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80

A.P. Board (Internal) Examination - 2024-25

Subject: Mathematics

Class: IX (Nine)

Time: 3 hours

Maximum Mark: 80

General Instructions:

- (i) All questions are compulsory.
- (ii) The question paper consists of 40 questions divided into four sections: A, B, C and D.  
Section-A comprise 20 questions of 1 mark each.  
Section-B comprise 6 questions of 2 marks each.  
Section-C comprise 8 questions of 3 marks each.  
Section-D comprise 6 questions of 4 marks each.

Section-A

(Question 1 to 20 carry 1 mark each)

1. A line segment has \_\_\_\_\_ end points. (1)  
(a) 3            (b) 1            (c) No            (d) 2
2. If  $x = 2, y = 1$  is a solution of the linear equation  $2x + 3y = k$ , then the value of  $k$  is \_\_\_\_\_.  
(a) 5            (b) 7            (c) 6            (d) -7
3. Curved surface area of a cone is \_\_\_\_\_. (1)  
(a)  $\pi r l$             (b)  $\pi r^2$             (c)  $2\pi r$             (d)  $3\pi r^2$
4. The class size of the interval 10 - 20 is \_\_\_\_\_. (1)  
(a) 30            (b) 15            (c) 10            (d) 2
5. The coordinate axes divide the plane into four parts called \_\_\_\_\_. (1)  
(a) Abscissa            (b) Quadrant            (c) Ordinate            (d) Origin
6. A polynomial of degree three is called \_\_\_\_\_. (1)  
(a) Cubic            (b) Quadratic            (c) Linear            (d) Bi-quadratic
7. If the radius of a sphere is 7cm, then its surface area is \_\_\_\_\_. (1)  
(a)  $308cm^2$             (b)  $616cm^2$             (c)  $154cm^2$             (d)  $462cm^2$
8. The zero of the polynomial  $p(x) = 3x - 2$  is \_\_\_\_\_. (1)  
(a) 3            (b)  $\frac{2}{3}$             (c) -2            (d) 0
9. Every irrational number is a \_\_\_\_\_ number. (1)  
(a) Real            (b) Rational            (c) Natural            (d) Whole

$$2(2)^2 = 4(2)$$

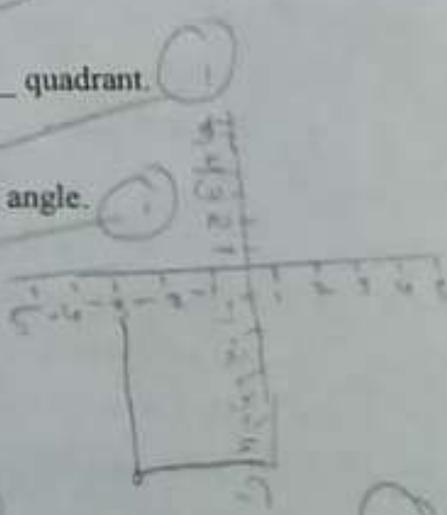
$$2(4) = 8$$

$$8 - 8 = 0$$

$$2(2 - 4) = 2(-2) = -4$$

$$2(4) - 8 = 8 - 8 = 0$$

$$0 = 0$$



10. The side opposite to the right angle is called the \_\_\_\_\_  
 (a) Hypotenuse (b) Base (c) Height (d) Median

11. In which situation  $x^3 + y^3 + z^3 = 3xyz$ ?  
 (a)  $x + y - z = 0$  (b)  $x - y - z = 0$   
 (c)  $x + y + z = 0$  (d)  $x - y + z = 0$

12. In between any two numbers, there are \_\_\_\_\_ rational numbers.  
 (a) Only one (b) Two (c) Infinite (d) No

13. The value of  $p(x) = 2x^2 - 4x + 1$  at  $x = 2$  is \_\_\_\_\_  
 (a) 0 (b) -3 (c) 1 (d) 2

14. The measure of a straight angle is \_\_\_\_\_  
 (a)  $90^\circ$  (b)  $60^\circ$  (c)  $360^\circ$  (d)  $180^\circ$

15.  $\frac{8\sqrt{15}}{2\sqrt{3}} =$  \_\_\_\_\_  
 (a) 20 (b)  $4\sqrt{5}$  (c)  $\sqrt{3}$  (d) 4

16. The line segment joining the centre to any point on the circle is \_\_\_\_\_  
 (a) A diameter (b) A chord (c) A radius (d) A segment

17. Which of the following is not a polynomial?  
 (a)  $2x - 7$  (b)  $x^2 + \sqrt{2}$  (c)  $y^3 - 2y + 3$  (d)  $4y + \frac{1}{y}$

18. A point whose abscissa is -3 and ordinate is -5 lies in \_\_\_\_\_ quadrant.  
 (a) 2<sup>nd</sup> (b) 1<sup>st</sup> (c) 4<sup>th</sup> (d) 3<sup>rd</sup>

19. An angle greater than  $90^\circ$  but less than  $180^\circ$  is called \_\_\_\_\_ angle.  
 (a) Acute (b) Right (c) Obtuse (d) Reflex

20. Which of the following is not a criteria for congruence of triangles?  
 (a) SAS (b) ASA (c) SSA (d) SSS

**Section-B**

(Question 21 to 26 carry 2 marks each)

21. Check whether (4, 0) is a solution of the equation  $x - 2y = 4$ .

22. What is the name of horizontal and vertical lines drawn to determine the position of any point in the Cartesian plane.

