

## Sample Question Paper

Term 2

STANDARD (041)

Time Allowed: 2 hours

Maximum Marks: 40

### General Instructions:

1. The question paper consists of 14 questions divided into 3 sections A, B and C.
2. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
3. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
4. Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

### SECTION A

1. Compute the median marks for the following data.

Marks	0 and above	10 and above	20 and above	30 and above	40 and above	50 and above	60 and above
Number of students	50	46	40	20	10	3	0

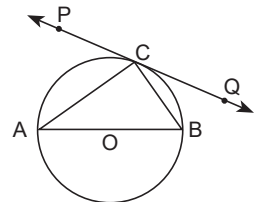
2. Solve:  $x^2 - (\sqrt{3} + 1)x + \sqrt{3} = 0$

OR

Find the value of  $k$  for which the equation  $x^2 + k(2x + k - 1) + 2 = 0$  has real and equal roots.

3. The 25th term, 10th term and the last term of an AP are  $-67$ ,  $-22$  and  $-82$  respectively. Find the common difference and the number of terms.

4. In the given figure, PQ is a tangent at a point C to a circle with centre O. If AB is a diameter and  $\angle CAB = 30^\circ$ , find  $\angle PCA$ .



5. Solve:  $r^2p^2z^2 + 2rpz + 1 = 0$ ,  $p \neq 0$ ,  $r \neq 0$ .

6. The area of a base of a cuboid is  $30 \text{ cm}^2$  and its volume is  $135 \text{ cm}^3$ . Find the height of the cuboid.

OR

The dimensions of a metallic cuboid are  $100 \text{ cm} \times 80 \text{ cm} \times 64 \text{ cm}$ . It is melted and recast into a cube. Find the surface area of the cube.

### SECTION B

7. Draw a pair of tangents to a circle of radius 3.5 cm which are inclined to each other at an angle of  $45^\circ$ .
8. The mean of the following frequency distribution is 57.6 and the sum of observations is 50. Find the missing frequencies  $f_1$  and  $f_2$ .

<i>Class interval</i>	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100	100 – 120
<i>Frequency</i>	7	$f_1$	12	$f_2$	8	5

9. A statue 1.46 m tall, stands on top of a pedestal. From a point on the ground the angle of elevation of the top of the statue is  $60^\circ$  and from the same point the angle of elevation of the top of the pedestal is  $45^\circ$ . Find the height of the pedestal. [Use  $\sqrt{3} = 1.73$ ]

OR

From a window 60 m high above the ground in a street, the angles of elevation and depression of the top and the foot of another house on opposite side of the street are  $60^\circ$  and  $45^\circ$  respectively. Show that the height of the opposite house is  $60(1 + \sqrt{3})$  metres.

10. The daily pocket allowance of two groups of children are as follows:

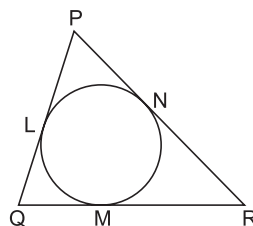
<i>Daily allowance (in ₹)</i>	16 – 18	18 – 20	20 – 22	22 – 24	24 – 26
<i>Group A</i>	50	78	46	11	40
<i>Group B</i>	54	89	40	29	13

Compare their modal daily pocket allowances.

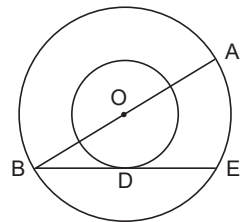
### SECTION C

11. In the given figure, a circle is inscribed in  $\Delta PQR$  with  $PQ = 10 \text{ cm}$ ,  $QR = 8 \text{ cm}$  and  $PR = 12 \text{ cm}$ . Find the lengths of  $QM$ ,  $RN$  and  $PL$ .

OR



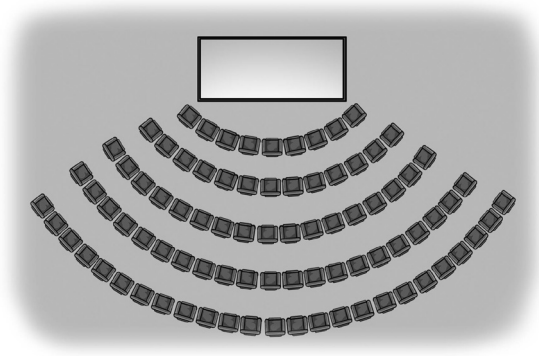
In the given figure, the radii of two concentric circles are 13 cm and 8 cm. AB is diameter of the bigger circle. BD is the tangent to the smaller circle touching it at D. Find the length AD.



12. From a solid cylinder of height 2.8 cm and diameter 4.2 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid.

### Case Study 1

13. In the school auditorium, annual day function is being organised. Organisers observe that, 9 guests occupied the 1st row, 13 guests occupied the 2nd row, 17 guests occupied the 3rd row and so on. There were 25 guests in the last row.

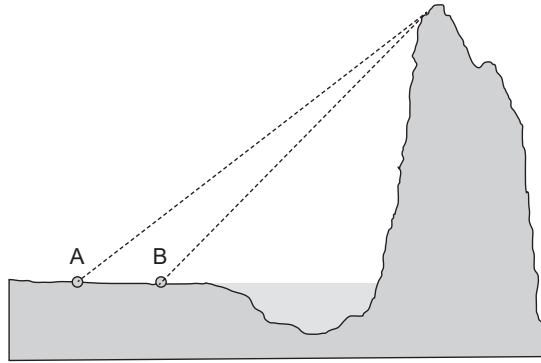


Read the above situation and answer the following questions.

- (i) Form an AP representing the number of guests based on their seating arrangement and hence, find the number of rows in the auditorium.
- (ii) Find the number of guests seated in 4th row. Also, find the total number of guests seated in the auditorium.

### Case Study 2

14. A team went to Nainital to survey mountains. The team members A and B were standing on the ground and wanted to find the height of the mountain some distance away from the other side of the lake. One team member was standing on the top of the mountain. The angle between the horizontal ground at A and the line of sight to the top of the mountain to be  $30^\circ$ . The angle between the horizontal ground at B and the line of sight to the top of the mountain be  $60^\circ$ . The distance between A and B is 400 m. Based on the given situation, answer the following questions.



- (i) Make a labelled figure on the basis of the given information and calculate the horizontal distance from B to mountain.
- (ii) Find the height of the mountain.