

RS-1

**FIRST REVISION EXAMINATION- 2025****10 - Std****MATHEMATICS****TIME : 3.00 Hrs****MARKS:100****PART I****CHOOSE THE CORRECT ANSWER:****14X1=14**

- $A = \{a, b, p\}$ ,  $B = \{2, 3\}$ ,  $C = \{p, q, r, s\}$  then  $n[(A \cup C) \times B]$  is  
(a) 8 (b) 20 (c) 12 (d) 16
- If  $f$  is a identity function, then the value of  $f(1) - 2f(2) + f(3)$  is  
(a) 1 (b) 0 (c) -1 (d) -3
- Given  $F_1 = 1$ ,  $F_2 = 3$  and  $F_n = F_{n-1} + F_{n-2}$  then  $F_5$  is  
(a) 3 (b) 5 (c) 8 (d) 11
- The next term of the sequence  $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$  is  
(a)  $\frac{1}{24}$  (b)  $\frac{1}{27}$  (c)  $\frac{2}{3}$  (d)  $\frac{1}{81}$
- $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$  is  
(a)  $\frac{9y}{7}$  (b)  $\frac{9y^2}{(21y-21)}$  (c)  $\frac{21y^2-42y+21}{3y^3}$  (d)  $\frac{7(y^2-2y+1)}{y^2}$
- For the given matrix  $A = \begin{pmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{pmatrix}$  the order of the matrix  $A^T$  is  
(a)  $2 \times 3$  (b)  $3 \times 2$  (c)  $3 \times 4$  (d)  $4 \times 3$
- Two poles of heights 6m and 11m stand vertically on a plane ground. If the distance between their feet is 12m, what is the distance between their tops?  
(a) 13m (b) 14m (c) 15m (d) 12.8m
- The area of triangle formed by the points  $(-5, 0)$ ,  $(0, -5)$  and  $(5, 0)$  is  
(a) 0 sq.units (b) 25 sq.units (c) 5 sq.units (d) none of these
- The value of 'a' if the lines  $7y = ax + 4$  and  $2y = 3 - x$  are parallel  
(a)  $\frac{7}{2}$  (b)  $-\frac{2}{7}$  (c)  $\frac{2}{7}$  (d)  $-\frac{7}{2}$



10. If the ratio of the height of a tower and the length of its shadow is  $\sqrt{3} : 1$  then the angle of elevation of the sun has measure

- (a)  $45^\circ$  (b)  $30^\circ$  (c)  $90^\circ$  (d)  $60^\circ$

11. If two solid hemispheres of same base radius  $r$  units are joined together along their bases, then curved surface area of this new solid is

- (a)  $4\pi r^2$  sq.units (b)  $6\pi r^2$  sq.units (c)  $3\pi r^2$  sq.units (d)  $8\pi r^2$  sq.units

12. A frustum of a right circular cone is of height 16 cm with radii of its ends as 8cm and 20cm. Then the volume of the frustum is

- (a)  $3328 \pi \text{ cm}^3$  (b)  $3228 \pi \text{ cm}^3$  (c)  $3240 \pi \text{ cm}^3$  (d)  $3340 \pi \text{ cm}^3$

13. Variance of first 20 natural numbers is

- (a) 32.25 (b) 44.25 (c) 33.25 (d) 30

14. A letter is selected at random from the word 'PROBABILITY', then the probability that the letter is not a vowel is

- (a)  $\frac{4}{11}$  (b)  $\frac{7}{11}$  (c)  $\frac{3}{11}$  (d)  $\frac{6}{11}$

## PART II

ANSWER ANY 10 QUESTIONS. QUESTION NO.28 IS COMPULSORY:

10X2=20

15. Let  $A = \{1, 2, 3\}$  and  $B = \{x \mid x \text{ is a prime number less than } 10\}$ . Find  $A \times B$  and  $B \times A$ .

16. Let  $f$  be a function from  $R$  to  $R$  defined by  $f(x) = 3x - 5$ . Find the values  $a$  and  $b$  given that  $(a, 4)$  and  $(1, b)$  belong to  $f$ .

