

F. 6

G. None of these

Answer: π
- 4

1024.

Question: For any real numbers x and y, we write x Ry <=>
$x^2 - y^2 + \sqrt{3}$ is an irrational number. Then the
2
relation R is:

Options:

A. reflexive

B. symmetric

C. Transitive

D. None of these

Answer: reflexive

1025.

Question: A function f from the set of natural numbers to integers is defined by:
n-1
when n is odd
f(n) =
2
n
when n is even
2
then function is:

Options:

A. one one but not onto

B. onto but not one

C. one

D. one one and onto both

E. neither one one nor onto

Answer: one one and onto both

1026.

Question: Which one of the following is not a principle of
Linear Programming?

Options:

A. Principle of small steps

B. Principle of immediate feedback

C. Principle of slow pacing

D. Principle of active responding

Answer: Principle of slow pacing

RajTest

1027.

Question: dy
If y=sinx + sinx + √ sinx + ...∞ then
is
dx
equal to :

Options:

A. COS X

B. 2y-1

C. - COS X

D. 2y-1

E. sin x

F. 1-2y

G. - sin x

H. 1-2y

Answer: COS X
- 2y-1

1028.

Question: If the angle θ
x+1 y-1 z-2
2
2
between the line
and the
plane
1
2x-y+2z+4=0 is such that sin 0 = - .
3
The value of a is –

Options:

A. 4

B. 3

C. 3

D. 4

E. 3

F. 5

G. 5

H. 3

Answer: 5
- 3

1029.

Question: Which of the following formula is the Simpson's
3 th rule for numerical integration?
8

Options:

A. Xn

B. nydx

C. 3h

D. =

E. (yo+yn) + 3(y1+V2 + V4 + Y5 + 7 + ... + yn-1) + yn

F. Xo

G. mydx =

H. 3h

I. 0

J. {(yo+yn) + 3(1 + 2 + 4 + 5 + ... + yn-1) + 2(уз + 86 + ... + Vn-2)}

K. Xo

L. Xn

M. 3h

N. anydx = 3 (tn) + 3(1 + 2 + ... + Уп-1) + 2(Уз + У6 + ... + Уп-3)}

O. 2

P. Xo

Q. Sydx = 3(+) + 3(1 + 2 + ... + Уп-2) + 2(уз + 6 + ... + n-3)}

R. 2

Answer: mydx =
- 3h
- 0
- {(yo+yn) + 3(1 + 2 + 4 + 5 + ... + yn-1) + 2(уз + 86 + ... + Vn-2)}
- Xo

1030.

Question: If a=i+j+k, b=2i-4k, c=i+aj+3k are coplanar, then the value of a is :

Options:

A. 5

B. 2

C. 3

D. 5

E. 7

F. 3

G. 5

H. 3

RajTest

Answer: 5
- 3

1031.

Question: If a=(i+j+k), a.b=1 and axb=j-k then b is:

Options:

A. i-j+k

B. 2j-k

Answer: i-j+k

1032.

Question: Out of the following which one is not the statement of motivational teacher of Mathematics

Options:

A. I want to turn children on Mathematics in

B. the same way, that I am.

C. I love Mathematics and yet it has such a

D. negative image. I want to help change that

E. image.

F. You could not easy with Maths.

G. I want to show children that Mathematics

H. is a fascinating subject.

Answer: You could not easy with Maths.

1033.

Question: The distance travelled s (in cm) by a particle in t
seconds is given by $s = t^3 + 2t^2 + t$. The speed of the particle after 1 second will be :

Options:

A. 8 cm/s

B. 6 cm/s

C. 2 cm/s

D. None of these

Answer: 8 cm/s

1034.

Question: x; if x is rational
If f(x) = -x; if x is irrational
the following statement is true :

Options:

A. f(x) is an odd function

B. 1

C. f(x) is continuous at x =

D. 2

E. f(x) is continuous at x = 0

F. f(x) is a periodic function

Answer: f(x) is continuous at x = 0

1035.

Question: If lines x-1_y-2_z-3 and x-1_y-5_z-6
-3 2k
2
3k
1
-5
mutually perpendicular, then k is equal to -

Options:

A. -10

B. 7

C. 7

D. 10

E. -10

F. -7

Answer: -10/7

1036.

Question: A kite is flying at an inclination of 60° with the
horizontal plane. If the length of the thread is 120m, then the height of the kite from the horizontal plane is :

Options:

A. $60\sqrt{3}$ m

B. 60 m

C. 60

D. $\sqrt{3}$

E. m

F. 120 m

Answer: $60\sqrt{3}$ m

1037.

Question: Under which condition
X-XoУ-Yo_Z-Zo
l
m

RajTest

n
xy - plane?

Options:

A. l=0

B. m = 0

C. n=0

D. l=0, m= 0

Answer: n=0

1038.

Question: Which of the following methods is commonly used to solve assignment problems?

Options:

A. Stepping stone method

B. Hungarian method

C. Northwest corner method

D. Vogel's approximation method

Answer: Hungarian method

1039.

Question: Find the length of tangent, drawn from a point which is at a distance of 5cm from the centre of the circle of radius 3cm.

Options:

A. 3 cm

B. 4 cm

C. 2 cm

D. None of these

Answer: 4 cm

1040.

Question: The total number of divisors of number 360 are:

Options:

A. 30

B. 24

C. 6

D. 12

Answer: 24

1041.

Question: If f is a bounded function and p* is a refinement
of a partition p then which of the following statement is true?

Options:

A. L (f, p*) <L (f, p)

B. L (f, p*) L (f, p)

C. U (f, p*) U (f, p)

D. None of these

Answer: U (f, p*) U (f, p)

1042.

Question: A particle is projected with a velocity of 49m/sec.
making an angle 60° with the horizontal. Its time of flight is given by -

Options:

A. 10√3 sec

B. 5√3 sec

C. √3 sec

D. None of these

Answer: 5√3 sec

1043.

Question: 1
√2
√3
The series
+
+
is
22+1 3+1 42 +1

Options:

A. Convergent

B. Divergent

C. Oscillatory

D. None of these

Answer: Convergent

1044.

Question: If A = `[-1 0 2; 5 6 7; 0 3 0; 4 0 4]`, B = `[5 6; -3 2; 2 -1; 1 0]` and C = `[1 3 5; 2 4 -5; -4 -2; 2 -1]`. D = ABC, then d34 equals

Options:

A. 1

B. 38

C. -42

RajTest

D. multiplication is not possible

Answer: multiplication is not possible

1045.

Question: Relation R is defined as R = {(a, b) | (a - b) = km for some fixed integer m and a, b, k ∈ z}, then R is

Options:

A. Reflexive but not symmetric

B. Symmetric but not transitive

C. Transitive but not reflexive

D. An equivalence relation

Answer: An equivalence relation

1046.

