MA-10

Elementary Mathematics

Elementary Mathematics (MA-10)

Examination June 2022

Time: 2 Hours   Max. 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 – type questions)

Note: Section 'A' contains Five (05) long-answer-type questions of Twenty (20) marks each. Learners are required to answer any two (02) questions only.

$$[2 \times 20 = 40]$$

Q.1(A) A certain amount increases by 60% in 6 years at simple interest. What will be the compound interest of Rs. 15,000 after 3 years at the same rate.

P.T.O.

(B)   Mohan and Rakesh started a partnership business investing Rs. 20,000 and Rs. 15,000 respectively. After six months Suresh joined them with Rs. 20,000. If they earned a profit of Rs. 25,000 at the end of 2 years from the starting of the business, find the share of Rakesh in total profit.

Q.2(A) If $7^{(x-y)} = 343$ and $7^{(x+y)} = 16807$ then find the value of $3^x + 4^y$.

(B)   If $\log_2 (x^2 + x) - \log_2(x + 1) = 5$, then find the value of $x^2 - 2x + 1$.

Q.3(A) Prove that

$$\sqrt{\frac{Sec\theta - 1}{Sec\theta + 1}} = co\sec\theta - cot\theta$$

(B)   Find the value of $\cos 75^0$.

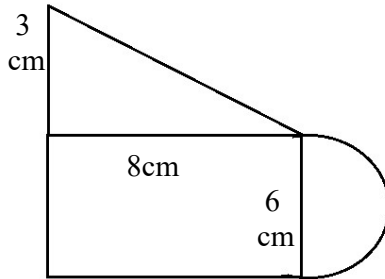Q.4(A) Find the average of the following frequency distribution.

Class	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	11	20	35	20	8	6

(B)   Define median, its advantages and disadvantages.

P.T.O.

Q.5(A) Find the total surface area of a metal pipe whose internal radius is 2cm, external radius is 2.4cm and length of the pipe is 10cm.

(b)   Find the area of the following figure.

Section – B
(Short-answer-type questions)

Note: Section 'B' contains Eight (08) short-answer-type questions of Ten (10) marks each. Learners are required to answer any Four (04) questions only.

$$[4 \times 10 = 40]$$

Q.1.   The percentage profit earned by selling an item for Rs. 1920 is equal to the percentage loss incurred by selling the same item for Rs. 1280. At what price should the item be sold to make 25% profit.

Q.2.   6 men and 8 women can complete a work in 10 days. 26 men and 48 women can complete the same work in 2 days. In how many days 15 men and 20 women can complete the same work.   P.T.O.

Q.3. Find the HCF of

$$\frac{12}{25}, \quad \frac{9}{10}, \quad \frac{18}{35}, \quad \frac{21}{40}$$

Q.4. Simplify

$$\frac{64^{-1/3}.64^{1/3}}{8^{-1/3}} \quad \frac{-(64)^{2/3}}{16^{1/3}.32^{1/3}}$$

Q.5. If 6 +12 + 18 + ... = 1800, then find the number of terms in the series.

Q.6. Given that $Sin^2\theta - 3Sin\theta + 2 = 0$, find the value of θ.

Q.7. What do you mean by measures of central tendency. Differentiate mean, median and mode.

Q.8. One side of a cube of 10cm long. A cuboid is formed by joining six cubes end to end. Find the surface area of the cube and the cuboid.