



Time Allowed: 3 Hrs.

Instructions:

1. This question paper contains 38 questions divided into five Sections A to E.
2. Section A comprises of 20 Multiple choice questions of 1 mark each.
3. Section B comprises of 5 Very short answer questions of 2 marks each.
4. Section C comprises of 6 Short answers questions of 3 marks each.
5. Section D comprises of 4 Long answer questions of 5 marks each.
6. Section E has 3 Case study questions of 4 marks each with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All questions are compulsory. However, an internal choice in 2 Questions of sections B, C and D each has been provided.
8. An internal choice has been provided in the 2 mark questions of section E.
9. Use of Calculators is not permitted. Draw neat figure wherever required

SECTION-A

Q1. If P(-1, 1), Q(3, -4), R(1, -1), S(-2, -3), and T(-4, 4) are plotted on the graph paper, the points in the fourth quadrant are

- (a) P and Q (b) Q and R (c) Only S (d) P and R

Q2. The distance of the point P (2, 3) from x-axis is

- (a) 2 (b) 3 (c) 1 (d) 5

Q3. If x is negative and y is positive, then the point (x, y) lies in

- (a) III quadrant (b) IV quadrant (c) II quadrant (d) I quadrant

Q4. On which axis does the point (-7, 0) lie?

- (a) Origin (b) x-axis (c) y-axis (d) none of these

Q5. In the equation $y = 4x + 5$, what does the constant 5 represent?

- (a) The slope of the line (b) The y-intercept
(c) The degree of the polynomial (d) The x-intercept

Q6. If $p(x) = 7 - 3x + 2x^2$, then value of p (-2) is:

- (a) 12 (b) 31 (c) 21 (d) 22

Q7. Which of the following numbers is an irrational number?

- (a) $\sqrt{23}$ (b) $\sqrt{225}$ (c) 0.3796 (d) 7.478

Q8. $\sqrt{12} \times \sqrt{8}$ is equal to

- (a) $2\sqrt{6}$ (b) $3\sqrt{6}$ (c) $4\sqrt{6}$ (d) $6\sqrt{6}$

Q9. If $\frac{x}{y} + \frac{y}{x} = (-1)$ find the value of $x^3 - y^3$.
 (a) 1 (b) -1 (c) 0 (d) 1/2

Q10. The value of $(a+1)(a-1)(a^2+1)$ is:
 (a) $a^4 - 2a^2 - 1$ (b) $a^4 - a^2 - 1$ (c) $a^4 - 1$ (d) $a^4 + 1$

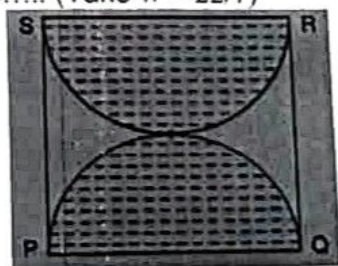
Q11. If $a - b = 7$ and $ab = 9$, then $a^2 + b^2 =$
 (a) 7 (b) 31 (c) 63 (d) 67

Q12. A triangle is drawn with one of its side as diameter, then the measure of angle opposite to diameter is .
 (a) Acute angle (b) Obtuse angle (c) A right angle (d) A straight angle

Q13. Equal chords of a circle subtend
 (a) Unequal angles at the centre (b) Equal angles at the centre (c) Equal angles at every point (d) Right angles always

Q14. The area of a rhombus is 72 sq. cm. If its perimeter is 32 cm, then its altitude.
 (a) 6 cm (b) 8 cm (c) 9 cm (d) 10 cm

Q15. PQRS is a square land of side 28 m. Two semi-circular grass covered positions are to be made on two of its opposite sides as shown in the figure. The area left uncovered is..... (Take $\pi = 22/7$)



(a) 178sq. m (b) 168 sq. m (c) 208 sq.m (d) 200 sq. m

Q16. During a cricket match, a batswoman hits a boundary 15 times out of 25 deliveries played. Calculate the probability that she does NOT hit a boundary on a delivery chosen random.

