

Time: 3 Hours

Max.marks 75

Instructions :

1. All the questions are compulsory.
2. Marks allotted for the questions are mentioned against them.
3. Questions from 1 to 5 are objective type questions.
4. Internal choices have been provided for the questions from 6 to 23.

Q-1 Choose the correct option:

1 × 6 = 6

- (i). The sum or difference of a rational and an irrational number will be:
 - (a) rational number
 - (b) irrational number
 - (c) natural number
 - (d) Integers
- (ii). The value of $(3 + \sqrt{3})(3 - \sqrt{3})$ is :
 - (a) 0
 - (b) 1
 - (c) 3
 - (d) 6
- (iii). Which of the following is not a polynomial ?
 - (a) 5
 - (b) $y + \frac{2}{y}$
 - (c) 0
 - (d) $\sqrt{2}x + 3$
- (iv). The degree of polynomial $x^2 + 3x^4 + x - 4x^3 + 7$ is :
 - (a) 2
 - (b) 4
 - (c) 3
 - (d) 0
- (v). The number obtained by subtracting $\frac{1}{4}$ from $\frac{3}{4}$ is:
 - (a) $\frac{1}{2}$
 - (b) $\frac{1}{4}$
 - (c) $\frac{1}{5}$
 - (d) 1
- (vi). The equation $y = 3x + 5$ has:
 - (a) a unique solution.
 - (b) There are only two solutions.
 - (c) There are infinitely many solutions.
 - (d) There is no solution

Q-2. Fill in the blanks:

1 × 6 = 6

- (i). Point (0, -5) will be located on _____ axis.
- (ii). The graph of $x = a$ is a straight line parallel to the _____ axis.
- (iii). Those lines which are parallel to the same line are mutually _____.
- (iv). Angles opposite to equal sides of an isosceles triangle are _____.
- (v). The quadrilateral whose all sides are equal and each angle is of 90° is called _____.
- (vi). Two angles whose sum is 180° are called _____.

Q-3. Write true or false:

$1 \times 6 = 6$

- (i). The value of the remainder in $59 \div 8$ is 5.
- (ii). The point (1,3) is a solution of the equation $x + y = 4$.
- (iii). In a triangle, at most two angles can be right angled.
- (iv). The line segment joining the center to any point on the circle is the circumference of the circle.
- (v). -5 is smaller than 0 but larger than -8.
- (vi). The measure of a straight angle is 180°

Q-4 Match the columns:

$1 \times 6 = 6$

Column A	Column B
(i). rectangle is a	(a) Circumference
(ii). Addition of $2x$ to 3	(b) Triangle
(iii). $(-a)(-2b)$	(c) 90°
(iv). Circle	(d) $2x + 3$
(v). Right angle	(e) $2ab$
(vi). A closed figure with three sides	(f) quadrilateral

Q-5 Write the answer in one word or sentence-

$1 \times 6 = 6$

- (i). Write the degree of linear polynomial.
- (ii). How many groups will be formed if 28 beads are divided into groups of 4 each?
- (iii). In which quadrant will the point (4, -3) be located?
- (iv). What will be the distance of point (-5,2) from x-axis?
- (v). What will be the sum of the first ten even natural numbers?
- (vi). What is the maximum number of circles that can be drawn through three non-collinear points?

Q.6. Find four rational numbers between $\frac{1}{5}$ and 1

2

Or

Rationalize the denominator of $\frac{1}{\sqrt{2}}$

Q.7. Simplify : $(7)^{\frac{1}{2}}, (8)^{\frac{1}{2}}$

2

Or

Simplify : $\frac{5}{\sqrt{3}-\sqrt{5}}$

Q.8. Factorize : $x^3 - 2x^2 - x + 2$

2

Or

Write $(3a + 4b)^3$ in expanded form.

Q.9. Plot the points (1,5), (4,-3), (-5,4) and (-3,-2) on the Cartesian plane.