Question: `((1+i)/sqrt(2))^8 + ((1-i)/sqrt(2))^8` equals :

Options:

A. 1

B. 2

C. 3

D. 4

Answer: 2

1047.

Question: n, nth roots of unity form a series in

Options:

A. Arithmetic progression

B. Geometric progression

C. Harmonic Progression

D. Arithmetic - Geometric Progression

Answer: Geometric progression

1048.

Question: Matrix `[1 -2 -3; 2 1 -2; 3 2 1]` is

Options:

A. symmetric

B. skew-symmetric

C. singular

D. non-singular

Answer: non-singular

1049.

Question: For n being a positive integer, `(-sqrt(-1))^(4n+3)` equals :

Options:

A. 1

B. -1

C. i

D. -i

Answer: i

1050.

Question: The true statement is

Options:

A. `|z1+z2|^2 < |z1|^2 + |z2|^2 + 2R (z1 z2)`

B. `|z1-z2|^2 > |z1|^2 + |z2|^2 - 2R (z1 z2)`

C. `|z1+z2|^2 + |z1-z2|^2 = 2(|z1|^2 + |z2|^2)`

D. `|z1+z2| < |z1| + |z2|`

Answer: `|z1+z2|^2 + |z1-z2|^2 = 2(|z1|^2 + |z2|^2)`

1051.

Question: A rectangular sheet of paper 30 × 60 cm is folded so as to form prisms on regular hexagonal bases. The ratio of the volumes of the two prism is

Options:

A. 1/2

B. 2/3

C. 1/sqrt(2)

D. sqrt(2)/sqrt(3)

Answer: 1/2

1052.

Question: A rectangular sheet of paper 30 cm long and 18 cm wide can be formed as the curved surface of a right circular cylinder in two ways. The ratio of their volumes is

Options:

A. 4/3 or 3/4

B. 5/3 or 3/5

C. 3/2 or 2/5

D. 1/2 or 2/1

Answer: 5/3 or 3/5

1053.

RajTest

Question: A is the corner of any cube and P, Q, R are the middle points of the edges which terminate at A. If APQR and the corresponding tetrahedra at the other corners are removed, then the true statement for the resulting solid is

Options:

A. number of edges = 36

B. number of edges = 24

C. number of vertices = 24

D. number of vertices = 36

Answer: number of edges = 24

1054.

Question: For x = -5 + 2`sqrt(-4)`, then value of (`x^4 + 9x^3 + 35x^2 – x + 4`) equals

Options:

A. 160

B. 240

C. -160

D. 4

Answer: -160

1055.

Question: How many square yards of canvas is required for a conical tent 9 ft. high so that a man 6 ft. high could stand within a radius of 2 ft. from the centre ? (in square yards)

Options:

A. 2`sqrt(13)`

B. 18`pi` `sqrt(13)`

C. 4`pi` `sqrt(13)`

D. 2`pi` `sqrt(13)`

Answer: 2`pi` `sqrt(13)`

1056.

Question: The volume of the solid generated by the revolution of an equilateral triangle of side 'p' unit about one of its sides is: (in cube unit)

Options:

A. `(pi p^3)/3`

B. `(pi p^3)/4`

C. `(pi p^3)/5`

D. `(pi p^3)/6`

Answer: `(pi p^3)/4`

1057.

Question: The area of that circular section of a sphere which is at a distance of 7 cm from the centre is 144 `pi` sq. cm. Then the area that section which is at a distance of 5 cm from the centre (in sq. cm) is

Options:

A. 168

B. `sqrt(168)`

C. `sqrt(168 pi)`

D. 168 `pi`

Answer: 168 `pi`

1058.

Question: A cone, a hemisphere and a cylinder stand on equal bases and have the same height, then the ratio of their volumes is

Options:

A. 1:2:3

B. 2:3:4

C. 3:4:5

D. 4:5:6

Answer: 1:2:3

1059.

Question: Into each end of a solid circular cylinder whose length is 10 cm and diameter is 8 cm, a conical cavity is bored; if the diameter of each cavity is 6 cm and its depth is 4 cm, then the whole surface of remaining solid (in sq. cm) is

Options:

A. 94 `pi`

B. 110 `pi`

C. 124 `pi`

D. 124

Answer: 124 `pi`

1060.

Question: Three equal balls of 5 cm in diameter lie on a floor so as to touch one another, and a fourth ball equal in radius is placed on them. The height of centre of the fourth ball above the floor in cm is :

Options:

A. `5 (1/sqrt(3) + 1/2)^(1/2)`

B. `5 (1/sqrt(3) + 1/2)`

RajTest

C. `5(sqrt(3)+1)`

D. `5 (sqrt(3)/2 + 1)`

Answer: `5 (sqrt(3)/2 + 1)`

1061.

Question: A radian = `lambda` (a right angle), then `lambda` equals (in radian) is

Options:

A. `pi`

B. `2/pi`

C. `3/pi`

D. `pi/3`

Answer: `2/pi`

1062.

Question: If `tan theta = 1/sqrt(7)`, then the value of `(cosec^2 theta - sec^2 theta) / (cosec^2 theta + sec^2 theta)` equals :

Options:

A. `sqrt(7)/4`

B. 1/4

C. 3/4

D. -3/4

Answer: 3/4

1063.

Question: From the top of a cliff, 60 metres high, the angle of depression of the top and bottom of a tower are observed to be 30° and 60°. The height of the tower is

Options:

A. 40 m

B. `60/sqrt(3)` m

C. `60 sqrt(3)` m

D. 60 m

Answer: 40 m

1064.

Question: A sphere of radius 2 inches is placed on the top of another sphere of radius 3 inches. The volume of the cone that will just cover the both spheres (in cubic inches) is

Options:

A. 72 `pi`

B. 54 `pi`

C. 81 `pi`

D. 27 `pi`

Answer: 81 `pi`

1065.

Question: `cos 22 (1/2)`° equals

Options:

A. `(sqrt(3)+sqrt(2))/2`

B. `(sqrt(2)-sqrt(2))/2`

C. `(sqrt(2)+sqrt(2))/2`

D. `(sqrt(1)+sqrt(2))/2`

Answer: `(sqrt(2)+sqrt(2))/2`

1066.

Question: In the given figure AD is the bisector of angle A, then length of this bisector `delta` equals

Options:

A. `(2bc)/(b+c) cos (A/2)`

B. `(bc)/(b+c) cos (A/2)`

C. `(2bc)/(b+c) cos (A/2)`

D. `(bc)/(b+c) cos (A/2)`

Answer: `(2bc)/(b+c) cos (A/2)`

1067.

Question: If A + B + C = 180°, then if tan A + tan B + tan C = `lambda` tan A tan B . tan C, then `lambda` equals

Options:

A. -1

B. 1

C. 2

D. 1/2

Answer: 1

1068.