(a) 0.2 (b) 0.5 (c) 0.8 (d) 0.4

Q17. A box contains 30 chits which are numbered from 1 to 30. If one chit is drawn at random from the box then find the probability that the number is multiple of 5 is

(a) $\frac{5}{30}$ (b) $\frac{1}{5}$ (c) $\frac{5}{10}$ (d) $\frac{1}{3}$

Q18. The sum of first 67 natural number is

(a) 2278 (b) 2154 (c) 3124 (d) 4212

Direction: (Q19- Q20) In the questions given below; there are two statements marked as **Assertion (A)** and **Reason (R)**. Read the statements and choose the correct option.

Options

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (b) Both (A) and (R) are true and (R) is not the correct explanation of (A)
- (c) (A) is true but (R) is not true.
- (d) (A) is false but (R) is true

Q19. **Assertion (A):** $x = -4$, $y = 5$ is a solution of the equation $2x + y = -3$

Reason (R): At $x = -4$, $y = 5$ the LHS of equation $2x + y = -3$ is equal to the RHS of the equation.

Q20. **Assertion (A):** Product of 3.333 and $\frac{5}{9}$ is a rational number.

Reason (R): Product of two rational numbers is a rational number.

SECTION B

Q21. Write the co-ordinates of the point M

- a) Whose ordinate is -5 and which lies on y-axis
- b) Whose abscissa is 3 and which lies on x-axis

Q22. Find the value of the linear polynomial $-8a + 17$ at $a = -5$

Q23. Find the decimal form of $\frac{3}{13}$ and write what kind of decimal it is.

OR

Find the decimal form of $\frac{7}{8}$ and write what kind of decimal it is?

Q24. The base of an isosceles triangle is 10 cm and one of its equal sides is 12 cm. Find its area by using Heron's formula.

Q25. A coin is tossed 60 times and tails turn up 33 times. Find the probability of getting a head.

OR

A bag contains 12 white, 4 red and 4 black balls. A ball drawn at random. Find the probability that it is a white or a black ball

SECTION C

✓Q26. Plot the points A(2,1), B(-1,2), C(-2,-1) and D(1,-2) in the Cartesian plane. Is ABCD a square? Find the distance between A and C.

OR

Plot the points P(2,-2), Q(8,4), R(4,8) and S(-2,2) in the Cartesian plane. Find the length of the diagonal.

Q27. The present age of Ramesh's father is four times Ramesh age. After 6 years, their ages will be added up to 72 years. Find their present ages.

OR

If the length of a rectangle is 5 more than twice its width and its perimeter is 34 cm, what are the dimensions of the rectangle?