Or

2

In how many parts the cartesian plane is divided by x-axis and y-axis and what these parts are called ?

Q.10. Write in which quadrants the points (-2,4), (3,-1), (-1,0) and (1,2) are located.

Or

2

Write the abscissa and ordinate at the points (5,2) and (7,4).

Q.11. Write the equations of any two lines passing through the point (1,2)

Or

2

Write two solutions of the equation $4x + 3y = 12$

Q.12. If the point (3,4) lies on the graph of equation $3y = ax + 7$ then what is the value of a ?

Or

2

For what value of k , $x = 2, y = 1$ is a solution of the equation of $2x + 3y = k$.

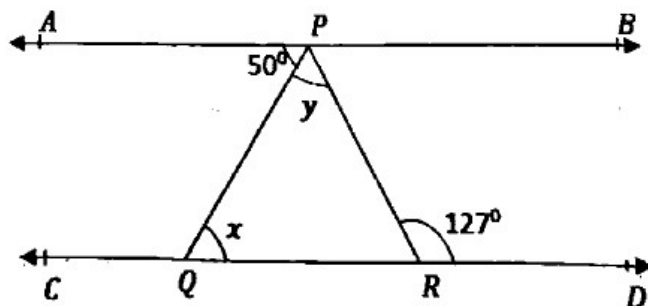
Q.13. If a point C is situated between two points A and B such that $AC = BC$ then prove that $AC = \frac{1}{2}AB$

Or

2

If A, B and C are three points situated on a line and B lies between the points A and C then prove that $AB + BC = AC$

Q.14. In the given figure, if $AB \parallel CD$, $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$ then find x and y



Or

2

Define straight angle.

Q.15. In $\triangle ABC$, angle bisector AD of $\angle A$ is perpendicular to side BC .

Show that $AB = AC$

2

Or

Show that each angle of an equilateral triangle is 60°

Q.16. Divide 360 in the ratio 5 : 7

Or

2

If Mohan is twice as tall as Ramesh, then what is the ratio of the heights of Mohan and Ramesh?

Q.17. A shopkeeper bought a copy in ₹35.15 and sold it in ₹45.65 then how much profit he received ?

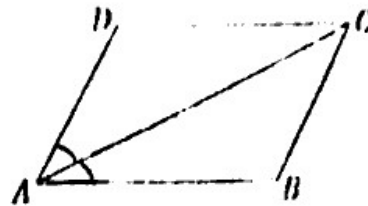
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Or

The cost of a shirt is ₹700.50. The shopkeeper sells it at a discount of ₹122.85, then what will be the selling price of the shirt?

Q.18. In the following figure, diagonal AC of a parallelogram ABCD bisects $\angle A$.

Show that ABCD is a rhombus.



Or

✓ If the diagonals of a parallelogram are equal, show that it is a rectangle.

Q.19. Two angles of a quadrilateral are 60° and 70° and the other two angles are equal, then find these angles of the quadrilateral.

Or

Prove that the line segment joining the midpoints of sides of a triangle is parallel to the third side.

Q.20. Show that $1.272727\dots = 1.\overline{27}$ can be expressed as $\frac{p}{q}$ where p and q are integers and $q \neq 0$.

Or

Simplify $\frac{5}{\sqrt{7}-\sqrt{2}} + \frac{3}{\sqrt{5}+\sqrt{2}}$

Q.21. Factorize : $x^3 - 23x^2 + 142x - 120$

Or

Find the value $(-12)^3 + 7^3 + 5^3$ of without calculating their cubes.

Q.22. Prove that equal chords of a circle subtend equal angles at the centre.

4

Or

Two chords AB and CD of length 5cm (and) 12cm of a circle are parallel and lie on opposite sides of the centre. If the distance between AB and CD is 6cm then find the radius of the circle.

Q.23. By using identities find the value of $(999)^3$

Or

Check whether $1+3x$ is a factor of $3x^3 + 7x$ or not.

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