

Time allowed: **3 hours**; Maximum marks: **90**

General Instructions:

- All Questions are compulsory
- The Question Paper consists of 31 Questions divided in to four sections A, B, C and D
- Section- A comprises of 4 questions of one mark each
- Section- B comprises of 6 questions of two mark each
- Section- C comprises of 10 questions of three mark each
- Section- D comprises of 11 questions of Four mark each
- The use of calculator is not permitted.

Section-A

1. The degree of the polynomial $5y - \sqrt{2}$ is ____.

- 0
- 1
- 3
- 5

2. After simplification the value of $9x^2 - 16y^2 =$ ____.

- $(x + y)(x - 2)$
- $(x - 2y)(x^2 + 3y^2)$
- $(3x + 4y)(3x - 4y)$
- $(x - y)(x - 1)$

3. In the fourth quadrant, the nature of the x and y coordinates is ____.

- $x > 0$ and $y > 0$
- $x < 0$ and $y < 0$
- $x < 0$ and $y > 0$
- $x > 0$ and $y < 0$

4. Identify if the given statement is true or false. $x = 3$ and $y = 5$ is a solution of $2x + 5y = 24$

- True
- False

Section - B

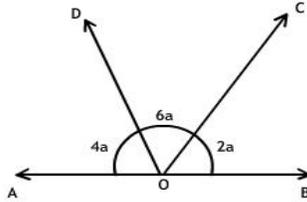
5. Explain factor theorem with suitable example.

6. Using suitable identities, find the product of the following equation:

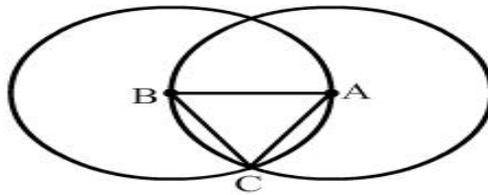
- $(y + 3)(y + 8)$
- $(x - 3)(x + 3)$

7. Find the value of the polynomial $8 - 4x^3 + 2x + 1$ for $x = -1$ and $x = 4$.

8. In the figure below, the value of "a" is ____.



9. In the figure given below, if "A" and "B" are centers of two circles which intersect at point C, then ΔABC is ____.



10. $\Delta ABC \cong \Delta XYZ$ by SAS congruence condition. If $\angle B = 70^\circ$, then $\angle Y =$ ____

Section -C

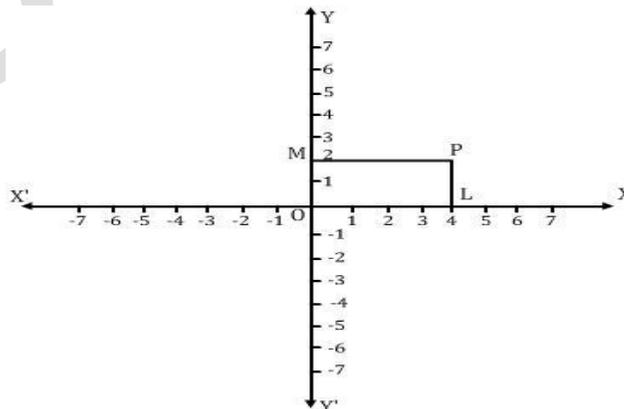
11. $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225} =$ ____.

12. If the polynomial $p(x) = 2x^4 + 6x^3 + 2x^2 + x + 2$ is divided by $(x + 2)$, then the remainder is ____.

13. Identify whether the polynomial $4x^3 + 4x^2 - x - 1$ is exactly divisible by $(2x - 1)$

14. If the polynomials $ax^3 + 4x^2 - 13$ and $2x^3 - 5x + a$ leave the same remainder when divided by $(x + 2)$ then the value of "a" is ____.

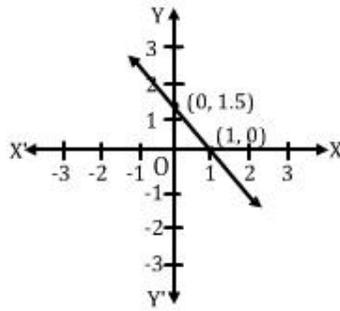
15. In the figure below, the coordinates of the point P are ____.



16. ABC is an equilateral triangle in which A(-1, 0) and B(1, 0), then the coordinates of vertex "C" are ____.

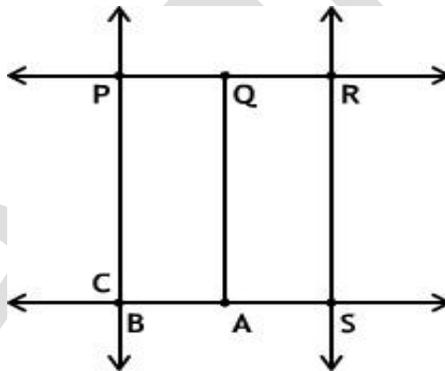
17. A person moves 'a' units along positive Y-axis to reach a point A. From Point A, he moves other 'a' units parallel to positive X-axis to reach point B. If he moves from B to origin directly, then the total distance covered by the person is ____.