17. If  $13824 = 2^a \times 3^b$  then find  $a$  and  $b$ .

18. Find the sum of 102, 97, 92, ..... upto 27 terms.

19. Find the LCM of  $x^3 - 27$ ,  $(x-3)^2$ ,  $x^2 - 9$

20. Solve  $2x^2 - 3x - 3 = 0$  by formula method.

21. Find the value of  $a, b, c, d$  from the equation  $\begin{pmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{pmatrix} = \begin{pmatrix} 1 & 5 \\ 0 & 2 \end{pmatrix}$

22. In two concentric circles, a chord of length 16 cm of larger circle becomes a tangent to the smaller circle whose radius is 6 cm. Find the radius of the larger circle.

23. Show that the given points are collinear  $(-3, -4)$ ,  $(7, 2)$  and  $(12, 5)$ .

24. A player sitting on the top of a tower of height 20 m observes the angle of depression of a ball lying on the ground as  $60^\circ$ . Find the distance between the foot of the tower and the ball. ( $\sqrt{3} = 1.732$ )



25. The curved surface area of a right circular cylinder of height 14cm is  $88\text{cm}^2$ . Find the diameter of the cylinder.
26. Find the standard deviation of first 21 natural numbers.
27. A die is rolled and a coin is tossed simultaneously. Find the probability that the die shows an odd number and the coin shows a head.
28. The slant height of a frustum of a cone is 4m and the perimeter of circular ends are 18m and 16m. Find its curved surface area.

### PART III

ANSWER ANY 10 QUESTIONS. QUESTION NO.42 IS COMPULSORY:

10X5=50

29. Let  $A=\{1,2,3,4\}$  and  $B=\{2,5,8,11,14\}$  be two sets. Let  $f: A \rightarrow B$  be a function given by  $f(x)=3x-1$ . Represent this function (i) by arrow diagram (ii) in a table form (iii) as a set of ordered pairs (iv) in a graphical form.
30. If  $f(x) = x^2$ ;  $g(x) = 2x$  and  $h(x) = x+4$ . Show that  $(f \circ g) \circ h = f \circ (g \circ h)$ .
31. The ratio of 6<sup>th</sup> and 8<sup>th</sup> term of an A.P is 7: 9. Find the ratio of 9<sup>th</sup> term to 13<sup>th</sup> term.
32. Find the sum to n terms of the series  $0.4 + 0.44 + 0.444 + \dots$  to n terms.
33. Find the square root of the polynomial  $37x^2 - 28x^3 + 4x^4 + 42x + 9$  by division method
34. If  $\alpha, \beta$  are the roots of  $7x^2 + ax + 2$  and if  $\beta - \alpha = \frac{-13}{7}$ . Find the values of .
35. If  $A = \begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}$   $B = \begin{pmatrix} 1 & 2 \\ -4 & 2 \end{pmatrix}$   $C = \begin{pmatrix} -7 & 6 \\ 3 & 2 \end{pmatrix}$  Verify that  $A(B+C) = AB + AC$ .
36. State and prove angle bisector theorem.
37. Find the area of the quadrilateral whose vertices are at  $(-9,0)$ ,  $(-8,6)$ ,  $(-1,-2)$  and  $(-6, -3)$ .
38. If  $\frac{\cos \alpha}{\cos \beta} = m$  and  $\frac{\cos \alpha}{\sin \beta} = n$ , then prove that  $(m^2 + n^2) \cos^2 \beta = n^2$
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. The time taken (in minutes) to complete a homework by 8 students in a day are given by 38, 40, 47, 44, 46, 43, 49, 53. Find the coefficient of variation.
41. A box contains cards numbered 3, 5, 7, 9, ..., 35, 37. A card is drawn at random from the box. Find the probability that the drawn card have either multiples of 7 or a prime number.
42. A straight line AB cuts the co-ordinate axes at A and B. If the mid point of AB is (2,3), find the equation of AB.



## PART IV

ANSWER ALL THE QUESTIONS:

2X8=16

43.(a) Construct a triangle similar to a given triangle ABC with its sides equal to  $\frac{6}{5}$  of the corresponding sides of the triangle ABC. (scale factor to  $\frac{6}{5} > 1$ )

(OR)

(b) Draw a circle of radius 4 cm. At a point L on it draw a tangent to the circle using the alternate segment theorem.

44.(a) A school announces that for a certain competitions, the cash prize will be distributed for all the participants equally as show below

No. of participants (x)	2	4	6	8	10
Amount for each participant in ₹ (y)	180	90	60	45	36

(i) Find the constant of variation.

(ii) Graph the above data and hence, find how much will each participant get if the number of participants are 12.

