

U.G. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Third Semester

Mathematics

Non Major Elective — MATHEMATICS FOR
COMPETITIVE EXAMINATIONS — I

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. $7 + 7 \div 7 \times 7 =$ _____

(a) $\frac{2}{7}$ (b) 14

(c) $7\frac{1}{7}$ (d) 42

8. Cost price = Rs. 56.25. profit = 20% selling price = _____

(a) Rs. 62.50 (b) Rs. 60
(c) Rs. 67.50 (d) Rs. 66.25

9. The difference of two numbers is 8 and $\frac{1}{8}$ th of their sum is 35. The numbers are _____

(a) 132, 140 (b) 128, 136
(c) 124, 132 (d) 136, 144

10. 11 times a number gives 132. The number is _____

(a) 11 (b) 12
(c) 13.2 (d) 13

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).

11. (a) Find the value of $1 + \frac{1}{2 + \frac{1}{1 - \frac{1}{3}}}$.

Or

(b) Find the value of $\frac{9^2 \times 18^4}{3^{16}}$.

2. $5005 - 5000 + 10.00 =$ _____

(a) 0.5 (b) 50
(c) 5000 (d) 4505

3. The average of first five multiples of 3 is _____

(a) 9 (b) 72.6
(c) 3 (d) 6

4. If $2A = 3B = 4C$ then $A : B : C$ is _____

(a) 2 : 3 : 4 (b) 4 : 3 : 2
(c) 6 : 4 : 3 (d) 3 : 4 : 6

5. _____ % of 64 is 8.

(a) 3 (b) 10
(c) 8 (d) 12.5

6. The number increased by $37\frac{1}{2}\%$ gives 33. The number is _____

(a) 22 (b) 24
(c) 25 (d) 27

7. A man sold a ratio for Rs. 1980 and gained 10% the ratio was bought for _____

(a) Rs. 1782 (b) Rs. 1800
(c) Rs. 2178 (d) Rs. 1500

12. (a) The average age of a family of 6 members is 22 years. If the age of the youngest member be 7 years, find the average age of the family at the birth of the youngest member.

Or

(b) In a mixture of 35 litres, the ratio of milk and water is 4 : 1 now, 7 litres of water is added to the mixture. Find the ratio of milk and water in the new mixture.

13. (a) A person 'A' credits 15% of his salary in his fixed deposit account and spends 30% of the remaining amount on groceries. If the cash in hand is Rs. 2380, what is his salary?

Or

(b) A and B started a business and invested Rs. 20,000 and Rs. 25,000 respectively. After 4 months B left and C joined by investing Rs. 15,000. At the end of the year, there was a profit of Rs. 4,600. What is the share of C?

14. (a) By selling a watch for Rs. 144, a man loses 10%. At what price should he sell it to gain 10%?

Or

(b) A man sells an article at a profit of 20%. If he had bought it at 20% less and sold it for Rs. 5 less, he would have gained 25%. Find the cost price of the article.

15. (a) A fraction becomes 4 when 1 is added to both numerator and denominator and it becomes 7 when 1 is subtracted from both the numerator and denominator. What is the numerator of the fraction?

Or

- (b) The number x is exactly divisible by 5 and the remainder obtained on dividing the number y by 5 is 1. What remainder will be obtained when $x + y$ is divided by 5?

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions choosing either (a) or (b).

16. (a) Evaluate $\frac{0.125 + 0.027}{0.25 - 0.15 + 0.09}$.

Or

- (b) The average of 5 consecutive numbers is n . If the next two numbers are also included, the average will be increased by how much?

17. (a) Two numbers are in the ratio 3 : 5. If each number is increased by 10, the ratio becomes 5 : 7. Find the numbers.

Or

- (b) The ratio of milk and water in 85 Kg of adulterated milk is 27 : 7. Find the amount of water which must be added to make the ratio 3 : 1.

18. (a) A and B invest in the business in the ratio 3 : 2. If 5% of the total profit goes to charity and A's share is Rs. 855 then find the total profit?

Or

- (b) 72% of the students of a certain class took biology and 44% took Mathematics. If each student took biology or mathematics and 40 took both, find the total number of students in the class.

19. (a) 'A' bought 25 kg of rice at rate of Rs. 6 per kg and 35 kg of rice at the rate of Rs. 7 per kg. He mixed the two and sold the mixture at the rate of Rs. 6.75 per kg. What was his profit or loss in the transaction?

Or

- (b) A bought a TV with 20% discount on the labelled price. Had he bought it with 25% discount he would have saved Rs. 500. At what price did he buy the TV?

20. (a) The sum of squares of two numbers is 80. And the square of their difference is 36. Find the product of the numbers.

Or

- (b) Of the three numbers, the sum of first two is 45; the sum of the second and the third is 55 and the third and thrice the first is 90. What is the third number?