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 $\sin 20°.\sin 45°.\sin 60°.\sin 80° = \frac{3}{16}$.

   (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.

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 :

$$\cos 20°.\cos 40°.\cos 60°.\cos 80° = \frac{1}{16}$$

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 :

1. Value of $\cos 90°$:
   (a) 0
   (b) 1
   (c) None of the above
2. Area of a circle with radius *r* is :
   (a) πr^3
   (b) πr
   (c) πr^2
   (d) None of the above

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. $A = P\left(1 + \frac{r}{100}\right) \wedge n$ 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

8. Parameter of a rectangle is :
   (a) 2 (L + W)
   (b) L × 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