

# TERM-II

# SAMPLE QUESTION PAPER

BLUE PRINT

Time Allowed : 2 hours

Maximum Marks : 40

S. No.	Unit / Chapter		Section-A (2 marks)	Section-B (3 marks)	Section-C (4 marks)	Total
1.	Unit-I	Quadratic Equations	–	–	1(4)	3(10)
2.		Arithmetic Progressions	1(2)*	–	1(4)	
3.	Unit-II	Circles	1(2)	–	1(4)*	3(9)
4.		Constructions	–	1(3)*	–	
5.	Unit-III	Some Applications of Trigonometry	2(4)	1(3)	–	3(7)
6.	Unit-IV	Surface Areas and Volumes	1(2)*	–	1(4)	2(6)
7.	Unit-V	Statistics	1(2)	2(6)	–	3(8)
		<b>Total Questions</b>	<b>6(12)</b>	<b>4(12)</b>	<b>4(16)</b>	<b>14(40)</b>

\*It is a choice based question.

# Mathematics - Standard

Time Allowed : 2 hours

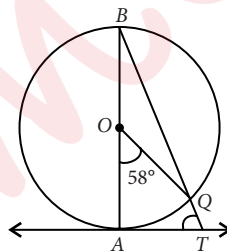
Maximum Marks : 40

## General Instructions :

1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. All questions are compulsory.
3. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
4. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
5. 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. The tops of two towers of height  $x$  and  $y$ , standing on level ground, subtend angles of  $30^\circ$  and  $60^\circ$  respectively at the centre of the line joining their feet, then find  $x : y$ .
2. In the given figure,  $AB$  is the diameter of a circle with centre  $O$  and  $AT$  is a tangent. If  $\angle AOQ = 58^\circ$ , find  $\angle ATQ$ .



3. For the following data, find the modal class.

Class interval	Frequency
Less than 20	15
Less than 40	37
Less than 60	56
Less than 80	87
Less than 100	115

4. Which term of the A.P. 3, 15, 27, 39, .... will be 120 more than its 21<sup>st</sup> term?

OR

Find the four numbers in A.P., whose sum is 50 and in which the greatest number is 4 times the least.

5. A pole 14 m high casts a shadow  $14\sqrt{3}$  m long on the ground. Find the sun's elevation.

6. If the total surface area of a solid hemisphere is  $462 \text{ cm}^2$ , find its volume.  $\left[ \text{Take } \pi = \frac{22}{7} \right]$

OR

Two cubes each of volume  $125 \text{ cm}^3$  are joined end to end. Find the surface area of the resulting cuboid.

### SECTION - B

7. Find the median of the following frequency distribution:

Weekly wages (in ₹)	60-69	70-79	80-89	90-99	100-109	110-119
No. of workers	5	15	20	30	20	8

8. Draw a line segment of length  $8.4 \text{ cm}$  and divide it internally in the ratio of  $5 : 9$ . Measure the two parts.

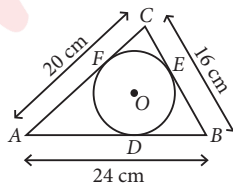
OR

Construct a tangent to a circle of radius  $5 \text{ cm}$  from a point on the concentric circle of radius  $7 \text{ cm}$ .

9. An aeroplane, when flying at a height of  $4000 \text{ m}$  from the ground passes vertically above another aeroplane at an instant when the angles of elevation of the two planes from the same point on the ground are  $60^\circ$  and  $45^\circ$  respectively. Find the vertical distance between the aeroplanes at that instant. (Take  $\sqrt{3} = 1.73$ )
10. The mean weight of  $150$  students in a class is  $60 \text{ kg}$ . The mean weight of boys is  $70 \text{ kg}$  while that of girls is  $55 \text{ kg}$ . Find the number of boys and girls in the class.

### SECTION - C

11. The sums of  $n, 2n, 3n$  terms of an A.P. are  $S_1, S_2, S_3$  respectively. Prove that  $S_3 = 3(S_2 - S_1)$ .
12. A circle is inscribed in a  $\Delta ABC$  having sides  $16 \text{ cm}$ ,  $20 \text{ cm}$  and  $24 \text{ cm}$  as shown in figure. Find  $AD$ ,  $BE$  and  $CF$ .



OR

Prove that the tangent drawn at the mid-point of an arc of a circle is parallel to the chord joining the end points of the arc.

### Case Study - 1

13. Quadratic equations started around  $3000 \text{ B.C.}$  with the Babylonians. They were one of the world's first civilisation, and came up with some great ideas like agriculture, irrigation and writing. There were many reasons why Babylonians needed to solve quadratic equations. For example to know what amount of crop you can grow on the square field.

Based on the above information, represent the following questions in the form of quadratic equation.

- (i) The sum of squares of two consecutive integers is  $650$ .
- (ii) A natural number whose square diminished by  $84$  is thrice of  $8$  more of given number.

## Case Study - 2

14. Alok and his family went for a vacation to Jaipur. There they had a stay in tent for a night. Alok found that the tent in which they stayed is in the form of a cone surmounted on a cylinder. The total height of the tent is 42 m, diameter of the base is 42 m and height of the cylinder is 22 m.



Based on the above information, answer the following questions.

- (i) How much canvas is needed to make the tent?
- (ii) Find the volume of the tent.

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