Mock Board Exam

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.

6. A students has to answer a question either by typing it out, in the space provided, or writing down each answer on paper, and uploading a picture of it using the upload option.

7. A student is advised to write the answers in a clear, legible handwriting using a blue/black ball point pen before uploading it.

Section A

12 Marks

Internal choices have been provided for few questions. Answer them accordingly.

12 Marks

This is an OR based question

1 Find the roots of the quadratic equation $3x^2 - 2\sqrt{6}\,x + 2 = 0$ **2 M**

OR

Find the values of k for which the quadratic equation $kx\,(x-2) + 6 = 0$ has real and equal roots.   **2 M**

2 A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to $1\,cm$ and the height of the cone is equal to its radius. Find the volume of the solid in terms of π .   **2 M**

3 Determine the AP whose 3rd term is 5 and the 7th term is 9.   **2 M**

4 A survey conducted on 20 households in a locality by a group of students resulted in the following frequency table for the number of family members in a household: **2 M**

| Family Size	$1-3$	$3-5$	$5-7$	$7-9$	$9-11$
Number of Families	7	8	2	2	1

Find the mode of this data.

This is an OR based question

5   Prove that the tangents drawn at the ends of a diameter of a circle are parallel.   **2 M**

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

A triangle ABC is drawn to circumscribe a circle of radius $4\ cm$ such that the   **2 M**
segments BD and DC into which BC is divided by the point of contact D are of
lengths $8\ cm$ and $6\ cm$ respectively (see figure). Find the sides AB and AC, when
the area of the triangle ABC is $84\ cm^2$.
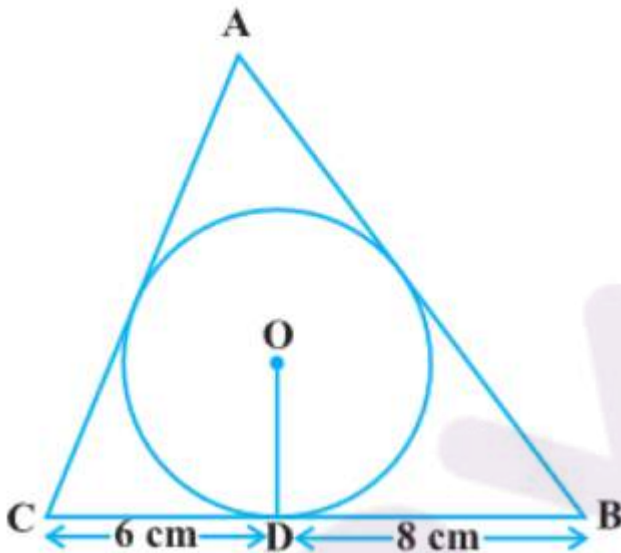
6   Find the median for the following data.   **2 M**

Class Interval	$0-10$	$10-20$	$20-30$	$30-40$
Frequency	7	15	16	12

Section B

12 Marks

Internal choices have been provided for few questions. Answer them accordingly.

12 Marks

7   The sum of the first three terms of an AP is 93. The sum of the last two terms is 272.   **3 M**
If its first term is 21, find the number of terms.

8   From a point P on the ground the angle of elevation of the top of a 10 m tall building   **3 M**
    is $30°$ .A flag is hoisted at the top of the building and the angle of elevation of the top
    of the flagstaff from P is $45°$. Find the length of the flagstaff and the distance of the
    building from the point P. (You may take $\sqrt{3} = 1.732$)

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

The angles of depression of the top and the bottom of an $8\ m$ tall building from the   **3 M**
top of a multi-storeyed building are $30°$ and $45°$, respectively. Find the height of the
multi-storeyed building and the distance between the two buildings.

9   PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and   **3 M**
    Q intersects at a point T (see figure). Find the length TP.
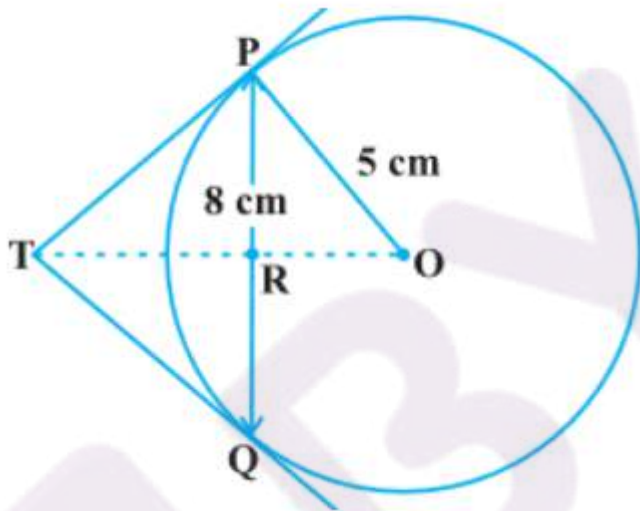
10 Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/   **3 M**
    h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed ?

Internal choices have been provided for few questions. Answer them accordingly.

16 Marks

This is an OR based question

11 Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4   **4 M**
 cm and taking B as centre, draw another circle of radius 3 cm. Construct tangents
 to each circle from the centre of the other circle.

OR

Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at   **4 M**
an angle of 60°.

12 Find the mean and mode of the following frequency distribution: **4 M**

Class	Frequency
$0 - 10$	3
$10 - 20$	8
$20 - 30$	10
$30 - 40$	15
$40 - 50$	7
$50 - 60$	4
$60 - 70$	3

13 A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height   **4 M**
 of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the
 girl at any instant is 60°. After some time, the angle of elevation reduces to 30° (see
 figure). Find the distance travelled by the balloon during the interval.
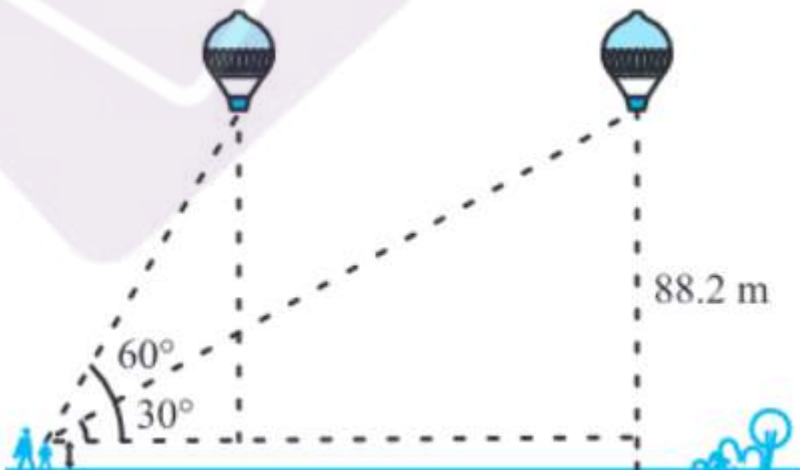
14 Two dairy owners P and Q sell flavoured milk filled to capacity in mugs of negligible thickness, which are cylindrical in shape with a raised hemispherical bottom. The mugs are 14 cm high and have a diameter of 7 cm as shown in the given figure. Both P and Q sell flavoured milk at the rate of ₹80 per litre. The dairy owner P uses the formula $\pi r^2 h$ to find the volume of milk in the mug and charges ₹43.12 for it. The dairy owner Q is of the view that the price of the actual quantity of milk should be charged. What according to him should be the price of one mug of milk? Which value is exhibited by the dairy owner Q? $\left(\pi = \frac{22}{7}\right)$

4 M