PRACTICE PAPER-2
Mathematics-Basic (241)
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. 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. Solve: $\sqrt{7}x^2 - 6x - 13\sqrt{7} = 0$ **[2]**

   OR

   Determine whether the given values are solutions of the given equation or not:

   $x^2 - 3x + 2 = 0$, x = 2, x = -1

2. Eight solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 6 cm and height 32 cm. Then, find the diameter of each sphere. **[2]**

3. If the mean of the following data is 20.6. Find the value of p. **[2]**

x	10	15	p	25	35
f	3	10	25	7	5

4. The sum of n terms of an AP is $3n^2 + 5n$. Find the AP. Hence, find its 16^{th} term. **[2]**

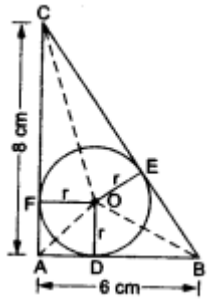
5. The frequency distribution of agricultural holdings in a village is given below : **[2]**

Area of land [in hectare)	1 - 3	3 - 5	5 - 7	7 - 9	9 - 11	11 -13
Number of families	20	45	80	55	40	12

   Find the modal agricultural holdings of the village

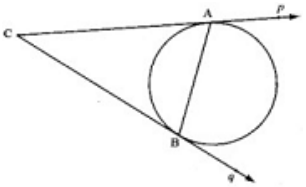
6. In the given figure, ABC is a right-angled triangle with AB = 6 cm and AC = 8 cm. A circle with centre O has been inscribed inside the triangle. Calculate the value of the radius of the **[2]**

inscribed circle.



OR

Prove that the tangents drawn at the end of a chord of a circle make equal angle with the chord.



Section B

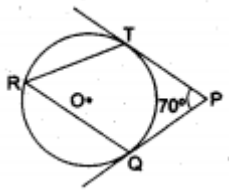
7. In an AP: $a_n = 4$, d = 2, $S_n = -14$, find n and a. **[3]**

8. The angle of elevation of a cloud from a point 200 m above the lake is 30^o and the angle of depression of its reflection in the lake is 60^o, find the height of the cloud above the lake. **[3]**

OR

A path separates two walls. A ladder leaning against one wall rests at a point on the path. It reaches a height of 90 m on the wall and makes an angle of 60° with the ground. If while resting at the same point on the path, it were made to lean against the other wall, it would have made an angle of 45° with the ground. Find the height it would have reached on the second wall.

9. In the given figure, O is the centre of a circle. PT and PQ are tangents to the circle from an external point P. If $\angle TPQ$ = 70°, find $\angle TRQ$. **[3]**



10. Find roots of given quadratic equation: $p^2x^2 + \left(p^2 - q^2\right)x - q^2 = 0, p \neq 0$ **[3]**

Section C

11. Determine a point which divides a line segment of length 12 cm internally in the ratio 2: 3. Also, justify your construction. **[4]**

OR

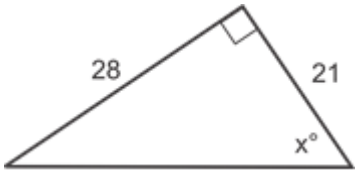
Let ABC be a right triangle in which AB = 6 cm, BC = 8 cm and $\angle B = 90^\circ$. BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangents from A to this circle.

12. The following table shows the ages of the patients admitted in a hospital during a year: **[4]**

Age (in years)	**5-15**	**15-25**	**25-35**	**35-45**	**45-55**	**55-65**
Number of patients	6	11	21	23	14	5

Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.

13. Tushar a class 10th student after reading the chapter Application of trigonometry started solving the problems of the chapter. He was solving different types of questions, one of them is related to triangle as shown in the figure below. **[4]**

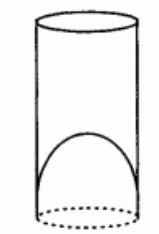


By analysing the above given figure answer the following questions:

i. He writes $x^0 = \tan^{-1}(\frac{21}{28})$
He made a mistake. What did he do wrong?

ii. How could Tushar have found the hypotenuse in the triangle avoiding making mistake?

14. A juice seller was serving his customers using glasses as shown in Fig. The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. **[4]**



i. If the height of a glass was 10 cm, find the apparent capacity of the glass

ii. Also, find its actual capacity. (Use $\pi = 3.14$.)