Question: One of the general solution of `sin x + cos x = sqrt(2) cos A` is ; (`x > pi/4`)

Options:

A. `2n pi + pi/4 + A`

B. `n pi + pi/4 + A`

C. `n pi/2 + pi/4 + A`

D. `4n pi + pi/4 + A`

Answer: `2n pi + pi/4 + A`

RajTest

1069.

Question: The most general value of `theta` satisfying both the equations `sin theta = -1/2` and `tan theta = 1/sqrt(3)` is

Options:

A. `n pi + (7pi)/6`

B. `2n pi + (7pi)/6`

C. `2n pi - (7pi)/6`

D. `n pi pm (7pi)/6`

Answer: `2n pi + (7pi)/6`

1070.

Question: `(2 tan^-1 (1/3) + tan^-1 (1/7))` equals :

Options:

A. `pi/3`

B. `pi/4`

C. `pi/6`

D. `2pi/3`

Answer: `pi/4`

1071.

Question: `lim_(x->0) (a^x-1)/(b^x-1)` equals (a `ne` b)

Options:

A. `log_b a`

B. `log_a b`

C. `log a`

D. `log_a b`

Answer: `log_b a`

1072.

Question: For function `sin x / |x|` at x = 0, the true statement is

Options:

A. function is differentiable

B. left hand limit does not exist

C. right hand limit does not exist

D. function is discontinuous

Answer: function is discontinuous

1073.

Question: If the function f is derivable at x = a, then `lim_(x->a) (x f(a) - a f(x))/(x-a)` equals

Options:

A. `f(a)-a f'(a)`

B. `a f(a)-f'(a)`

C. `a f(a)+f'(a)`

D. `f'(a)-a f(a)`

Answer: `f(a)-a f'(a)`

1074.

Question: The derivative of `tan^-1 ( (sqrt(1+x^2)-1)/x )`, `x > 0` with respect to `sin^-1 ( (2x)/(1+x^2) )`, `x > 0` equals

Options:

A. 1/2

B. 1/4

C. 1

D. 2

Answer: 1/4

1075.

Question: `(sin^-1 (5/13) - cos^-1 (12/13))` equals:

Options:

A. `sin^-1 (5/13)`

B. `sin^-1 (16/65)`

C. `tan^-1 (5/16)`

D. `sin^-1 (56/65)`

Answer: `sin^-1 (16/65)`

1076.

Question: The rate of working of an engine is given by f(v) = 15v + `6000/v`, `0 le v le 30`, v unit being the speed of the engine. Then the value of v for which the rate of working is least, is

Options:

A. 20 unit

B. 30 unit

C. 40/3 unit

D. 45/2 unit

Answer: 20 unit

1077.

Question: If p and q are the intercepts on x and y axes respectively of a tangent to any point (x, y) of the curve `sqrt(x/a) + sqrt(y/b) = 1`, then `(1/p + 1/q)` equals

RajTest

Options:

A. 1

B. 2

C. `sqrt(2)`

D. `1/sqrt(2)`

Answer: 1

1078.

Question: The acute angle of intersection of following curves is `x^2 – y^2 = a^2`, `x^2 + y^2 = a^2 sqrt(2)`

Options:

A. `tan^-1 2`

B. `tan^-1 sqrt(2)`

C. `pi/4`

D. `pi/3`

Answer: `pi/4`

1079.

Question: The function `f(x) = (lambda cos theta + sin theta) / (sin theta + 2 cos theta)` is monotonically increasing if

Options:

A. `lambda > 3`

B. `lambda < 2`

C. `lambda > 2`

D. `lambda < 5/2`

Answer: `lambda < 2`

1080.

Question: The true statement for the function `f(x) = sin 2x - x`, where `-pi/2 le x le pi/2` is:

Options:

A. maxima at `x = pi/3`

B. minima at `x = pi/6`

C. minimum value is `(pi/6 - sqrt(3)/2)`

D. maximum value is `(pi/6 + sqrt(3)/2)`

Answer: minimum value is `(pi/6 - sqrt(3)/2)`

1081.

Question: Which of the following statement is incorrect in context of use of diagnostic test in mathematics?

Options:

A. To know what kind of errors student make.

B. To know what are causes of errors.

C. To know is there any relation of these errors with other errors.

D. To know the achievement of students in mathematics.

Answer: To know the achievement of students in mathematics.

1082.

Question: 'Analytical Method' of Teaching of Mathematics is based on which maxims of teaching?

Options:

A. known to unknown

B. unknown to known

C. Rule to example

D. General to specific

Answer: unknown to known

1083.

Question: A mathematics teacher prepares a question in his Unit Test that :
The value of sin(A + B) is equal to :
(a) sin A sin B
(b) sin A cos B
(c) sin A sin B + cos A cos B
(d) sin A cos B + cos A sin B
The above question prepared by teacher is based on instructional objective of which of the following level :

Options:

A. knowledge

B. understanding

C. application

D. skill

Answer: knowledge

1084.

Question: Which of the following is a type of disability in which a child faces problem only with mathematical tasks ?

Options:

A. Locomotor Disability

B. Dyscalculia

C. Dysphasia

D. Dysgraphia

Answer: Dyscalculia

RajTest

1085.

Question: Which of the following statement is incorrect in context of characteristics of oral mathematics?

Options:

A. Students become quick and early respondee with oral mathematics exposure.

B. Oral mathematics saves time

C. Getting logical and systematic solutions are not possible through oral mathematics.

D. It gives confidence and patience in student.

Answer: Getting logical and systematic solutions are not possible through oral mathematics.

1086.

Question: The use of mathematics needed for vocational, consumer social, recreational & home making activities, is known as

Options:

A. Vocational Mathematics

B. Recreational Mathematics

C. Functional Mathematics

D. Social Mathematics

Answer: Functional Mathematics

1087.

Question: Which of the following statement is not correct in context of remedial teaching of Mathematics for slow learners?

Options:

A. To encourage students to solve the problem outside the text book.

B. To encourage students to solve the problems with behavioural examples of daily life.

C. Use of audio-visual aids while teaching.

D. Making them active only with entertaining activity.

Answer: Making them active only with entertaining activity.

1088.

Question: Who stated that "A project is a whole-hearted purposeful activity proceeding in a Social Environment"?

Options:

A. Stevenson

B. Kilpatrik

C. Ballard

D. Bertrand Russel

Answer: Kilpatrik

1089.

Question: Taylor frame is used to teach Mathematics to which of the following category of children with disability?

Options:

A. Children with Visual Impairment

B. Children with Hearing Impairment

C. Children with Locomotor Disability

D. Children with Muscular Dystrophy

Answer: Children with Visual Impairment

1090.

Question: Which of the following statement is not related to 'Skill' objective of Mathematics Teaching ?

Options:

A. Able to draw Geometrical figures quickly & accurately.

B. Able to calculate quickly and accurately.

C. Able to read Tables and Graphs accurately.

D. Able to recite definitions of Mathematical concepts.

Answer: Able to recite definitions of Mathematical concepts.

