

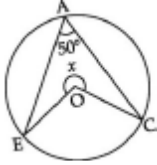
#### General Instructions:

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into four sections A, B, C and D. Section – A comprises of 8 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each.
3. Question numbers 1 to 8 in Section – A are multiple choice questions where you are to select one correct option out of the given four.
4. There is no overall choice. However, internal choices have been provided in 1 question of two marks, 3 questions of three marks and 2 questions of four marks each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculator is not permitted.

#### Section – A

**Question numbers 1 to 8 carry one mark each. For each questions, four alternative choices have been provided of which only one is correct. You have to select the correct choice.**

1. If  $x = -3$  and  $y = -2$  is a solution of equation  $x - py = 7$ , the value of  $p$  is:  
a.  $-2$                       b.  $5$                       c.  $2$                       d.  $-5$
2. If a triangle and a parallelogram are on the same base and between the same parallels, then the ratio of the area of the triangle to the area of parallelogram is:  
a.  $1 : 3$                       b.  $1 : 2$                       c.  $3 : 1$                       d.  $1 : 4$
3. Find  $x$  in the adjoining figure, O is the centre of the circle.



- a.  $100^0$       b.  $200^0$       c.  $250^0$       d.  $260^0$
4. The graph of  $0x + 3y = 6$  is parallel to
- Neither  $x - axis$  nor  $y - axis$
  - A line through origin
  - $x - axis$
  - $y - axis$
5. The mean of the multiples of 3 from 3 to 10 is:
- 5
  - 6.5
  - 7
  - 6
6. The diameter of a solid cone of radius  $r$  is the same as its height. The volume of the cone is:
- $\frac{1}{3}\pi r^2 h$
  - $\frac{2}{3}\pi r^3$
  - $\pi r^2 h$
  - $\frac{4}{3}\pi r^3$
7. A coin is tossed 10 times with the frequencies: Head – 4, tail – 6. The probability of no head is:
- $\frac{2}{5}$
  - $\frac{3}{5}$
  - 0
  - 1
8. Curved surface area of a hemisphere with radius 7 cm is:
- $308 \text{ cm}^2$
  - 308 cm
  - $154 \text{ cm}^2$
  - 154 cm

### Section – B

**Question numbers 9 to 14 carry two marks each.**

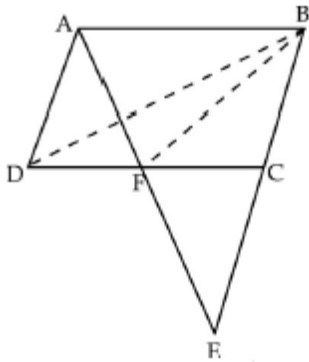
9. Prove that the diagonals of a rhombus are perpendicular to each other.  
OR  
The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.
10. Find the total surface area of a hemisphere of radius 3.5 cm. (Take  $\pi = \frac{22}{7}$ )
11. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of  $x$ .  
29, 32, 48,  $x$ ,  $x + 2$ , 72, 78, 84, 95.
12. In a cricket match a batswoman hits the boundary 16 times out of 40 balls she plays. Find the probability of her not hitting the boundary.

13. A chord of a circle is equal to its radius. Find the angle subtended by this chord at a point on the major segment.
14. Is it correct to say that the mode of the data 3, 2, 5, 3, 9, 3, 15, 9, 8 is 15? Give reasons for your answers.

### Section – C

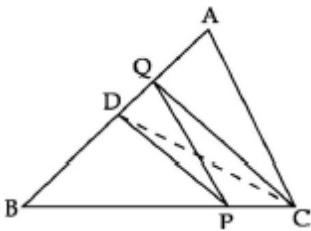
Question numbers 15 to 24 carry three marks each.

15. Compare the equation  $\frac{x}{3} + \frac{3}{2}y + 4 = 2y - 3$  and  $lx + my - n = 0$  and write the value of  $l, m$  and  $n$ .
16. ABCD is a parallelogram in which BC is produced to E such that CE = BC. AE intersects CD at F. Prove that  $ar(\Delta BFC) = \frac{1}{4}ar(ABCD)$ .



