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MA-10

Elementary Mathematics

Elementary Mathematics (MA-10)

Examination-2019

Time : **3** *Hours* *[Maximum Marks : 80*

Note : This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

Long Answer Types Questions

Note : Section 'A' contains Five (05) long-answer-type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only. **(3×15=45)**

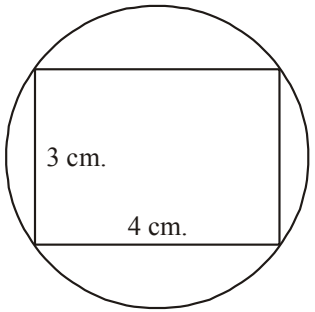
1. (a) Rohit invested Rs. 13,900 divided in two different schemes A and B at the simple interest rate of 14% per annum and 11% per annum respectively. If he earned a total of Rs. 3508 as simple interest in 2 years, find the amount he invested in scheme B. (8 marks)

(b) A can do a piece of work in 4 hours. A and C together can do it in 2 hours, while B and C together need 3 hears to finish the same work. How many hours will B take to complete the work alone. (7 marks)

2. (a) The difference of two numbers is 1460. On dividing the larger number by the smaller, 8 is obtained as quotient and 11 as remainder. Find the numbers. (8 marks)

(b) The ratio of two numbers is 4 : 5. If the HCF of these numbers is 6. Find the numbers and their LCM. (7 marks)

3. (a) Compute area and perimeter of the circle given in the following figure. (8 marks)



(b) Prove that $\left(\frac{1-\sin\theta}{1+\sin\theta}\right) = (\sec\theta - \tan\theta)^2$. (7 marks)

4. (a) Find the median of the following data :

Class	0–4	4–8	8–12	12–16	16–20
Frequency	13	29	48	22	8

(8 marks)

(b) Define mode, its advantages and disadvantages. (7 marks)

5. (a) The length, height and width of a cuboid are 5 mt, 3 mt and 4 mt respectively. Find the cost of coloring the outer surface of the cuobid if the charges of coloring are Rs. 10 per. square mt. (8 marks)

(b) Find the total surface area of the right prism whose base is a triangle with sides 13 cm, 20 cm, and 21 cm and having a height of 9 cm. (7 marks)

Section–B

Short Answer Types Questions

Note : Section 'B' contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. The compound interest on Rs. 30,000 at 7% per annum is Rs. 4347. Find the time period in years.

2. The cost price of 20 books is the same as the selling price of x books. If the profit is 25%, find the value of x.

3. The sum of the series 27 + 36 + 45 + ... + 162 is 1512. Find the number of terms in the series.

4. Prove that :

$$\log a + \log a^2 + ... + \log a^n = \log a \ \frac{n(n+1)}{2}.$$

5. Find the value of :

$$\frac{(.000729)^{1/2} + (.000625)^{1/2}}{(.000729)^{1/2} - (.000625)^{1/2}}$$

6. In an examination, 50 candidates given the exam. Following table shows the distribution of marks of the students.

Marks obtained	No. of candidates
Less than 20	4
Less than 40	10
Less than 60	20
Less than 80	40
Less than 100	50

Calculate the mean marks.

7. If $\sin\theta + \cos\theta = 7/5$ and $\sin\theta . \cos\theta = 12/25$, then find the values of $\sin\theta$ and $\cos\theta$.

8. Find the area of the following figure in which the left and right corner triangle are equilateral triangles with open sides covered by half circles.