1091.

Question: Which of the following principles of curriculum construction is not appropriate in context of Mathematics curriculum preparation ?

Options:

A. Principle of usefulness for higher education

B. Principle of Child Centeredness

C. Principle of Activity

D. Principle of Teacher Centeredness

Answer: Principle of Teacher Centeredness

1092.

Question: If a, b, c and d are four distinct prime numbers with 'a' as smallest prime number, then abcd is

RajTest

Options:

A. a prime number

B. an odd number

C. a rational number

D. an even number

Answer: an even number

1093.

Question: If the medians of two sides of a triangle meet at right angles, the lengths of these two sides are of a and b units. The length of third side of triangle is

Options:

A. $V(2(a^2+b^2))/5$

B. $V(2(a^2+b^2))/3$

C. $V(a^2+b^2)/5$

D. $V(a^2+b^2)/ab$

Answer: $V(a^2+b^2)/5$

1094.

Question: In the given figure, the sides AB and CD are parallel. Let the area of triangle OAD be α and area of triangle OBC be β, then the true statement is :
D
C
O
A
B

Options:

A. $\alpha = \beta$

B. $\alpha > \beta$

C. $\alpha < \beta$

D. None of these

Answer: $\alpha = \beta$

1095.

Question: If x is not equal to zero, then
((-8x³)/27)^(-1/3) * (8x³/27)^(-1/3)
is equal to

Options:

A. 0

B. -3/(2x)

C. -3/x

D. 3/x

Answer: 0

1096.

Question: The solution of the following system of equations is
$x/a - y/b = a^2 + b^2$
$ax + by = a^2 + b^2$

Options:

A. -a, -b

B. a, b

C. ab, ab

D. b^2/a^2, a^2/b^2

Answer: a, b

1097.

Question: Let α, β, γ be the roots of $3x^3 - 10x^2 + x + 6 = 0$, if $\alpha\beta - \alpha - 2 = 0$, then γ is

Options:

A. 2/3

B. -2/3

C. 3/2

D. -3/2

Answer: -2/3

1098.

Question: If $(2 + \sqrt{3})$ is one root of $x^4 + 2x^3 - 16x^2 - 22x + 7 = 0$, then one of the other root is

Options:

A. $-3 - \sqrt{2}$

B. $\sqrt{3} - \sqrt{2}$

C. $\sqrt{3} + \sqrt{2}$

D. $3 + \sqrt{2}$

Answer: $-3 - \sqrt{2}$

1099.

Question: Let α, β, γ be the roots of $x^3 - 7x^2 + 36 = 0$, and if $\beta - \alpha = 5$, then γ is

Options:

A. -1/6

B. 1/6

C. 6

D. -6

Answer: 6

RajTest

1100.

Question: In the expansion of $(1 + x)^{15}$, the coefficients of (r - 1)th term and (2r + 3)th term are equal, then r equals :

Options:

A. 3

B. 6

C. 4

D. 5

Answer: 5

1101.

Question: In the given figure, PQ is parallel to BC, and lengths AP = 4x – 3, AQ = 8x – 7, PB = 3x – 1, QC = 5x – 3, then x equals :

Options:

A. 1/2

B. 1/3

C. 1/4

D. 1

Answer: 1

1102.

Question: If x = 2/3, then greatest term in the expansion of $(1 + x)^9$ will be

Options:

A. T3

B. T4

C. T6

D. T7

Answer: T4

1103.

Question: In the expansion of $(1-x)^{-3}$, $|x| < 1$, if the coefficient of rth term is $\lambda + 2C_2$, then r equals

Options:

A. λ

B. $\lambda +1$

C. $\lambda-1$

D. $\lambda+2$

Answer: $\lambda +1$

1104.

Question: If n is a positive integers, then $n(n^2 - 1) (3n + 2)$ is divisible by

Options:

A. 18

B. 48

C. 24

D. 16

Answer: 24

1105.

Question: If $x \in R$, then minimum and maximum limit of $(x^2-2x+9)/(x^2+2x+9)$ are

Options:

A. 1/4, 2

B. 1, 2

C. 1/2, 2

D. 3/2, 2

Answer: 1/2, 2

1106.

Question: The roots of equation $1/(x+p) + 1/(x+q) = 1/r$ are equal and opposite in sign, then

Options:

A. $r = pq/(p+q)$

B. $r = (p+q)/2$

C. $r = (p+q)/pq$

D. $r = pq/2$

Answer: $r = (p+q)/2$

1107.

Question: If $a^2 + b^2+c^2 > bc + ca + ab$ is true, then values of a, b, c are

Options:

A. positive real numbers only

B. whole numbers only

C. rational numbers only

D. all non-zero real numbers

Answer: all non-zero real numbers

1108.

Question: The coefficient of x^4 in the expansion of $(1 + x + x^2 + x^3)^{11}$ is

Options:

RajTest

A. 990

B. 1000

C. 980

D. 890

Answer: 990

1109.

Question: If S_1, S_2, ... S_n are the sums of n infinite geometrical series whose first terms are 1, 2, 3, ..., n and common ratios are 1/2, 1/3, 1/4, ..., 1/(n+1), then $(S_1 + S_2 + S_3 + ... + S_n) = ?$

Options:

A. 1/2 n(n+2)

B. 1/3 n(n+2)

C. 1/3 n(n+3)

D. 1/4 n(n+3)

Answer: 1/3 n(n+3)

1110.

Question: If n harmonic means are inserted between 1 and r, then 1st mean / nth mean = ?

Options:

A. (n+r)/(nr-1)

B. (2n+r)/(nr-1)

C. (n+r)/(nr+r)

D. (n+r)/(nr+1)

Answer: (n+r)/(nr+1)

1111.

Question: If $^{18}C_{10} = {}^{18}C_{15}$, then $^{27}C_x$ equals

Options:

A. 702

B. 351

C. 729

D. 243

Answer: 351

1112.

Question: Words are framed from the letters of the word GANESHPURI as follows, then the true statement is

Options:

A. if all vowels are always together, then (7!) (4!) words

B. letters E, H, P are never together, then (10!)/3 words

C. the letter G always occupies the first place, then (10!) words

D. all the letters are taken together, then (9!) words

Answer: if all vowels are always together, then (7!) (4!) words

1113.

Question: For an arithmetical progression
$a_1, a_2, a_3, ...,$
$a_1^2 - a_2^2 + a_3^2 - a_4^2 + ... - a_2k^2 = ?,$
d being the common difference :

Options:

A. $-kd (a_1 + a_2k)$

B. $kd (a_1 + a_2k)$

C. $-kd (a_1 - a_2k)$

D. $kd (a_1 - a_2k)$

Answer: $-kd (a_1 + a_2k)$

1114.

Question: $\sin x + \cos x / \sqrt{\sin 2x}\, dx = \sin^{-1} (\sin x - \lambda \cos x) + C$, <x< then equals

Options:

A. -1

B. -2

C. 1

D. 2

Answer: 1

1115.

