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**"There is no element of genius
Without some form of madness"**

<u>**CLASS 10TH CBSE**</u>
<u>**MOCK TEST- 2**</u>
<u>**TERM-2**</u>

<u>**T.T-2 Hr**</u>   <u>**M.M- 40**</u>
Instructions
    1. The question paper contains three sections A, B and C
    2. Section A has 5 questions with 3 internal choices.
    3. Section B has 4 questions with 3 internal choices
    4. Section C has1 Case Based MCQs comprises of 5 MCQs
    5. There is no negative marking.

<center><u>**SECTION A**</u></center>   (3 Marks Each)
<center>This section costs of 5 questions of Short Answer type</center>

1.   Find the root of the quadratic equation $9x^2 - 9(a+b)x + (2a^2 + 5ab + 2b^2) = 0$.

2.   Which terms of the progression $19, 18\frac{1}{5}, 17\frac{2}{5}$.... is the first negative tem?

<center>OR</center>

From the top of a 10 m high building, the angle of elevation of the top of a towers is $60°$ and the angle of depression of its foot is $45°$. Determine the height of the tower .

3.   In the given figure, AB is the diameter of a circle with centre O sod QC is a tangent to the circle at C. $\angle CAB = 30°$, then find $\angle CQA$ and $\angle CBA$
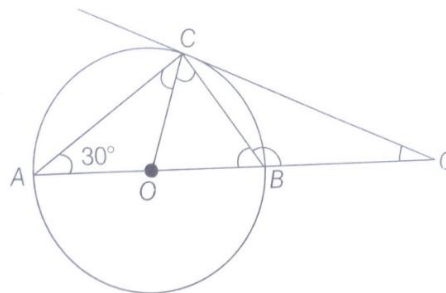
<center>Or</center>

A copper wire 4 mm in diameter is evenly wound about a cylinder whose length is 24 cm and diameter 20 cm as to cover the whole surface. Find the length and weight of the wire assuming the specific density to be 8.88 gm/cm³

4. Draw a circle of radius 6 cm. Take a point P on it. Without using the centre of the circle, draw a tangent to the circle at point P.

5. The mean of the following frequency table is 50 but the frequencies f_1 and f_2 in class intervals 20-40 and 60-80 are missing. Find the missing frequencies

Class interval	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100	Total
Frequency	17	f_1	32	f_2	19	120

Or

Find the volume area of the largest right circular cone that can be cut out of a cube whose edge is 10 cm

SECTION B (5 Marks Each)
This section consist of 4 questions of long answer type

6. A cone of maximum size is cut-out from a cube of edge 14 cm. Find the surface area of the remaining solid left out after the cone is cut-out

Or

The angle of elevation of a jet plane from a point A on the ground is $60°$. After a flight of 15 sec, the angle of elevation changes to $30°$. If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.

7. If α and β are the zeroes of the quadratic polynomial $f(x) = 3x^2 - 4x + 1$ find a quadratic polynomial whose zeroes are $\dfrac{\alpha^2}{\beta}$ and $\dfrac{\beta^2}{\alpha}$.

Or

If m times the mth term of an AP is equal to n times its nth term, then show that (m + n)th term of the AP is zero.

9. In the given figure, PT is a tangent and PAB is a secant. If PT = 6 cm and AB = 5 cm, then find the length of PA.
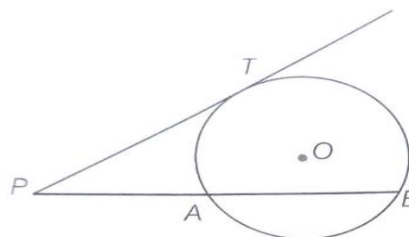
OR

Find the mean, mode and median of the following data.

| Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	3	4	7	15	10	7	4

SECTION C
This section consists of 1 case based comprises of 5 MCQs.

10. In one corner of the drawing room, a flower basket is kept inside the glass, lies on the table. The basket is designed in such a way that every one pleases to see it.

The shape of flower basket is hemisphere with radius 60 cm and upper shape is conical with height of 120 cm from the bottom surface
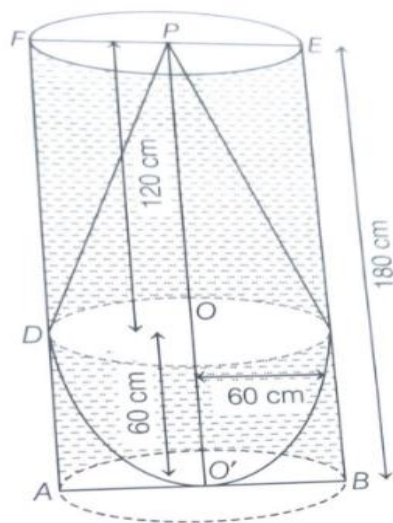
(i) Find the capacity of the glass

(a) $\dfrac{14.256}{7} \, m^3$ (b) $\dfrac{12.256}{7} \, m^3$ (c) $\dfrac{142.256}{7} \, m^3$ (d) $\dfrac{14.256}{5} \, m^3$

(ii) Find the volume of cone

(a) $0.54 \, m^3$ (b) $0.45 \, m^3$ (c) $0.25 \, m^3$ (d) $0.52 \, m^3$

(iii) Find the curve surface area of hemisphere.

(a) $0.201 \, m^2$ (b) $0.104 \, m^2$ (c) $0.102 \, m^2$ (d) $0.401 \, m^2$

(iv) The volume of two combined figure is equal to the sum of

(a) Two individual volumes   (b) Two individual curve surface area
(c) Volumes and curve surface area (d) None of these

(v) If the cost of painting the glass outside is Rs. 1.20 per m^2, find the total cost of painting the CSA of the glass.

(a) Rs. 55   (b) Rs. 55.02   (c) Rs. 57   (d) Rs. 57.02

ANSWER KEY

1. $\dfrac{(2a + b)}{3} , \dfrac{(a + 2b)}{3}$

2. 25th term OR $10 \left(\sqrt{3} + \right) 1m$

3. $\angle CQA = 30°$ and $\angle CBA = 60°$ OR 4.21 kg

4.

5. $f_1 = 28$ and $f_2 = 24$ OR 261.9 cm^2 6. $1022 + 154\sqrt{5}$ cm^2 OR 720 km/h

7. $k\left(x^2 - \dfrac{28}{9}x + \dfrac{1}{3}\right)$ where k is any non zero real number   8. 2.14 cm

9. 4 cm OR (i) 37.4, (ii) 36.15, (iii) 37.3   10. (i) (a) (ii)(b)(iii)(c) (iv)(a) (v)(d)