(OR)

(b) Draw the graph of  $y = x^2 - 4x + 3$  and use it to solve  $x^2 - 6x + 9 = 0$



**STANDARD -X****MATHEMATICS**

TIME : 2.00 Hrs

MARKS:100

**PART I****CHOOSE THE CORRECT ANSWER:**

19X1=19

- Let  $A=\{1,2,3,4\}$  and  $B=\{4,8,9,10\}$ . A function  $f: A \rightarrow B$  given by  $f = \{(1,4), (2,8), (3,9), (4,10)\}$  is a  
(a) Many- one function (b) Identity function (c) One-to-one function (d) Into function
- Let  $f$  and  $g$  be two functions given by  $f = \{(0,1), (2,0), (3, -4), (4,2), (5,7)\}$   
 $g = \{(0,2), (1,0), (2,4), (-4,2), (7,0)\}$  then the range of  $f \circ g$  is  
(a)  $\{0,2,3,4,5\}$  (b)  $\{-4,1,0,2,7\}$  (c)  $\{1,2,3,4,5\}$  (d)  $\{0,1,2\}$
- Euclid's division lemma states that for positive integers  $a$  and  $b$ , there exist unique integers  $q$  and  $r$  such that  $a = bq+r$ , where  $r$  must satisfy  
(a)  $1 < r < b$  (b)  $0 < r < b$  (c)  $0 \leq r < b$  (d)  $0 < r \leq b$
- If  $A = 2^{65}$  and  $B = 2^{64} + 2^{63} + 2^{62} + \dots + 2^0$  which of the following is true?  
(a)  $B$  is  $2^{64}$  more than  $A$  (b)  $A$  and  $B$  are equal (c)  $B$  is larger than  $A$  by 1 (d)  $A$  is larger than  $B$  by 1
- $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$  gives (a)  $\frac{x^2-7x+40}{(x-5)(x+5)}$  (b)  $\frac{x^2+7x+40}{(x-5)(x+5)(x+1)}$  (c)  $\frac{x^2-7x+40}{(x+1)(x^2-25)}$  (d)  $\frac{x^2+10}{(x+1)(x^2-25)}$
- If the roots of the equation  $qx^2 + px + r = 0$  are the squares of the roots of the equation  $qx^2 + px + r = 0$ , then  $q, p, r$  are in  
(a) A.P (b) G.P (c) Both A.P and G.P (d) none of these
- If number of columns and rows are not equal in a matrix then it is said to be a  
(a) diagonal matrix (b) rectangular matrix (c) square matrix (d) identity matrix
- If in  $\Delta ABC$ ,  $DE \parallel BC$ .  $AB = 3.6$  cm,  $AC = 2.4$  cm and  $AD = 2.1$  cm then the length of  $AE$  is  
(a) 1.4cm (b) 1.8 cm (c) 1.2 cm (d) 1.05cm
- In figure  $CP$  and  $CQ$  are tangents to a circle with centre at  $O$ .  $ARB$  is another tangent touching the circle at  $R$ . If  $CP = 11$ cm and  $BC = 7$  cm, then the length of  $BR$  is  
(a) 6cm (b) 5cm (c) 8cm (d) 4cm
- If  $(5,7)$ ,  $(3,p)$  and  $(6,6)$  are collinear, then the value of  $p$  is  
(a) 3 (b) 6 (c) 9 (d) 12
- When proving that a quadrilateral is a parallelogram by using slopes you must find  
(a) The slopes of two sides (b) The slopes of two pair of opposite sides (c) The lengths of all sides (d) Both the lengths and slopes of two sides
- $\tan \theta \operatorname{cosec}^2 \theta - \tan \theta$  is equal to (a)  $\sec \theta$  (b)  $\cot^2 \theta$  (c)  $\sin \theta$  (d)  $\cot \theta$
- $a \cot \theta + b \operatorname{cosec} \theta = p$  and  $b \cot \theta + a \operatorname{cosec} \theta = q$  then  $p^2 - q^2$  is equal to  
(a)  $a^2 - b^2$  (b)  $b^2 - a^2$  (c)  $a^2 + b^2$  (d)  $b - a$
- The height of a right circular cone whose radius is 5 cm and slant height is 13cm will be  
(a) 12cm (b) 10cm (c) 13cm (d) 5cm
- A shuttle cock used for playing badminton has the shape of the combination of  
(a) a cylinder and a sphere (b) a hemisphere and a cone (c) a sphere and a cone (d) frustum of a cone and a hemisphere
- The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is  
(a) 1:2:3 (b) 2:1:3 (c) 1:3:2 (d) 3:1:2
- The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is  
(a) 3 (b) 15 (c) 5 (d) 225
- If the mean and coefficient of variation of a data are 4 and 87.5% then the standard deviation is  
(a) 3.5 (b) 3 (c) 4.5 (d) 2.5
- The probability a red marble selected a random from a jar containing  $p$  red,  $q$  blue and  $r$  green marbles is (a)  $\frac{q}{p+q+r}$  (b)  $\frac{p}{p+q+r}$  (c)  $\frac{p+q}{p+q+r}$  (d)  $\frac{p+r}{p+q+r}$