Q28. Find six rational numbers between $-\frac{6}{7}$ and $\frac{1}{6}$

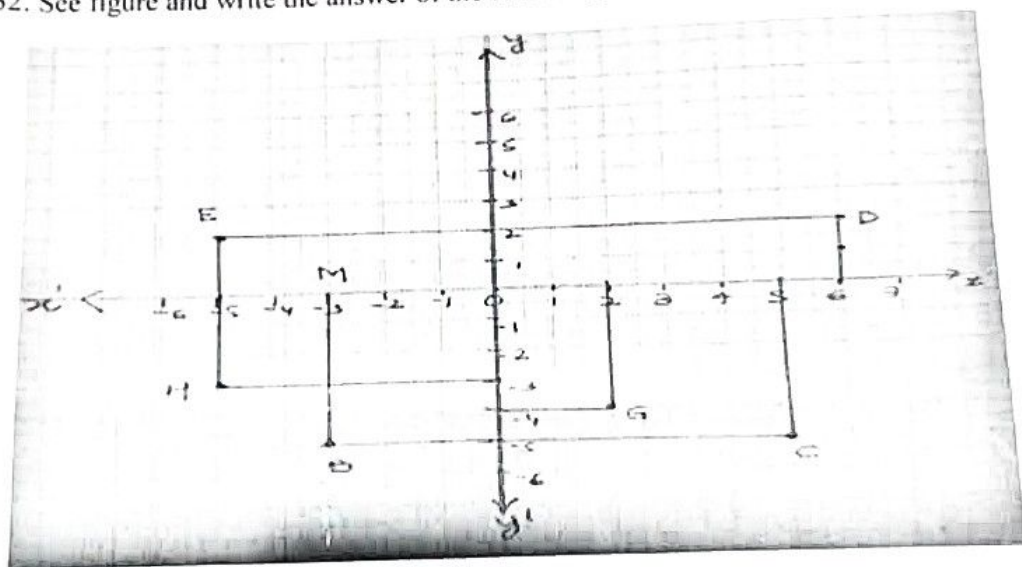
Q29. Draw ΔPQR with $PQ = 6\text{cm}$, $\angle P = 110^\circ$ and $PR = 5\text{cm}$. draw the circumcircle of ΔPQR . Is the centre inside or outside the triangle?

Q30. Factorise: $36x^2 + 25y^2 + 49z^2 + 60xy - 70yz - 84xz$.

Q31. Find the 5th term of a GP with common ratio 2, whose 8th term is 192.

SECTION D

Q32. See figure and write the answer of the following:



- The coordinates of B
- The point identified by the coordinates (2, -4).
- The Point identify by the coordinates (-5, -3)
- The mirror image of (-5, 2) along y-axis.
- The coordinates of D

Q33. a) Locate $\sqrt{13}$ on the number line and show proper working of it. Draw neat diagram of it.

b) Simplify: $(8\sqrt{7} + 5\sqrt{2}) \times (8\sqrt{7} - 5\sqrt{2})$

OR

a) Locate $\sqrt{5}$ on the number line and show proper working of it. Draw neat diagram of it.

b) Simplify: $\sqrt{45} + 28\sqrt{20} - 4\sqrt{5}$

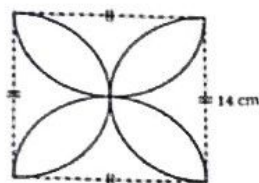
Q34. a) Evaluate: 103×107 by using suitable identity

2) If $x + y = 12$ and $xy = 27$, find the value of $x^3 + y^3$

OR

If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that $a^3 + b^3 + c^3 - 3abc = -5$.

Q35. Find the total perimeter of all the petals in the given figure



SECTION E

Q36. A professional photographer buys a high end DSLR camera for ₹ 45,000. Due to the release of newer models and wear and tear, the market value of the camera decreases at a constant rate of ₹ 3,500 per year.

- Find the market value of the camera exactly 7 years after the date of purchase.
- Explain why this specific relationship represents linear decay.
- Create a table showing the value of the camera as 'V', for time as 't' varying from 1 to 4 years.

OR

Find the value of the camera exactly 8 year after the date of purchase

Q38. A school auditorium has seats arranged in rows. The first row has 20 seats, the second row has 24 seats, the has 28 seats, and so on. The number of seats increase by 4 seats in each successive row. Answer the following questions.

- What is the first term of the AP?
- What is the common difference?
- How many seats are there in 10 rows?

OR

How many seats are there in 25 row?

Q37. A travel agency surveyed 2,000 people to find out their preferred mode of travel for long-distance trips. The results are categorized by age group in the table below:

Age Group	Private Car	Train	Aeroplane	Bus
Under 30	150	250	300	100
30-50	350	200	150	100
Over 50	100	180	20	100

If a person is chosen at random from this survey, find the probability that the person:

- Is over 50 years old and prefers to travel by Train.
- Is under 30 years old and does not prefer a Private Car.
- Is in the 30-50 age group and prefers either a Train or a Bus

OR

Is in the over 50 years age group like Aeroplane or Private car