

XII CLASS Mathematics Paper Model Paper Bihar Board

PARTS - A & B Max. Marks: 50

Time: 2 Hours

PART- A

Marks: 35

SECTION - I

Note: 1) Answer any FIVE of the following questions choosing atleast two from each group A and B.

2) Each question carries TWO marks. $5 \times 2 = 10$

GROUP - A

(Geometry, Co-ordinate Geometry, Statistics)

1. If PAB is a secant to a circle intersecting the circle at A and B and PT is a tangent segment then s.t. $PA \cdot PB = PT^2$.
2. If the area of the triangle formed with the vertices $(t, 2t)$, $(2, 6)$, $(3, 1)$ is 5 s.q. units, find t.
3. Find the area of the triangle formed by the line $2x - 4y - 7 = 0$ with the coordinate axes.
4. The observations of an ungrouped data are x_1, x_2 and $2x_2$ and $x_1 < x_2 < 2x_1$. If the mean and median of the data are each equal to 6. Find the observations of the data.

GROUP - B

(Trigonometry, Matrices, Computing)

5. If $\cos a = 3/2$ then find the value of $4 \sin^2 + \tan^2$.
6. If matrix $A = \begin{bmatrix} 7 & 4 \\ 5 & 3 \end{bmatrix}$, then find $A + A$.
7. If matrix $A = \begin{bmatrix} 7 & 4 \\ 3 & 5 \end{bmatrix}$, matrix $B = \begin{bmatrix} 7 & 4 \\ 0 & 3 \end{bmatrix}$, then s.t. $(A + B) = A + B$.
8. Write characteristics of a computer.

SECTION - II

Note: 1) Answers any FOUR of the following questions.

2) Each question carries ONE mark. $4 \times 1 = 4$

9. Define vertical Angle Bisector Theorem.

10. Find the equation of the line passing through the point (3, 4) and is parallel to $4x + 7y = 8$.

11. Define low Chart.

12. Eliminate \angle from $x = a \sin \angle$, and $y = a \cos \angle$.

13. The A.M. of 20, 16, x, 12 is 15, find x.

14. If matrix $A = \begin{bmatrix} 5 & 4 \\ 2 & 4 \end{bmatrix}$ then find A^{-1} .

SECTION - III

Note: 1) Answer any FOUR of the following questions choosing at least two from each group A and B.

Each question carries FOUR marks. $(4 \times 2) \quad 4 = 16$

GROUP - A

15. Define and prove converse of Pythagorean theorem.

16. Find the equation of the line passing through (4,3) and is perpendicular to the line $2x - 5y + 4 = 0$.

17. Find the equation of the line that cuts off intercepts a and b on the X and Y – axes such that $a + b = 2$, $ab = 3$.

18. The frequency distribution of marks scored by 50 students in a test is given below. Find the mean.

Marks	0 - 19	20 - 39	40 - 59	60 - 79	80 - 99
No. of students	5	15	22	6	2

GROUP - B

19. Find that $(\tan \angle + \sec \angle - 1) / (\tan \angle - \sec \angle + 1)$.

21. Solve the following linear system using Cramer's method. $-3x + 4y = 8$, $6y$

= 10

22. Gopal purchased a radio set for Rs. 500 and sold it for Rs. 600. Execute the flow chart using this data to determine loss or gain.

SECTION - IV

Note:1) Answer any ONE of the following questions.

2) This question carries FIVE marks.

23. Construct a triangle ABC in which AB = 4.4 cm, C = 65 and median through C = 2.7 cm.

24. There are two temples. One on each bank of a river, just opposite to each other. One of the temple A is 40 mts high. As observed from the top of this temple A, the angles of depression of the top and foot of the other temple B are $12^\circ 30'$ and $21^\circ 48'$ respectively. Find the width of the river and the height of the temple B.

Tan	0'	6'	12'	.....	48'	54'	Mean Difference				
										1'	
										2'	3'
										4'	5'
12°		0.2126	2144	2162	.....	2272	2290	3	6	9	12
15											
21°		0.3839	3859	3879	.....	4000	4020	3	7	10	13
17											

PART - B Marks: 15

Time: 30 Minutes

Instructions: 1) Each question carries mark.

2) Answer all the questions in the paper itself.

I. Choose the correct answer and write its letter in the brackets. $10 \times \frac{1}{2} = 5$

1. In ABC, P, Q are the mid points of AB, AC then PQ : BC = ()

- A) 2 : 1
- B) 1 : 2
- C) 1 : 1
- D) 4 : 1

3. The slope of the line joining (4, 6) and (2, 5) is ()

- A) 6
- B) 2
- C) 4
- D) 3

4. Y- intercept of the straight line $2x + 3y = 6$ ()

- A) $1/2$
- B) $1/3$
- C) 3
- D) 2

5. If $\sin \theta = 4/5$ then $\sin (180^\circ + \theta) = ()$

- A) $-4/5$
- B) $-5/4$
- C) $5/5$
- D) $4/2$

6. If $\tan (15^\circ + A) = 1/3$ then $A = ()$

- A) 60°
- B) 45°
- C) 90°
- D) 15°

7. If $x = \begin{pmatrix} x & 6 \\ 3 & 2x \end{pmatrix}$ is a singular matrix then $x = ()$

- A) 1
- B) 2
- C) 3
- D) 4

8. If $A^{-1} = A$ then A is ()

- A) Null matrix
- B) Identity matrix
- C) A^{-1}
- D) A

9. Range of 20, 18, 37, 42, 3, 12, 15, 26, is ()

- A) 63
- B) 42
- C) 39
- D) 6

10. Father of the computer is ()

- A) Alan Turing
- B) Charles Babbage
- C) John von Neumann
- D) Grace Hopper

- A) Leibnitz
- B) Pascal
- C) Heisenberg
- D) Babbage

II. Fill in the blanks. 10 × 2 = 5

11. ABCD is a cyclic quadrilateral, $C = 120^\circ$ then $A = \dots\dots\dots$
12. Distance between $(a \sin \theta, 0)$, $(0, a \cos \theta)$ is $\dots\dots\dots$
13. Slope of line making an angle 60° with the positive direction of X - axis is $\dots\dots\dots$
14. $\tan^2 100^\circ - \sec^2 100^\circ = \dots\dots\dots$
15. $\cos(-\theta) = \dots\dots\dots$
16. The arithmetic mean of first 'n' odd natural numbers $\dots\dots\dots$
17. If $(1 - 3) (5 - 1) = (p) (1 - 1) - 1 - 2$ then $p = \dots\dots\dots$
18. If $A = 2/3$ then $A^3 = \dots\dots\dots$
19. Full form of C.P.U. is $\dots\dots\dots$
20. $\dots\dots\dots$ are used in third generation computers.

III. Match the following.

(i) GROUP - A

GROUP - B

- | | |
|--|---|
| <ol style="list-style-type: none"> 21. There is a circle of radius 7, from a point P which is at a distance of 25 cm from the centre of the circle, a tangent is drawn to the circle, the length of the tangent is 22. Angle in a semi circle is 23. Slope of X - axis 24. Slope of Y - axis 25. Mode of 10, 8, 4, 10, 6, 24, 10 is | <p>() A) (3, 0)</p> <p>() B) (0, 3)</p> <p>() C) 24</p> <p>() D) 10</p> <p>() E) 1</p> |
|--|---|

- F) 90°
- G) 60°
- H) 0