Question: $\int e^{(x-1)/(x+1)^3}\, dx = \lambda e^{(x-1)/(x+1)^2} + C$, then λ equals :

Options:

A. x

B. -x

C. 1

D. -1

Answer: 1

1116.

Question: $\int \sqrt{1 + \sec x}\, dx$ equals

Options:

A. $\sin^{-1} [\sqrt{2} \sin(x/2)] + C$

RajTest

B. $(1/2)\sin^{-1}[\sqrt{2}\sin(x/2)] + C$

C. $2\sin^{-1}[\sqrt{2}\sin(x/2)] + C$

D. $\sqrt{2}\cos^{-1}[\sqrt{2}\cos(x/2)] + C$

Answer: $2\sin^{-1}[\sqrt{2}\sin(x/2)] + C$

1117.

Question: $\int_{(-\pi/2)}^{(\pi/2)} \sqrt{\cos x - \cos^3 x}\, dx$ equals

Options:

A. -2/3

B. 2/3

C. -4/3

D. 4/3

Answer: 4/3

1118.

Question: $\int_{(0)}^{(3)} |1-x|\, dx$ equals

Options:

A. 1/2

B. 3/2

C. 5/2

D. 7/2

Answer: 5/2

1119.

Question: A swimming pool is 40 m long, 20 m wide and 8 m deep at the deep end, and 3 m deep at shallow end, its bottom being rectangular. If the pool is filled by pumping water into it at rate of 40 cubic m per minute; how fast is the water level rising when it is 3 m deep at the deep end (in metre per minute)?

Options:

A. 1/12

B. 1/10

C. 1/8

D. 1/6

Answer: 1/12

1120.

Question: The area enclosed by the curve $y=4x(x-1)(x-2)$ and x-axis (in sq. units) is

Options:

A. 1

B. 2

C. 3

D. 4

Answer: 2

1121.

Question: The area enclosed by the curves $x = \sin^{-1}y$ and $x = \cos^{-1}y$ and y-axis lying in the first quadrant (in sq. units) is

Options:

A. $\sqrt{2}-1$

B. $\sqrt{2}+1$

C. $\sqrt{3}-1$

D. $\sqrt{3}+1$

Answer: $\sqrt{2}-1$

1122.

Question: The area of the region bounded by the curves $y = x^2 + 2$, $y = x$, $x = 0$ and $x = 3$, in square units is

Options:

A. 21/4

B. 21/2

C. 39/2

D. 39/4

Answer: 21/2

1123.

Question: The area enclosed in the region $\{(x, y) : x^2 + y^2 \le 1 \le x + 2\}$ (in sq. units) is

Options:

A. $\pi/4 + 2/5 - (1/2)\sin^{-1}(3/5)$

B. $\pi/4 - 2/5 - (1/2)\sin^{-1}(3/5)$

C. $\pi/4 + 2/5 + (1/2)\cos^{-1}(3/5)$

D. $\pi/4 - 2/5 - (1/2)\cos^{-1}(3/5)$

Answer: $\pi/4 + 2/5 - (1/2)\sin^{-1}(3/5)$

1124.

Question: ABC is a triangle and D, E, F are the middle points of sides BC, CA and AB respectively. Point K divides AD internally in the ratio 2: 1, then the true statement is

Options:

A. BE is divided internally by K in the ratio 1:2

B. FC is divided internally by K in the ratio 3:2

RajTest

C. BE and CF both are divided internally in the ratio 2: 1

D. K divides BE and CF in an arbitrary ratio

Answer: BE and CF both are divided internally in the ratio 2: 1

1125.

Question: ∫(0)^(1) log (1/x - 1) dx equals

Options:

A. 1

B. 0

C. 1/2

D. 2

Answer: 0

1126.

Question: Two of the straight lines represented by the equation $ax^3 + bx^2y + cxy^2 + dy^3 = 0$ will be at right angles if $a^2 + d^2 + \lambda = 0$, then λ equals :

Options:

A. ab + cd

B. ac + bd

C. ad + bc

D. abcd

Answer: ac + bd

1127.

Question: A point P moves so that the sum of the squares of its distances from the four sides of a square is constant; then the locus of this moving point P is

Options:

A. pair of straight lines

B. circle

C. ellipse

D. hyperbola

Answer: circle

1128.

Question: If P and Q are the ends of the conjugate diameters of an ellipse, then the locus of the middle points of PQ is

Options:

A. director circle of the ellipse

B. a hyperbola

C. a rectangular hyperbola

D. a concentric ellipse

Answer: a concentric ellipse

1129.

Question: Let e and e' be the eccentricities of the hyperbola and its conjugate hyperbola, then true statement is

Options:

A. e=-e'

B. $e^2 = 1 + e'^2$

C. $1/e^2 + 1/e'^2 = 1$

D. ee' = 2

Answer: $1/e^2 + 1/e'^2 = 1$

1130.

Question: If the line lx + my + n = 0 touches the parabola $y^2 = x$, then

Options:

A. Imn = 1

B. $n^2 = 4$ Im

C. $l^2 = mn$

D. $m^2 = 4$ In

Answer: $m^2 = 4$ In

1131.

Question: The equation of the straight line which passes through the intersection of the straight lines 2x - 3y + 4 = 0 and 3x + 4y - 5 = 0, and is perpendicular to the line 6x-7y+ 8 = 0 is

Options:

A. 119x+102y = 125

B. 119x-102y = 125

C. -119x + 102y = 125

D. 119x+102y + 125 = 0

Answer: 119x+102y = 125

1132.

Question: The angle between the line $\vec{r} = (\hat{i} - \hat{i}+k) + \lambda (2\hat{i} - \hat{i} + 3k)$ and the plane $\vec{r}. (2\hat{i} + \hat{i} - k) = 4$ is

Options:

A. π/2

B. π/3

RajTest

C. π/6

D. 0°

Answer: 0°

1133.

Question: Following lines x-1/2 = y-2/3 = z-3/4 and x-4/5 = y-1/2 = z intersect at point :

Options:

A. (1,2,3)

B. (4,1,0)

C. (-1,-1,-1)

D. (1, 1, 1)

Answer: (-1,-1,-1)

1134.

Question: Shortest distance between the lines $r=\bar{a}_1+\lambda b_1$ and $r=\bar{a}_2+\mu b_2$ is:

Options:

A. $[(b_1 x b_2)-(\bar{a}_2-\bar{a}_1)]/(b_1.b_2)$

B. $|(b_1 x b_2)-(\bar{a}_2-\bar{a}_1)|/|(b_1 x b_2)|$

C. $|(b_1 x b_2)-(\bar{a}_2-\bar{a}_1)|/(b_1.b_2)$

D. $|(b_1 x b_2)|/|\bar{a}_1.\bar{a}_2|$

Answer: $|(b_1 x b_2)-(\bar{a}_2-\bar{a}_1)|/|(b_1 x b_2)|$

1135.