OR

- In the figure, D is the mid – point of side AB of  $\Delta ABC$ . P is any point on BC. If  $CQ \parallel PD$  meets AB at Q, then prove that  $ar(\Delta BPQ) = \frac{1}{2}ar(\Delta ABC)$



17. Construct an angle of  $105^\circ$ , using ruler and compass only.
18. A wall 4 m long, 3 m high and 13 cm thick is made up of bricks each measuring  $20\text{ cm} \times 12\text{ cm} \times 6.5\text{ cm}$ . Find the number of bricks required to build the wall.

OR

A rectangular piece of paper is 22 cm long and 12 cm wide. A cylinder is formed by rolling the paper along its length. Find the volume of the cylinder.

(Use  $\pi = \frac{22}{7}$ )

19. Given below are the number of seats won by different political parties in an election.

Political party	A	B	C	D	E	F
Number of seats won	75	52	35	42	30	47

Draw a graph to represent the above data.

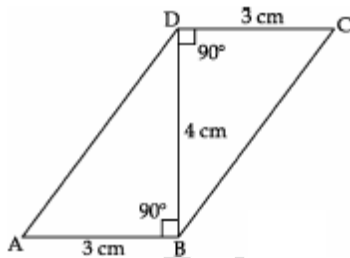
20. By means of graph, verify that  $x = 2, y = 2$  is a solution of the equation  $2x - y = 2$ .

21. A conical tent has the radius of its base as 7 m and curved surface area as  $550 \text{ m}^2$ . Find the volume of the tent. (Take  $\pi = \frac{22}{7}$ )

OR

A hemispherical dome of a building needs to be painted. If the circumference of the base of the dome is 17.6 m, find the cost of painting it, if the cost of painting is Rs. 5 per  $100 \text{ cm}^2$ . (Take  $\pi = \frac{22}{7}$ )

22. In the figure, ABCD is a quadrilateral and BD is one of its diagonals. Show that ABCD is a parallelogram and also find its area.



23. Show that the diagonals of a rhombus are perpendicular to each other.

24. The ages of workers in a factory are given in the following table:

Age (in years)	21 – 23	23 – 25	25 – 27	27 – 29	29 – 31	31 – 33	33 – 35
Number of workers	3	4	5	6	5	4	3

Find the probability that the age of the worker selected at random is at least 25 years.

### Section – D

Question numbers 25 to 34 carry four marks each.

25. P, Q, R and S are the mid – points of the sides AB, BC, CD and DA respectively of the parallelogram ABCD. Show that PQRS is a parallelogram whose area is half that of the parallelogram ABCD.
26. Construct a  $\Delta ABC$  in which  $BC = 5$  cm,  $\angle B = 30^\circ$  and  $AC - AB = 2$  cm.
27. Draw the graph of the equations  $2x + 3y = 5$  and  $x - 2y = 13$  on the same axes. Find the coordinates of the point where their graphs intersect each other.
28. A storage tank is in the form of a cube. When it is full of water the volume of water is  $15.625$  m<sup>3</sup>. If the present depth of water is  $1.5$  m, find the volume of water already used from the tank.
- OR
- The radius and height of a cylinder are in the ratio  $5 : 7$  and its volume is  $550$  cm<sup>3</sup>. Find the radius and height.
29. Prove that the angle subtended by an arc of the circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.
30. Prove that the diagonal of a parallelogram divides it into two congruent triangles.
31. Draw the graph of the equation  $5x - 4y + 20 = 0$ . Find the points where the line represented by the equation cuts the  $x - axis$  and  $y - axis$ .
32. Prove that the quadrilateral formed by the internal angle bisectors of any quadrilateral is cyclic.
- OR
- The diagonals of a parallelogram ABCD intersect at a point O. Through O, a line is drawn to intersect AD at P and BC at Q. Show that PQ divides the parallelogram into two parts of equal areas.
33. A semi – circular sheet of metal of diameter  $28$  cm is bent to form an open conical cup. Find the capacity of the cup.
34. Draw a frequency polygon to represent the following data:

Height (in cm)	145 – 150	150 – 155	155 – 160	160 – 165	165 – 170
Number of persons	3	5	6	10	12