Question Edited Successfully

BRINDHAVAN HR SEC SCHOOL,SUKKIRANPATTI

REVISION EXAMINATION 2025

10th Standard

Maths

Date : 11-03-25

Reg.No. : ☐☐☐☐☐☐

Exam Time : 03:00 Hrs

Total Marks : 100

PART -A

14 x 1 = 14

CHOOSE THE CORRECT ANSWER

1) If there are 1024 relations from a set A = {1, 2, 3, 4, 5} to a set B, then the number of elements in B is

(a) 3 (b) 2 (c) 4 (d) 8

2) $f(x) = (x + 1)^3 - (x - 1)^3$ represents a function which is

(a) linear (b) cubic (c) reciprocal (d) quadratic

3) If the sequence t_1, t_2, t_3... are in A.P. then the sequence t_6, t_{12}, t_{18},.... is

(a) a Geometric Progression (b) an Arithmetic Progression

(c) neither an Arithmetic Progression nor a Geometric Progression

(d) a constant sequence

4) $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$ gives

(a) $\frac{x^2-7x+40}{(x-5)(x+5)}$ (b) $\frac{x^2+7x+40}{(x-5)(x+5)(x+1)}$ (c) $\frac{x^2-7x+40}{(x^2-25)(x+1)}$ (d) $\frac{x^2+10}{(x^2-25)(x+1)}$

5) If A is a 2 x 3 matrix and B is a 3 x 4 matrix, how many columns does AB have

(a) 3 (b) 4 (c) 2 (d) 5

6) The two tangents from an external points P to a circle with centre at O are PA and PB. If $\angle APB = 70^\circ$ then the value of $\angle AOB$ is

(a) 100° (b) 110° (c) 120° (d) 130°

7) The slope of the line joining (12, 3), (4, a) is $\frac{1}{8}$. The value of 'a' is

(a) 1 (b) 4 (c) -5 (d) 2

8) (2, 1) is the point of intersection of two lines.

(a) x - y - 3 = 0; 3x - y - 7 = 0 (b) x + y = 3; 3x + y = 7

(c) 3x + y = 3; x + y = 7 (d) x + 3y - 3 = 0; x - y - 7 = 0

9) The electric pole subtends an angle of 30° at a point on the same level as its foot. At a second point 'b' metres above the first, the depression of the foot of the pole is 60°. The height of the pole (in metres) is equal to

(a) $\sqrt{3}$ b (b) $\frac{b}{3}$ (c) $\frac{b}{2}$ (d) $\frac{b}{\sqrt{3}}$

10) $\tan\theta = \frac{a}{x}$ then the value of $\frac{x}{\sqrt{a^2+x^2}}$ is

(a) $\cos\theta$ (b) $\sin\theta$ (c) $\operatorname{cosec}\theta$ (d) $\sec\theta$

11) The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is

(a) $\frac{4}{3}\pi$ (b) $\frac{10}{3}\pi$ (c) 5π (d) $\frac{20}{3}\pi$

12) 2. There are two cones with equal volumes. What will be the ratio of their radius and height?

(a) 1:1 (b) 1:2 (c) 1:3 (d) 1:4

13) A purse contains 10 notes of Rs. 2000, 15 notes of Rs. 500, and 25 notes of Rs. 200. One note is drawn at random. What is the probability that the note is either a Rs. 500 note or Rs. 200 note?

(a) $\frac{1}{5}$ (b) $\frac{3}{10}$ (c) $\frac{2}{3}$ (d) $\frac{4}{5}$

14) The average of first n natural numbers

(a) $\left[\frac{n(n+1)}{2}\right]$ (b) $\frac{(n+1)}{2}$ (c) $\sqrt{\frac{n^2-1}{12}}$ (d) $\frac{n^2-1}{12}$

PART -B 10 x 2 = 20

ANSWER ANY 10 QUESTIONS .QUESTION NO.28 IS COMPULSORY

15) Let A = {1, 2, 3, 4,..., 45} and R be the relation defined as "is square of a number" on A. Write R as a subset of A x A. Also, find the domain and range of R.

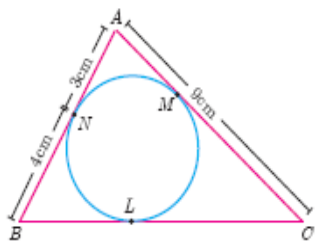
16) If $f(x) = x^2 - 1$, $g(x) = x - 2$ find a, if g o f(a) = 1

17) Solve $2m^2 + 19m + 30 = 0$

18) What is the smallest number that when divided by three numbers such as 35, 56 and 91 leaves remainder 7 in each case?

19) If the difference between the roots of the equation $x^2 - 13x + k = 0$ is 17. find k

20) In Fig, △ ABC is circumscribing a circle. Find the length of BC.