Question: The angle between following pair of lines is: r = 4î-ĵ+λ (î+2ĵ-2k) and r = î-ĵ + 2k + μ (2î + 4ĵ-4k)

Options:

A. π/2

B. π/3

C. π/6

D. 0°

Answer: 0°

1136.

Question: The plane lx + my = 0 is rotated about its line of intersection with the plane z = 0 through an angle α. The equation of plane in its new position is lx + my ± $z\lambda\sqrt{l^2 + m^2} = 0$, then λ is :

Options:

A. cot α

B. tan α

C. sin α

D. cos α

Answer: tan α

1137.

Question: Plane x/a + y/b + z/c = 1 meets the axes at P, Q, R. The area of the triangle PQR is :

Options:

A. $(\Sigma a^2 b^2)^{1/2}$

B. $(1/2)(\Sigma ab)^{1/2}$

C. (1/2) Σ (a, b)

D. $(1/2) (\Sigma a^2 b^2)^{1/2}$

Answer: $(1/2) (\Sigma a^2 b^2)^{1/2}$

1138.

Question: A perpendicular PN is drawn from P(5, 9, 3) upon a line NL given by x-1/2 = y-2/3 = z-3/4, the coordinates of foot of perpendicular N are :

Options:

A. (2,3,4)

B. (3,5,7)

C. (1, 2, 3)

D. (-5,-9,-3)

Answer: (3,5,7)

1139.

Question: The mean and standard deviation of a group of 25 observations were calculated to be 20 and 5 respectively. It was later found that there was an error in recording one observation; it was recorded as 12 instead of 22. The standard deviation when the error is corrected is (approx.):

Options:

A. 4.4

B. 4.5

C. 4.7

D. 4.9

Answer: 4.7

1140.

Question: Let a, b, c be lengths of edges of a rectangular parallelopiped. Then the shortest distance between a diagonal and its edges not meeting the diagonal are: $\lambda bc/\sqrt{b^2+c^2}$, $\lambda ca/\sqrt{c^2+a^2}$, $\lambda ab/\sqrt{a^2+b^2}$, then λ is :

Options:

RajTest

A. 1/3

B. 1/2

C. 2

D. 1

Answer: 1

1141.

Question: Four whole numbers taken at random are multiplied together. The chance that the last digit in the product is 9 or 7 or 3 or 1 is:

Options:

A. 16/625

B. (64/625)

C. (4!)/(9!)

D. $1-(2/5)^4$

Answer: 16/625

1142.

Question: Let a = 2m+n and b=m-2n be the adjacent sides of a parallelogram, where m and n are unit vectors inclined at an angle of 60°. The lengths of the diagonals of parallelogram are :

Options:

A. √5,√5

B. 1,√3

C. √7,√13

D. √2,√17

Answer: √7,√13

1143.

Question: The true statement is :

Options:

A. $(axb)^2 = (a)^2(b)^2 - (a.b)^2$

B. $(axb)^2 = (a)^2(b)^2 + (a.b)^2$

C. If $|a+b|=|a-b| \Rightarrow$ a and b are not perpendicular.

D. If a and b are unit vectors and θ is the angle between them, then $\cos(\theta/2) = (1/2)|a-b|$.

Answer: $(axb)^2 = (a)^2(b)^2 - (a.b)^2$

1144.

Question: A lot of 100 bulbs from a manufacturing process is known to contain 10 defective and 90 non-defective bulbs. If a sample of 8 bulbs is selected at random, the probability that the sample has atleast one defective bulb is :

Options:

A. $1 - (9/10)^8\ (8!/10!)$

B. $(9/10)^8\ (8/10)$

C. $(9/10)^8$

D. $1 - (9/10)^8$

Answer: $1 - (9/10)^8$

1145.

Question: Let X and Y be sets and f: x → y be one-one and onto function, then the true statement is :

Options:

A. f^{-1} is neither one-one nor onto function.

B. f^{-1} is one-one but not onto function.

C. f^{-1} is onto but not one-one function.

D. f^{-1} is one-one as well as onto function.

Answer: f^{-1} is one-one as well as onto function.

1146.

Question: The rule of combination of a set G of elements e, a, b, c under an operation * is displayed in the adjoining operation table. Then for the group (G, *), the true statement is :

Options:

A. * is not commutative.

B. e is not the identity.

C. every element does not have an inverse.

D. G is an abelian group.

Answer: G is an abelian group.

1147.

Question: Let $H_1 = \{0, \pm2, \pm4, \pm6, \ldots\}$ $H_2 = \{0, \pm3, \pm6, \pm9, \ldots\}$ and $Z = \{0, \pm1, \pm2, \pm3, \ldots\}$, then the true statement is

Options:

A. $(H_1 \cap H_2, +)$ is not a subgroup of $(Z, +)$

B. $(H_1, +)$ is not a subgroup of $(Z, +)$

C. $(H_2, +)$ is not a subgroup of $(Z, +)$

D. $(H_1 \cap H_2, +)$ is not a subgroup of $(Z, +)$

Answer: $(H_2, +)$ is not a subgroup of $(Z, +)$

1148.

RajTest

Question: Let P, Q, R be proper subsets of universal set, then true statement is :

Options:

A. $(P \cup Q)' = P' \cup Q'$

B. $(P \cup Q)' = P' \cap Q'$

C. $(P \cup Q) \cup R = P \cap (Q \cup R)$

D. $P \cup (Q \cap R) = (P \cap Q) \cup (P \cap R)$

Answer: $(P \cup Q)' = P' \cap Q'$

1149.

Question: If $u = (8x^2 + y^2)(\log x - \log y)$, then $(x\partial u/\partial x + y\partial u/\partial y)$ equals

Options:

A. u/2

B. 2u

C. u

D. -2u

Answer: 2u

1150.

Question: The minimum value of $f(x, y) = xy + a^3/x + a^3/y$ for $a > 0$ is:

Options:

A. a^2

B. $2a^2$

C. $3a^2$

D. $4a^2$

Answer: $3a^2$

1151.

Question: Value of -5/2 is:

Options:

A. $(-8\sqrt{\pi})/5$

B. $(-8\sqrt{\pi})/15$

C. $(4\sqrt{\pi})/5$

D. $(\sqrt{\pi})/3$

Answer: $(-8\sqrt{\pi})/15$

1152.

Question: The value of ∫∫e^(ax + by) dx dy, over the triangle bounded by x = 0, y = 0, ax + by = 1 is

Options:

A. ab

B. a/b

C. b/a

D. 1/ab

Answer: 1/ab

1153.