23. Write  $\frac{7}{8}$  in decimal form.

24. Prove that a cyclic parallelogram is a rectangle.

$$x - 2y = 4$$

$$(4) - 2(0) = 4$$

$$4 - 0 = 4$$

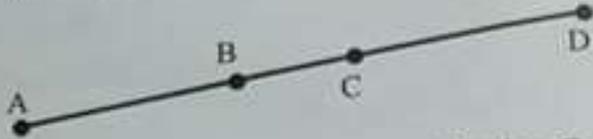
$$0 = 0 + 4$$

25. Write the coefficients of  $x^2$  in each of the following:

(a)  $2 - x^2 + x^3 \rightarrow -1$

(b)  $\frac{\pi}{2}x^3 + x - \frac{\pi}{2}$

26. In the figure, if  $AC = BD$ , then prove that  $AB = CD$

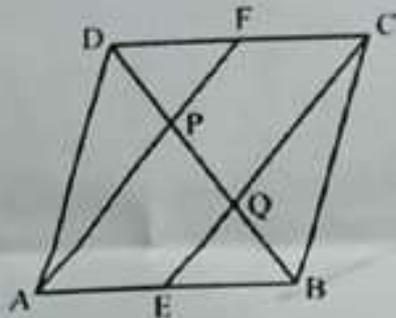


$AB + BC = AC$   
 $BC + CD = BD$   
 $AC = BD$   
 $\therefore AB = CD$

Section-C

(Question 27 to 34 carry 3 marks each)

27. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD.



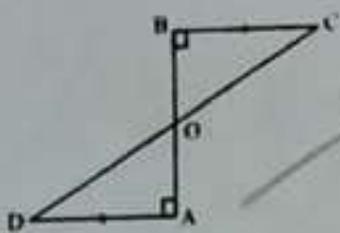
28. Find the two solutions of the equation  $x + 2y = 6$ .

29. Expand:  $(4a - 2b - 3c)^2$ .

30. Rationalise the denominator of  $\frac{5}{\sqrt{7}-\sqrt{5}} \times \frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}+\sqrt{5}} = \frac{5(\sqrt{7}+\sqrt{5})}{(\sqrt{7})^2 - (\sqrt{5})^2} = \frac{5(\sqrt{7}+\sqrt{5})}{7-5} = \frac{5(\sqrt{7}+\sqrt{5})}{2}$

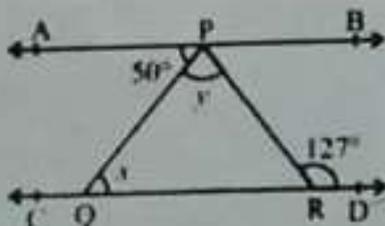
31. Express  $5x - 3y = 4$  in the form  $ax + by + c = 0$  and indicate the values of a, b and c.

32. AD and BC are equal perpendiculars to a line segment AB. Show that CD bisects AB.



$a = 5x$   
 $b = -3y$   
 $c = -4$   
 $5x - 3y = 4$   
 $5x - 3y - 4 = 0$

33. In the figure, if  $AB \parallel CD$ ,  $\angle APQ = 50^\circ$  and  $\angle PRD = 127^\circ$ , find x and y.



34. BE and CF are two equal altitudes of a triangle ABC. Using RHS Congruence rule, prove that the triangle ABC is isosceles.

**Section-D**

(Question 35 to 40 carry 4 marks each)

35. An isosceles triangle has perimeter 30cm and each of the equal sides is 12 cm. Find area of the triangle.

36. Classify the following as monomial, binomial and trinomial:

(a)  $2x^2 - 4x + 9$

binomial

(b)  $3y$

monomial

(c)  $8t + 1$

binomial

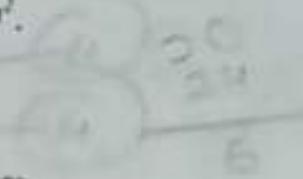
(d)  $r^2$

monomial

37. Express 1.272727 ..... in the form  $\frac{p}{q}$ , where p and q are integers and  $q \neq 0$ .

38. Find the volume of a sphere whose surface area is  $154 \text{ cm}^2$ .

39. Find four rational numbers between  $\frac{3}{5}$  and  $\frac{4}{5}$ .



40. The following table gives the life times of 400 neon lamps:

Life Time (in hours)	Number of lamps
300-400	14
400-500	56
500-600	60
600-700	86
700-800	74
800-900	62
900-1000	48

4

Represent the given information with the help of a histogram.

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