21) Find the area of the triangle whose vertices are (-3, 5) , (5, 6) and (5, - 2)

22) Find the equation of a line passing through the point (3, - 4) and having slope $\frac{-5}{7}$

23) prove the following identity.
$\frac{cos\theta}{1+sin\theta}$ = sec θ - tan θ

24) The radius of a spherical balloon increases from 12 cm to 16 cm as air being pumped into it. Find the ratio of the surface area of the balloons in the two cases.

25) Find the volume of the iron used to make a hollow cylinder of height 9 cm and whose internal and external radii are 21 cm and 28 cm respectively

26) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.

27) In a two children family, find the probability that there is at least one girl in a family

28) a,b,c are in AP then prove that $(a-c)^2 = 4(b^2 - ac)$

PART -C 10 x 5 = 50

ANSWER ANY 10 QUESTIONS .QUESTION NO.42 IS COMPULSORY

29) Let A = {x ∈ N | 1 < x < 4}, B = {x ∈ W | 0 ≤ x < 2) and C = {x ∈ N | x < 3}
Then verify that A x (B ∩ C) = (A x B) ∩ (A x C)

30) A function f: [-5,9] ⟶ R is defined as follows:

$$f(x) = \begin{cases} 6x+1 & \text{if } -5 \le x < 2 \\ 5x^2 - 1 & \text{if } 2 \le x < 6 \\ 3x - 4 & \text{if } 6 \le x \le 9 \end{cases}$$

Find
i) f(-3) + f(2)
ii) f(7) - f(1)
iii) 2f(4) + f(8)
iv) $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$

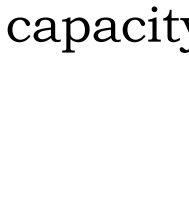
31) The 13^{th} term of an A.P is 3 and the sum of the first 13 terms is 234.Find the common difference and the sum of first 21 terms.

32) Find the sum to n terms of the series
3 + 33 + 333 + ...to n terms

33) Find the values of a and b if the following polynomials are perfect squares
$4x^4 - 12x^3 + 37x^2 + bx + a$

34) If $\mathbf{A} = \begin{bmatrix} 1 & -1 \\ 2 & 3 \end{bmatrix}$, Show that $\mathbf{A}^2 - 4\,\mathrm{A} + 5\mathbf{I}_2 = 0$.

35) In the adjacent figure, ABC is a right angled triangle with right angle at B and points D, E trisect BC. Prove that $8AE^2 = 3AC^2 + 5AD^2$



36) Let A(3, - 4), B(9, - 4) , C(5, - 7) and D(7, - 7). Show that ABCD is a trapezium.

37) Find the equation of the median and altitude of Δ ABC through A where the vertices are A(6, 2), B(-5,-1) and C(1, 9)

38) Two ships are sailing in the sea on either side of the lighthouse. The angles of depression of two ships as observed from the top of the lighthouse are 60° and 45° respectively. If the distance between the ships is $200\left(\frac{\sqrt{3}+1}{\sqrt{3}}\right)$ metres, find the height of the lighthouse.

39) The internal and external diameter of a hollow hemispherical shell are 6 cm and 10 cm respectively. If it is melted and recast into a solid cylinder of diameter 14 cm, then find the height of the cylinder.

40) A bucket is in the form of a cone. Its depth is 24 cm and the diameters of the top and bottom ends are 30 cm and 10 cm respectively. Find the capacity of the bucket.

41) Find the coefficient of variation of 24, 26, 33, 37, 29, 31.

42) In a class of 50 students, 28 opted for NCC, 30 opted for NSS and 18 opted both NCC and NSS. One of the students is selected at random. Find the probability that
(i) The student opted for NCC but not NSS.
(ii) The student opted for NSS but not NCC.
(iii) The student opted for exactly one of them.

PART -D 2 x 8 = 16

ANSWER THE QUESTIONS .

43) a) Construct a $\triangle PQR$ in which QR = 5 cm, $\angle P = 40^{o}$ and the median PG from P to QR is 4.4 cm. Find the length of the altitude from P to QR.

(OR)

b) Draw the two tangents from a point which is 5 cm away from the centre of a circle of diameter 6 cm. Also, measure the lengths of the tangents

44) a) Draw the graph of $y = 2x^2$ and hence solve $2x^2 - x - 6 = 0$

(OR)

b) The following table shows the data about the number of pipes and the time taken to till the same tank.

No of pipes (x)	2	3	6	9
Time Taken (in min) (y)	45	30	15	10

Draw the graph for the above data and hence
(i) find the time taken to fill the tank when five pipes are used
(ii) Find the number of pipes when the time is 9 minutes.

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