Question: The value of $\iint r\sqrt{(a^2 - r^2)}\, dr\, d\theta$, over upper half of the circle $r = a \cos \theta$ is

Options:

A. $-a^3/3\ (\pi/2 + 2/3)$

B. $-a^3/3\ (\pi/2 - 2/3)$

C. $a^3/3\ (\pi/2 + 1)$

D. $-a^3/3\ (\pi/2 - 1)$

Answer: $-a^3/3\ (\pi/2 - 2/3)$

1154.

Question: If $x^2 = au + bv$, $y^2 = au - bv$, then $(\partial x/\partial u)(\partial x/\partial v)$ is equal to

Options:

A. 1

B. -1

C. 1/2

D. -1/2

Answer: 1/2

1155.

Question: If P* is a refinement of a partition P, then for a bounded function f, the true statement is :

Options:

A. $L(P^*, f) < L(P, f)$

B. $L(P^*, f) > U(P, f)$

C. $L(P^*, f) \geq L(P, f)$

D. $U(P^*, f) \geq U(P, f)$

Answer: $L(P^*, f) \geq L(P, f)$

1156.

Question: On $[0,\pi/4]$, the function f(x) is defined as below: f(x) = { cos x if x is rational , sin x if x is irrational now if P is a partition in $0,\pi/4$, then sup L (f, P) is :

Options:

A. $1 + 1/\sqrt{2}$

B. $1 + \sqrt{2}$

RajTest

C. $1 - 1/\sqrt{2}$

D. $1 - 1/\sqrt{2}$

Answer: $1 - 1/\sqrt{2}$

1157.

Question: A particle moves along the curve $x = t^3 + 1$, $y = t^2$, $z = 2t + 5$. The component of its acceleration at $t = 1$ in the direction $(\hat{i} + \hat{j} + k)$ is :

Options:

A. 8

B. $8/\sqrt{3}$

C. $(6\hat{i}+2\hat{j})$

D. $7/\sqrt{3}$

Answer: $8/\sqrt{3}$

1158.

Question: The directional derivative of $f(x, y, z) = x(x^2 - y^2) – z$ at $A(1, -1, 0)$ in the direction of $p = (2\hat{i} - 3\hat{j} + 6k)$ is :

Options:

A. -8/49

B. 8/7

C. -8/7

D. 0

Answer: -8/7

1159.

Question: The true statement for the series $\sum_{n=1}^{\infty} x^{n-1}/n(3)^n$ is:

Options:

A. convergent if $x > 3$

B. divergent if $x > 1$

C. divergent if $x > 0$

D. convergent if $x < 3$

Answer: convergent if $x < 3$

1160.

Question: The value of $\int_C [(\cos x \sin y - xy)\, dx + \sin x \cos y\, dy]$ where C is the circle $x^2 + y^2 = 1$, is :

Options:

A. 0

B. 1

C. $\pi/2$

D. π

Answer: 0

1161.

Question: The true statement is :

Options:

A. grad div f = curl curl f - ∇^2 f

B. grad curl f = 0

C. curl div f = 0

D. $(1/2)$ grad $f^2 = f \times$ curl f + $(f \cdot \nabla) f$

Answer: $(1/2)$ grad $f^2 = f \times$ curl f + $(f \cdot \nabla) f$

1162.

Question: If $f = 3xy\,\hat{i} - y^2\,\hat{j}$, evaluate $\int_C f \cdot dr$, where C is the curve $y = 2x^2$ in xy plane from (0, 0) to (1, 2).

Options:

A. -7/6

B. 7/6

C. 25/6

D. -25/6

Answer: -7/6

1163.

Question: If $|p(s)|$ is a non-zero constant, then direction of dp/ds is:

Options:

A. perpendicular to direction of p(s).

B. parallel to direction of p(s).

C. always makes acute angle with p(s).

D. it can have any direction.

Answer: perpendicular to direction of p(s).

1164.

Question: The value of $\int_A^B (F \times dF)$ from $A(a, 0, 0)$ to $B(a, 0, 2\pi b)$ along $r = (a \cos t)\,\hat{i} + (a \sin t)\,\hat{j} + b t k$ is:

Options:

A. $\pi\alpha(bj + ak)$

B. 2na (aj + bk + abi)

C. $2\pi\alpha(aj + bk)$

D. 2na(bj + ak)

Answer: 2na(bj + ak)

RajTest

1165.

Question: Solution of (x log x) dy/dx = 2y for y(2) = (log 2)², is :

Options:

A. $y = (x^2/4)(\log x)^2$

B. $y = (\log 2) . (\log x)$

C. $y = (\log x)^2$

D. $y = (\log x^2)$

Answer: $y = (\log x)^2$

1166.

Question: The solution of (x + y)dx+(3x+3y-4)dy=0 for y(1) = 0 is :

Options:

A. (x+3y) + 2 log |(x+y-2)| = 1

B. (3x+y) +2 log | x+y-2 | = 1

C. (x+3y) +2 log | x+y+2 | = 1

D. (3x + y) + 2 log |(x + y + 2)| = 1

Answer: (x+3y) + 2 log |(x+y-2)| = 1

1167.

Question: For the differential equation $(D^2-2D-1)\ y = e^x \cos x$, the particular integral is:

Options:

A. $(1/3)e^x \cos x$

B. $-(1/3)e^x \cos x$

C. $-(1/3)e^x \cos x$

D. $(1/3)e^x \sin x$

Answer: $-(1/3)e^x \cos x$

1168.

Question: For the differential equation $(D^2 + 3D + 2)y = e\text{^}(e^x)$, the particular integral is:

Options:

A. $e^{-2x}.e\text{^}(e^x) + e^x$

B. $e^{2x}. e\text{^}(e^x)$

C. $e^{-2x}.e\text{^}(e^x)$

D. $e\text{^}(e^x)$

Answer: $e^{-2x}.e\text{^}(e^x)$

1169.

Question: For the differential equation $(x + 2)\ d^2y/dx^2 - (2x+5)\ dy/dx + 2y = (x + 1)e^x$ one of the complementary function is :

Options:

A. $y = e^{2x}$

B. $y = x$

C. $y = e^x$

D. $y = e^{-x}$

Answer: $y = e^{2x}$

1170.

Question: Solution of dy/dx = 1 + tan (y-x) is :

Options:

A. $\sin(y+x) = e^x+C$

B. $\sin(y-x) = e^x+C$

C. $\cos(y-x)=e^x+C$

D. $\cos(y-x) = e^x+C$

Answer: $\sin(y-x) = e^x+C$

1171.

Question: Coplanar forces equal to 7P, 8P and 5P acting on a particle are in equilibrium, then the angle between 8P and 5P is :

Options:

A. 30°

B. 45°

C. 60°

D. 120°

Answer: 120°

1172.

Question: A straight line cuts the line of action of three concurrent forces OP, OQ, OR in A', B', C' respectively. If R is the resultant of P and Q. and P/OA' * Q/OB' = R/OC', then * is:

Options:

A. ÷

B. -

C. +

D. x

Answer: +

1173.

