# PRACTICE PAPER- 2
## Mathematics- Standard (041)
## CLASS X
## Session: 2021-22
## TERM II

**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 4questions 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. Is the given sequence: $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \ldots$ form an AP? If it forms an AP, then find the common difference d and write the next three terms.    **[2]**

<div align="center">OR</div>

Find the $n^{\text{th}}$ term of the AP: 5, 11, 17, 23, ....

2. If x = 2 and x = 3 are roots of the equation $3x^2 - 2kx + 2m = 0$, find the value of k and m.    **[2]**

3. In the adjoining figure, a circle touches the side DF of $\triangle$EDF at H and touches ED and EF produced at K and M respectively. If EK = 9 cm, then what is perimeter of $\triangle$EDF?    **[2]**
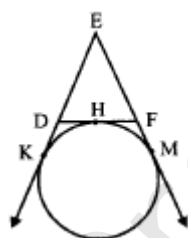


4. A toy is in the form of a cone mounted on a hemisphere with the same radius. The diameter of the base of the conical portion is 6 cm and its height is 4 cm. Determine the surface area of the toy. (Use $\pi$ = 3.14)    **[2]**

5. If the class mark of a continuous frequency distribution are 12, 14, 16, 18, ..., then find the class intervals corresponding to the class marks 16 and 22.    **[2]**

6. Two taps running together can fill a tank in $3\frac{1}{13}$ hours. If one tap takes 3 hours more than the other to fill the tank, then how much time will each tap take to fill the tank?    **[2]**

<div align="center">OR</div>

Find the values of k for which the given equation has real roots:

$5x^2 - kx + 1 = 0$

**Section B**

7. Find the median of the following frequency distribution: **[3]**

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

8. Let PQR be a right triangle in which PQ = 3 cm, QR = 4 cm and ∠Q = 90°. QS is the **[3]** perpendicular from Q on PR. The circle through Q, R, S is drawn. Construct the tangents from P to this circle.

9. The arithmetic mean of the following frequency distribution is 50. **[3]**

| Class | 0 - 10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 |
|---|---|---|---|---|---|
| Frequency | 16 | p | 30 | 32 | 14 |

Find the value of p.

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

OR

Two boats approach a light house in mid-sea from opposite directions. The angles of elevations of the top of the lighthouse from two boats are 30° and 45° respectively. If the distance between two boats is 100 m, find the height of the lighthouse.

**Section C**

11. The interior of a building is in the form of cylinder of diameter 4.3 m and height 3.8 m, **[4]** surmounted by a cone whose vertical angle is a right angle. Find the area of the surface and the volume of the building. (Use $\pi$ = 3.14).

12. In figure the incircle of $\triangle ABC$ touches the sides BC, CA and AB at D, E and F respectively. **[4]** Show that AF + BD + CE = AE + BF + CD = $\frac{1}{2}$(Perimeter of $\triangle$ABC)
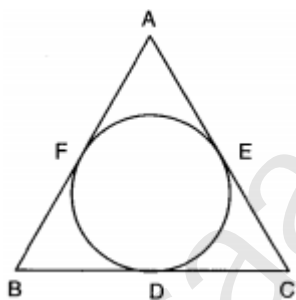


OR

In fig., two tangents AB and AC are drawn to a circle with centre O such that $\angle BAC = 120°$. Prove that OA = 2AB.
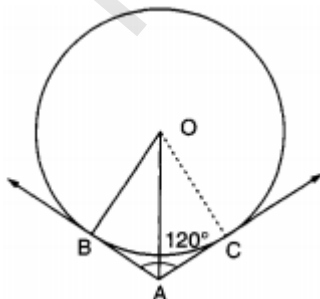


13. A TV tower stands vertically on a bank of a canal. From a point on the other bank of a canal. **[4]** From a point on the other bank directly opposite the tower, the angle of elevation of the top of

the tower is 60⁰ from a point 20 m away from this point on the same bank the angle of elevation of the top of the tower is 30⁰.
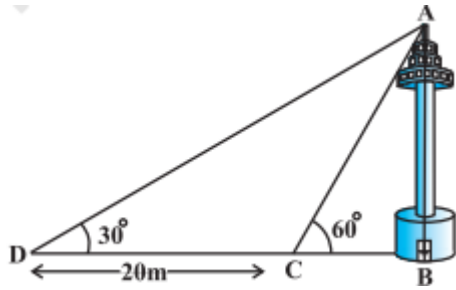


i. Find the height of the tower

ii. Find the width of the canal.

14. Deepa has to buy a scooty. She can buy scooty either making cashdown payment of Rs. 25,000 **[4]** or by making 15 monthly instalments as below.

Ist month - Rs. 3425, IInd month - Rs. 3225, IIIrd month - Rs. 3025, IVth month - Rs. 2825 and so on.



i. Find the amount of 6th instalment.

ii. Total amount paid in 15 instalments.