

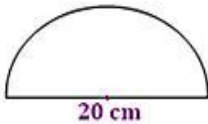
**Marking Scheme:** Four questions carry 10 marks each. Questions have 3 subparts each. Subparts (a) and (b) carry 3 marks each and subpart (c) carries 4 marks.

**Question 1:**

- A can do a piece of work in 15 hours while B can do it in 12 hours. How long will both take to do it, working together?
- Solve the inequation  $2(x - 4) \geq 3x - 5$  and write its solution set for  $x \in \mathbb{R}$ .
- Consider set  $A = \{1, 2, 3\}$ . Answer the following questions:
  - What is its cardinal number (n)?
  - Find the number of its subsets
  - Find the number of its proper subsets
  - Write the set in set-builder form

**Question 2:**

- After an increase of 20 %; a number becomes 540. Find the original number.
- Find the perimeter of the adjoining figure which is a semicircle including the diameter.



- A cuboid has its dimensions in the ratio 2:3:5. Its volume is  $3750 \text{ m}^3$ . Find:
  - Its dimensions (length, breadth and height)
  - Lateral surface area
  - Total surface area
  - Cost of painting the entire cuboid at the rate of Rs.  $10/\text{m}^2$ .

**Question 3:**

- Two parallel sides of a trapezium are of lengths 27 cm and 19 cm respectively, and the distance between them is 14 cm. Find the area of the trapezium.
- 32 workers can complete a work in 84 days. How many workers will complete the same work in 48 days?
- 4 books cost Rs. 20. Answer the following:
  - Find the cost of 12 books
  - Find the number of books that can be brought for Rs. 35.

**Question 4:**

- Solve the inequation:
$$\frac{x-1}{3} < \frac{5}{2} + x \quad x \in \mathbb{I}$$
- Find all the proper subsets of the set  $A = \{x : x \in \mathbb{I}, -2 < x < 2\}$
- Three taps A, B and C can fill an overhead tank in 6 hours, 8 hours and 12 hours respectively. How long would the three taps take to fill the empty tank, if all of them are opened together?