

Roll No.

MA-10

Elementary Mathematics

Elementary Mathematics (MA-10)

Examination, 2017

Time : 3 Hours

Max. Marks : 70

Note : This paper is of **seventy (70)** marks containing **three (03)** sections A, B and C. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of fifteen (15) marks each. Learners are required to answer *two* (02) questions only.

1. (a) Prove that $\sin 20^\circ \cdot \sin 45^\circ \cdot \sin 60^\circ \cdot \sin 80^\circ = \frac{3}{16}$.
(b) At what rate percentage of simple interest will a sum of money double itself in 06 years.
2. (a) Find compound interest on ₹ 20,480 at 6% per annum for 5 years.
(b) The following observation have been arranged in ascending order. If the median of the data is 63, find the value of x : 29, 32, 48, 50, x , $x + 2$, 72, 78, 84, 95.

3. (a) Show that :

$$\frac{\cos 11^\circ + \sin 11^\circ}{\cos 11^\circ - \sin 11^\circ} = \tan 56^\circ$$

- (b) Is $\sin A = 4/5$, $\cos B = 5/13$, where $0 < A, B < \pi/2$, then find the value of $\cos (A + B)$.
4. (a) Define the following using suitable examples :
- (i) Mean
 - (ii) Median
 - (iii) Mode
- (b) A number consists of two digits. The sum of the digits is 9. If 63 is subtracted from the number, its digit are interchanged. Find the number.

Section-B

(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of five (5) marks each. Learners are required to answer *six* (06) questions only.

1. The sum of two number is 15 and the sum of their square is 113. Find the numbers.
2. Show that :
 $\tan 3A . \tan 2A . \tan A = \tan . 3A - \tan 2A - \tan A$
3. If the different between compound interest and simple interest on a certain sum of money for 3 years at 5% per year is ₹ 122, then find the sum.
4. Find the value of $\log \frac{9}{8^-} \log \frac{27}{32^+} \log \frac{3}{4}$.
5. Find the area of the largest circle that can be drawn in square of side 14 cm.

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6. The sum of age of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest children ?
7. Find arithmetic mean of the following frequency distribution :

X	Y
2	5
4	12
6	25
8	30
10	35
12	45

8. Prove that :

$$\cos 20^\circ \cdot \cos 40^\circ \cdot \cos 60^\circ \cdot \cos 80^\circ = \frac{1}{16}$$

Section-C

(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this section are compulsory.

Attempt all from following :

- Value of $\cos 90^\circ$:
 - 0
 - 1
 - None of the above
- Area of a circle with radius r is :
 - πr^3
 - πr
 - πr^2
 - None of the above

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3. The mean of 2, 4, 6, a , 8 is 20. The value of a is :
- (a) 70
 - (b) 100
 - (c) 80
 - (d) 3
4. Mode of 3, 3, 4, 5, 6, 3, 4, 3, 3 is :
- (a) 3
 - (b) 4
 - (c) 5
 - (d) None of the above
5. $A = P \left(1 + \frac{r}{100} \right)^n$ is formula of :
- (a) Simple interest
 - (b) Compound interest
 - (c) Natural interest
 - (d) Bank interest
6. Value of square root of 2 is :
- (a) 1.444
 - (b) 1.414
 - (c) 1.2234
 - (d) None of the above
7. If price is doubled, the profit triples. The profit % is :
- (a) 66
 - (b) 105
 - (c) 100
 - (d) 120

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8. Parameter of a rectangle is :
- (a) $2(L + W)$
 - (b) $L \times W$
 - (c) None of the above
9. Find the missing number 1, 2, 3, 4, 25, 36,, 64.
- (a) 41
 - (b) 23
 - (c) 49
 - (d) None of the above
10. A man gave ₹ 100 for 1 year with 2% rate of interest. What will be the final amount he will get ?
- (a) 105
 - (b) 102
 - (c) None of the above

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