

End Semester Examinations - 2015-16 Even Semester - May 2016

15MA3017 Mathematics for Competitive Examinations

Set A

Time : 3 hrs
Total Marks: 100

1. (a). Find the unit's digit in the product $256 \times 27 \times 159 \times 182$. (marks 7)
(b). Find the H.C.F of 42 and 70. (marks 6)
(c). Find the L.C.M. of 12,16,20,24. (marks 7)

OR

2. (a). Arrange the fractions $\frac{3}{4}, \frac{5}{8}, \frac{7}{12}, \frac{13}{16}$ and $\frac{16}{29}$ in ascending order of magnitude. (marks 7)
(b). Simplify: $\frac{1}{3} \div \frac{5}{3} + \frac{1}{4} \times \frac{3}{5} - \frac{2}{5}$ of $\frac{5}{7}$. (marks 7)
(c). Find the square root of 63504. (marks 6)

3. (a). In a competitive examination, the average of marks obtained by 150 candidates is 32. If the average marks of passed candidates is 40 and that of a failed candidates is 15, what is the number of candidates who passed the examination? (marks 7)
(b). Evaluate $\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$ to infinity. (marks 7)
(c). A boy was asked to find $\frac{7}{9}$ of a fraction. He made a mistake of dividing the fraction by $\frac{7}{9}$ and so got an answer which exceeds the correct answer by $\frac{8}{21}$. Find the correct answer. (marks 6)

OR

4. (a). The sum of the ages of Aarushi and her mother is 49 years. Also, 7 years ago, the mother's age was 4 times Aarushi's age. Find the age of Aarushi's mother. (marks 7)
(b). Which is larger: $\sqrt[3]{4}$ or $\sqrt[4]{5}$? (marks 7)
(c). The population of a town has increased from 60,000 to 65,000. Find the increase percent. (marks 6)

5. (a). A man purchases 8 pens for Rs.9 and sells 9 pens for Rs.8. How much profit or loss does he made? (marks 7)
(b). If $a:b = 1:2$, $b:c = 3:4$, $c:d = 6:9$ and $d:e = 12:16$, then find $a:b:c:d:e$. (marks 7)
(c). A, B and C enter into partnership. A advances Rs.1200 for 4 months, B Rs.1400 for 8 months, and C Rs.1000 for 10 months. They gain Rs.585 altogether. Find the share of each. (marks 6)

OR

6. (a). A can do a piece of work in 5 days and B can finish the same work in 10 days. In how many days both working together will finish the same work? (marks 7)
(b). A man covers a certain distance between his house and office on scooter. Having an average speed of 30 Km/hr, he is late by 10 min. However with a speed of 40 Km/hr, he reaches his office 5 min earlier. Find the distance between his house and office. (marks 7)
(c). Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 18 minutes. (marks 6)

- 7.
- A train passes a platform 60 meters long in 20 seconds and a man standing on a platform in 12 seconds. Find the speed of the train in km/hr. (marks 7)
 - A boat against the current of water goes 9 km/hr and in the direction of the current at 12 km/hr. The boat for going to a place B from A in upward and downward direction takes 4 hours and 12 minutes. Find the distance between A and B. (marks 7)
 - A vessel contains mixture of spirit and water. Spirit is 18%. 8 litres of mixture is taken out of the vessel which is again filled with water. If the present percentage of spirit is 15%, find the quantity of the mixture in the vessel. (marks 6)

OR

- 8.
- On what dates of October, 1994 did Tuesday fall? (marks 7)
 - At what time between 4 and 5 are the hands of a clock 7 minutes apart? (marks 7)
 - Prove that the calendar for 1994 will serve for 2005. (marks 6)

9.

Directions: The questions followed by two statements labeled as (1) and (2). You have to decide whether these statements are sufficient to answer the question.

Give answer:

- If statement (1) alone is sufficient to answer the question but the statement (2) alone is not sufficient to answer the question.
 - If statement (2) alone is sufficient to answer the question but the statement (1) alone is not sufficient to answer the question.
 - If you can get the answer from (1) and (2) together although neither statement by itself suffices.
 - If statement (1) alone is sufficient and the statement (2), too, is sufficient
 - If you cannot get the answer from statements (1) and (2) together but still more data are needed.
- How many people heard my joke?
 - I told the joke to 4 friends, each of whom repeated it to 6 friends who did not tell anybody else.
 - No one heard the joke twice. (marks 5)
 - A chair has a marked price of Rs.100. Discounts of 20% and 25% are allowed. What is the cost of the chair to the dealer?
 - The dealer's profit is 30% of the selling price.
 - The dealer's cost of doing business is 10% of the selling cost. (marks 5)
 - How long will it take to travel from P to Q? It takes 6 hours to travel from P to Q and back to P.
 - It takes 25% more time to travel from P to Q than it takes from Q to P.
 - R is the midway between P and Q and it takes 2 hours to travel from P to R and back to P. (marks 5)
 - Train A leaves Dehradun at 1 a.m. and travels towards Delhi at a constant speed of x km per hour. Train B leaves Dehradun at 2 a.m. and travels towards Delhi at a constant speed of y km per hour. Which train will travel farther by 4 a.m.?
 - $x \geq y$
 - $x = 1.2y$ (marks 5)

Wishing you All the Best
