

**A-1154**

Total Pages : 5

Roll No. ....

**EMT-10**

**Elementary Mathematics**

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 70

*Note :-* This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**(Long Answer Type Questions) (2×19=38)**

*Note :-* Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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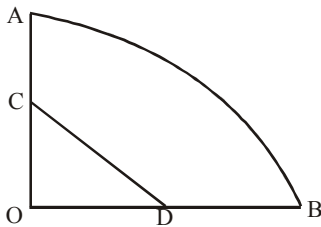
( 1 )

P.T.O.

1. (a) If you deposit \$5000 into an account paying 6% annual interest compounded monthly, how long until there is \$8000 in the account ?  
(b) A square and a rectangle have the same perimeter. Calculate the area of the rectangle if the side of the square is 60 cm and the length of the rectangle is 80 cm.
2. Average salary of Venkat and Naveen is Rs.4000. If the salary of Venkat and Naveen is increased by 20% and 40% respectively then their total salary becomes Rs. 10,200. Find the difference between the increment amount of Naveen and the increment amount of Venkat.
3. Prove that :

$$\sin 10^\circ, \sin 30^\circ, \sin 50^\circ, \sin 70^\circ = \frac{1}{16}$$

4. (a) The diagram Shows the sector OAB of a circle with centre O and radius 20 m, Angle AOB =  $\frac{\pi}{2}$  radians.



**Fig. 1**

The straight line CD divides the sector into two regions which have equal areas and the length of OC and OD are equal.

- (b) If a and b are whole numbers such that  $a^6 = 121$ , find the value of  $(a - b)^{b+1}$ .
5. (a) A flag of a height 4 meters is standing on the top of the building. The angle of the elevation of the top of the flag from the point X is  $45^\circ$  and angle of the elevation of the top of the building from the points X is  $30^\circ$ . Point X is on the ground level. What is the height (in meters) of the building ?
- (b) In  $\triangle ABC$ , right angled at B, if  $\sin A = \frac{7}{25}$ , then the value of  $\cos C$ .

### Section–B

(Short Answer Type Questions) (4×8=32)

**Note** :- Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. (a) An equilateral triangular park where's each side measures exactly 10 cm. The park is known for its unique symmetry. What is the total area of this triangular park ?

(b) Find the acute angle  $\theta$  when :

$$\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$$

2. (a) Convert  $12^\circ$  into radian.

(b) Evaluate :

$$3 \cos^2 60^\circ \sec^2 30^\circ - 2 \sin^2 30^\circ \tan^2 60^\circ$$

3. Calculate the median marks of students from the following distribution :

Weight	No. of Students
10–20	9
20–30	6
30–40	15
40–50	3
50–60	1
60–70	2
70–80	2

4. (a) Find the least number which when divided by 6, 12, 16 and 125 leaves 7 as remainder in each case but when divided by 11 leaves no remainder.

(b) Find the LCM of the fractions :

$$\frac{2}{5}, \frac{4}{7} \text{ and } \frac{6}{11}$$

5. Express :

$$\log(75/16) - 2\log(5/9) + \log(32/243)$$

in terms of  $\log 2$  and  $\log 3$ .

6. (a) Find the largest four-digit number exactly divisible by 15, 21 and 28.

(b) Find the HCF of 24 and 36.

7. A and B working separately can finish a work in 8 and 12 days respectively. If they work for a day alternately (beginning with A), then in how many days will the work be completed ?

8. A cuboid has dimensions 8 cm, 6 cm, and 4 cm. Find its surface area and volume.

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