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Reg. No. : .....

Code No. : 20432 E **Sub. Code : CNMA 31**

U.G. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

Third Semester

Mathematics

Non Major Elective — MATHEMATICS FOR COMPETETIVE EXAMINATIONS – I

(For those who joined in July 2021-2022 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)
Answer ALL questions.

Choose the correct answer:

1. $(-5)(4)(2)\left(-\frac{1}{2}\right)\left(\frac{3}{4}\right) =$ _____.

(a) -30 (b) -15
(c) 15 (d) 30

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

(a) 3 (b) 9
(c) 12 (d) 15

3. The notation of x is directly proportional to y is denoted by _____.

(a) $x \times y$ (b) $x \times \frac{1}{y}$
(c) $x = y$ (d) $x = \frac{1}{y}$

4. If $(a:b) > (c:d)$ then _____.

(a) $\frac{a}{b} < \frac{c}{d}$ (b) $\frac{a}{c} < \frac{b}{d}$
(c) $\frac{a}{c} > \frac{b}{d}$ (d) $\frac{a}{b} > \frac{c}{d}$

5. A partner who invests money only is known as _____.

(a) Sleeping partner (b) Working partner
(c) (a) or (b) (d) (a) and (b)

6. The decimal value of 8% is _____.

(a) 0.8 (b) 0.08
(c) 8 (d) 0.008

7. Loss % = _____.

(a) $\frac{Loss \times 100}{CP}$ (b) $\frac{Loss - 100}{SP}$

(c) $\frac{Loss \times 100}{CP}$ (d) $\frac{Loss \times 100}{SP}$

8. I gain 90 paise on Rs.90. My gain percent is _____.

(a) 0.1% (b) 10%

(c) 9% (d) 1%

9. If a number, when divided by 3, is reduced by 20, the number is _____.

(a) 10 (b) 20

(c) 30 (d) 40

10. The sum of first 6 natural number is _____.

(a) 20 (b) 30

(c) 31 (d) 21

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) If $2x + 3y + z = 55$, $x + z - y = 4$ and $y - x + z = 12$, then what are the values of x, y and z?

Or

(b) Find the mean of $1^2, 2^2, 3^2, 4^2, 5^2, 6^2, 7^2$.

12. (a) If $x : y = 3 : 4$ find $(4x + 5y) : (5x - 2y)$.

Or

(b) The ratio of three numbers is 3 : 4 : 7 and their product is 18144. Find the numbers.

13. (a) Three persons started a business by investing Rs.1,50,000, Rs.1,35,000 and Rs.1,20,000 respectively. Find the share of each, out of an annual profit of Rs.56,700.

Or

(b) If A's salary is 20% less than B's salary, by how much percent is B' salary more than A's?

14. (a) If the cost price of 12 pencil is equal to the selling price of 8 pencils, then find gain percent.

Or

(b) A book was sold for Rs.27.50 with a profit of 10%. If it were sold for Rs.25.75 then what would have been the percentage of profit or loss?

15. (a) The sum of two numbers is 15 and the sum of their squares is 113. Find the numbers.

Or

(b) If 50 is divided into two parts such that the sum of their reciprocals is $\frac{1}{12}$. Find the two parts.

PART C — ($5 \times 8 = 40$ marks)

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

Each answer should not exceed 600 words.

16. (a) The price of 10 chairs is equal to that of 4 tables. The price of 15 chairs and 2 tables together is Rs.4,000. Find total price of 12 chairs and 3 tables.

Or

(b) The average age of a class of 39 students is 15 years. If the age of the teacher to be included, then the average increases by 3 months. Find the age of the teacher.

17. (a) Two numbers are respectively 20% and 50% more than a third number. Find the ratio of two numbers.

Or

(b) A certain amount was divided between A and B in the ratio 4 : 3. If B's share was Rs.4,800, then find the total amount.

18. (a) If 4 (A's Capital) = 6 (B's Capital) = 10(C's Capital), then out of a profit of Rs.4,960, what is C's share?

Or

(b) In an examination, 80% of the students passed in English, 85% in Mathematics and 75% in both. If 40 students failed in both the subjects, find the total number of students.

19. (a) A daily man pays Rs.6.40 per litre of milk. He adds water and sells the mixture at Rs.8 per litre, thereby making 37.5% profit. Find the proportion of water to milk received by the customer.

Or

(b) Find the single discount equivalent to a series discount of 20%, 10% and 5%.

20. (b) The product of two fractions is $\frac{14}{15}$ and their quotient is $\frac{35}{24}$. Then find the greater fraction.

Or

(b) The sum of the squares of three consecutive odd numbers is 2531. Find the numbers.

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