18. Write the linear equation which represents the graph given below?



19. In the given figure name the following -

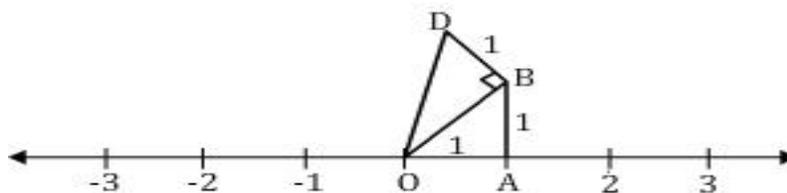
- (A) Three collinear points, (B) Two pairs of non-intersecting line segments (C) five line segments



20. In $\triangle ABC$, D and E are the midpoints of AC and BC respectively. If $DE = 12.5$ cm then the measure of AB is ____.

Section-D

Observe the figure given below and identify the length of OD.



22. If $x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$ and $x^2 - 3x = a + b\sqrt{3}$, then the value of $(a - b)$ is ____.

23. Express the following with a rational denominator.

(A) $\frac{9}{\sqrt{10+\sqrt{20+\sqrt{40-\sqrt{5-\sqrt{80}}}}}}$ (B) $\frac{3}{\sqrt{10+\sqrt{14+\sqrt{15+\sqrt{21}}}}}}$

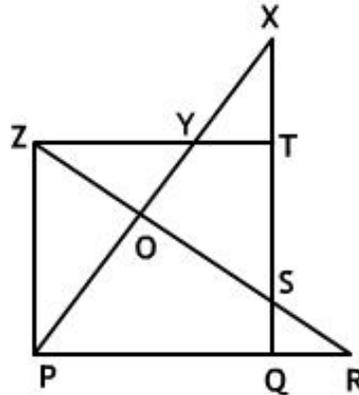
24. If $f(x) = 6x^3 - 11x^2 + 19x - 20$, then the value of $f(x)$ when $x = \frac{4}{3}$ is ____.

25. If the polynomial $p(x) = 12x^3 - 13x^2 - 5x + 7$ is divided by $(3x + 2)$ then the remainder is ____.

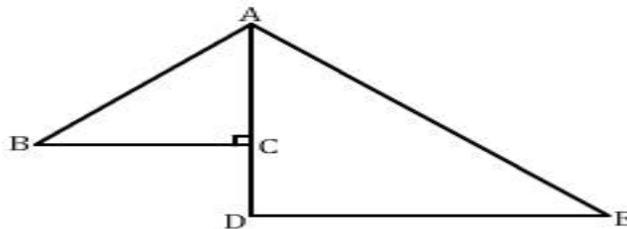
26. Plot the points $(0, 4)$, $(-2, 0)$ and $(2, 0)$ in rectangular co-ordinate system. Join them and mention which geometrical figure you obtain.

27. A railway half ticket costs half the full fare and the reservation charges are same for both half and full tickets. A family of 2 young persons and 4 children pay Rs 1260 for their travel from Delhi to Mumbai. If the basic fare is Rs x and reservation charge is Rs y , then the linear equation which represents the given information is ____.

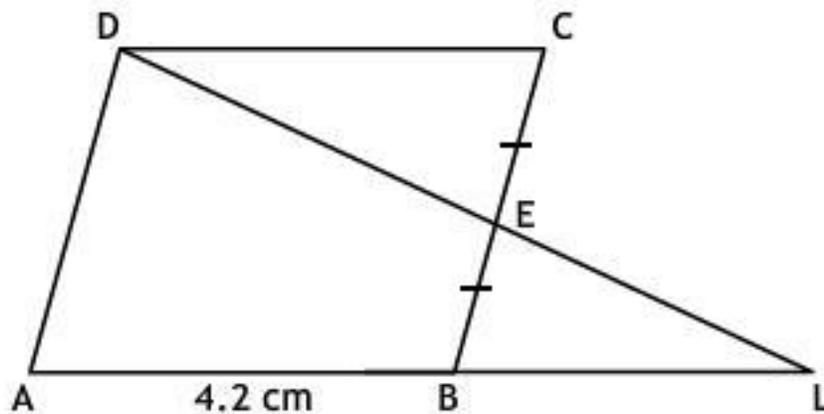
28. In the figure below the side PQ and QT of square PQTZ are produced to R and X respectively such that $QR = TX$. Prove that ZR and PX are perpendicular to each other.



29. In the figure below, $\triangle ABC$ and $\triangle ADE$ are two isosceles right angled triangles then the triangle formed by joining the points A, B and E is ____.



30. In the figure below, ABCD is a parallelogram and E is the mid-point of BC. If AB = 4.2 cm, then BL = ____.



31. In the figure below, $\triangle AOB \cong \triangle DOC$. If $AB = 5$ cm, $CD = x + y$, $AO = 3y$ and $OD = 2x$, then the values of x and y are respectively ____.