ANSWER ANY 7 QUESTIONS.

## PART II

20. If  $A \times B = \{(3,2), (3,4), (5,2), (5,4)\}$  then find A and B.
21. Let  $A = \{1,2,3,4,\dots,45\}$  and R be the relation defined as "square is of a number" on A. Write R as a subset of  $A \times A$ . Also find the domain the range of R.
22. 'a' and 'b' are two positive integers such that  $a^b \times b^a = 800$ . Find 'a' and 'b'.
23. Find the number of terms in the A.P 3,6,9,12,...111.
24.  $A = \begin{pmatrix} 5 & 2 & 2 \\ -\sqrt{17} & 0.7 & \frac{5}{2} \\ 8 & 3 & 1 \end{pmatrix}$  then verify  $(A^T)^T = A$
25. Verify that  $A^2 = I$  when  $A = \begin{pmatrix} 5 & -4 \\ 6 & -5 \end{pmatrix}$
26. If  $\triangle ABC$  is similar to  $\triangle DEF$  such that  $BC = 3$  cm,  $EF = 4$  cm and area of  $\triangle ABC = 54$  cm<sup>2</sup>. Find the area of  $\triangle DEF$ .
27. Find the area of the triangle whose vertices are (1,-1), (-4,6) and (-3,-5).
28. Find the range and co-efficient of range of the following data 25,67,48,53,18,39,44.
29. what is the probability that a leap year selected at random will contain 53 Saturdays.

## PART III

ANSWER ANY 7 QUESTIONS.

30. Let  $A = \{x \in W \mid x < 2\}$ ,  $B = \{x \in N \mid 1 < x \leq 4\}$  and  $C = \{3,5\}$ . Verify that  $(A \cup B) \times C = (A \times C) \cup (B \times C)$
31. Let  $f: A \rightarrow B$  be a function defined by  $f(x) = \frac{x}{2} - 1$ , where  $A = \{2,4,6,10,12\}$   $B = \{0,1,2,4,5,9\}$ . Represent  $f$  by (i) set of ordered pairs (ii) a table (iii) an arrow diagram (iv) a graph
32. Find the sum to n terms of the series  $3+33+333+\dots$  to n terms
33. Rekha has 15 square colour papers of sizes 10cm, 11cm, 12cm,...24cm. How much area can be decorated with these colour papers?
34. Find the square root of  $64x^4 - 16x^3 + 17x^2 - 2x + 1$
35. If  $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$  show that  $A^2 - 5A + 7I_2 = 0$
36. State and prove Thales theorem.
37. Find the area of the quadrilateral whose vertices are at (-9,-2), (-8,-4), (2,2) and (1,-3).
38. A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of the pages completed by them.
39. Two dice are rolled together. Find the probability of getting a doublet or sum of faces as 4.

## PART IV

ANSWER ALL QUESTIONS:

(QUESTION NO. GIVEN AS PER PUBLIC EXAMINATION)

- 43.(a) Construct a triangle similar to a given triangle ABC with its sides equal to  $\frac{6}{5}$  of the corresponding sides of the triangle ABC (scale factor to  $\frac{6}{5} > 1$ )
- (b) Draw a circle of radius 4.5 cm. Take a point on the circle. Draw the tangent at that point using the alternate segment theorem.
- 44.(a) A two wheeler parking zone near bus stand charges as below.

Time (in hour) (x)	4	8	12	24
Amount (y)	60	120	180	360

Check if the amount charged are in direct variation or in inverse variation to the parking time. Graph the data. Also (i) find the amount to be paid when parking time is 6 hr, (ii) find the parking duration when the amount paid is ₹ 150

(b) Draw the graph of  $xy = 24$ ,  $x, y > 0$ . Using the graph find, (i) y when  $x = 3$ , and (ii) x when  $y = 6$