RajTest

Question: The moment of a force about a point is numerically = λ (the area of the triangle formed by the line representing the force and by joining the ends of this line to the point). Then λ is :

Options:

A. 1

B. 2

C. 1/2

D. 3

Answer: 2

1174.

Question: The position of a moving point at time t is given by x = a cos ωt, y = a sin ωt, its acceleration at time t is :

Options:

A. aω

B. $a\omega^2$

C. a tan ωt

D. $a^2\omega^2$

Answer: $a\omega^2$

1175.

Question: The particular integral of $(D + 3)^2 y = 5^x - \log 2$, is:

Options:

A. $5^x/(3+\log 5) - \log 2/9$

B. $5^x/(3+\log 5)^2 + \log 2/9$

C. $5^x/(3-\log 5)^2 - \log 2/9$

D. $5^x/(3-\log 5)^2 + \log 2/9$

Answer: $5^x/(3+\log 5)^2 + \log 2/9$

1176.

Question: If the convex set of all the feasible solutions of $AX = b, X \geq 0$, is a convex polyhedron, then _____ extreme points give an optimal solution. Fill the gap correctly by :

Options:

A. any of these

B. at least one of the

C. at least two of the

D. none of these

Answer: at least one of the

1177.

Question: The initial simplex table for some L.P.P. is as above : Now the false statement is :

Options:

A. the departing vector is a_5.

B. the entering vector is a_2.

C. the key element is 8.

D. the corresponding variables X4, X5, x6 form an identity matrix.

Answer: the corresponding variables X4, X5, x6 form an identity matrix.

1178.

Question: If we have a basic feasible solution consisting of (m + n - 1) independent allocations and a set of arbitrary number $u_i (i = 1, 2, ..., m)$ and $v_j (j = 1, 2, ..., n)$ satisfying $c_{rs} = u_r + v_s$ for all occupied cells(r, s), then the evalution $\Delta_{ij} (\geq 0)$ corresponding to each empty cell (i, j) is given by

Options:

A. $C_{ij} + (u_i+v_j)$

B. $C_{ij} + (u_i-v_j)$

C. $C_{ij} - (1/2)(u_i+v_j)$

D. $C_{ij} - (u_i+v_j)$

Answer: $C_{ij} - (u_i+v_j)$

1179.

Question: A particle is projected with a velocity of 196 m/s at an elevation of 30°, taking g = 9.8 m/s^2, the true statement is :

Options:

A. initial horizontal velocity = 98 m/s

B. greatest height attained = 980 m

C. time of flight = 20 s

D. initial vertical velocity = $98\sqrt{3}$ m/s

Answer: time of flight = 20 s

1180.

Question: One real root of equation $x^3 - 9x + 1 = 0$ lies between

Options:

A. 2 and 2.5

B. 2.4 and 2.6

C. 1 and 2.7

RajTest

D. 2.75 and 3

Answer: 2.75 and 3

1181.

Question: If $dy/dx = x - y^2$ and $y(0) = 1$, then $y(0.1)$ correct upto two decimal places (approx.) is :

Options:

A. 0.85

B. 0.84

C. 0.91

D. 1.01

Answer: 0.91

1182.

Question: An explicit formula for the sequence defined by the recurrence relation $b_n=2b_{n-1}+1$, with the initial condition $b_1 = 7$ is :

Options:

A. $b_n = 2^{n+1}+3$

B. $b_n = 2^{n+2}-1$

C. $b_n = 3.2^n+1$

D. $b_n = 4.2^n-n$

Answer: $b_n = 2^{n+2}-1$

1183.

Question: For $r \geq 0$, the generating function A(z) corresponding to numeric function $a_r = 4_r+3$, is

Options:

A. 64/(1-4z)

B. 32/(1-4z)

C. 16/(1-4z)

D. 128/(1-4z)

Answer: 64/(1-4z)

1184.

Question: Which of the following is the highest level objective under cognitive domain in Bloom Taxonomy of Educational Objectives?

Options:

A. Knowledge

B. Understanding

C. Evaluation

D. Analysis

Answer: Evaluation

1185.

Question: If $\Delta f(x) = 9x^2 + 11x + 5$, then f(x) equals :

Options:

A. $3x^{(3)} +10x^{(2)} + 5x^{(1)} + k$

B. $3x^{(2)}-10x^{(1)} + k$

C. $3x^{(3)} +10x^{(2)} + 15x^{(1)} + k$

D. $x^{(3)} -x^{(2)} + x^{(1)} + k$

Answer: $3x^{(3)} +10x^{(2)} + 5x^{(1)} + k$

1186.

Question: Who provided specific type of classification with the help of Audio-Visual aids based on Experiences known as 'Cone of Experiences'.

Options:

A. Edger Dale

B. Espich and Williams

C. Smith and Moore

D. Susan Markle

Answer: Edger Dale

1187.

Question: Which is the third step of Herbitian five step approach of lesson plan ?

Options:

A. Introduction or Preparation

B. Comparison and Association

C. Presentation

D. Generalization

Answer: Comparison and Association

1188.

Question: Which of the following is the correct logical order of steps of Unit Approach given by Morrison's ?

Options:

A. Exploration → Presentation → Assimilation → Recitation → Organisation

B. Presentation → Exploration → Assimilation → Recitation → Organisation

C. Presentation → Exploration → Recitation → Assimilation → Organisation

D. Exploration → Presentation → Assimilation → Organisation → Recitation

RajTest

Answer: Exploration → Presentation → Assimilation → Organisation → Recitation

1189.

Question: Who was the propounder of 'Mathetics' programmed instruction system ?

Options:

A. B.F. Skinner

B. Robert Mager

C. T.F. Gilbert

D. Lawrence Stalurow

Answer: T.F. Gilbert

1190.

Question: Which of the following Maxims is not related to Inductive Method of teaching Mathematics?

Options:

A. Specific to General

B. Concrete to Abstract

C. Rules to Example

D. Known to unknown

Answer: Rules to Example

1191.

Question: Which of the following statement is incorrect about Nature of Mathematics?

Options:

A. Mathematics has its own language from which term, concept, sign, formula's, principles are developed.

B. Mathematics is Universal Subject.

C. Numbers, places, measurements are the bases of Mathematics from which relationship between object and numerical conclusion have been made.

D. In Mathematics scope of generalization is limited.

Answer: In Mathematics scope of generalization is limited.

1192.

Question: Which of the following statement expresses understanding level instructional outcome?

Options:

A. Verification of the result.

B. Comparing similar concept or things.

C. Classify the facts on the basis of their traits.

D. Arranging mathematical steps in a systematic manner.

Answer: Classify the facts on the basis of their traits.

1193.

Question: In which teaching method, teacher provides learning material to students in class room, and instruct them to study throughly and get important points, then summarize it with the help of teacher?

Options:

A. Projected Method

B. Problem Solving Method

C. Supervised Study Method

D. Heuristic Method

Answer: Supervised Study Method

RajTest