



MTOE1 - BUSINESS MATHEMATICS

Time- 2 hrs

Max Marks - 50

This question paper contains 1 printed pages and four parts

I. Answer any SEVEN FULL questions

(7 x 2 = 14)

1. For what value of k , the system of equations $kx - 20y - 6 = 0$ and $6x - 10y - 14 = 0$ has no solution?
2. The difference between two numbers is 70. The numbers are in ratio 3:5. Frame a linear equation to represent it and solve it to find the numbers.
3. Solve the system of linear equations $2x - 3y = -1$ and $3x + 4y = 5$.
4. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & -1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 3 \\ 3 & 5 \\ 2 & -1 \end{bmatrix}$, then find AB .
5. Find the value of the determinant $\begin{vmatrix} 2 & 6 & 4 \\ -5 & -10 & -15 \\ 1 & 3 & 2 \end{vmatrix}$ without usual expansion.
6. Solve the system of Equations using matrices: $x + y = 3$, $2x + 3y = 8$.
7. Define i) Sub-Duplicate ratio ii) Triplicate ratio
8. State the following properties of Proportion i) Dividendo property ii) Invertendo property
9. The cost of Laptop is Rs. 68,000. If a reduction of 20% is given on it what would be the reduced price?

II. Answer any TWO FULL questions

(2 x 6 = 12)

10. Solve the system of linear equations $2x + 3y = 13$ and $x - 2y = -4$.
11. Find the two consecutive odd positive integers, whose sum of squares is 290.
12. i) Check whether the system of linear equations $2x + 3y = 9$ and $4x + 6y = 18$ are consistent.
ii) If the sum of two roots is 8 and its difference is 4, find the quadratic equation. (4+2)

III. Answer any TWO FULL questions

(2 x 6 = 12)

13. Solve the following system of equations $7x + 3y = -1$; $2x + y = 0$ by matrix method.

14. Check whether $(m + n)A = mA + nA$, where $m = -1$, $n = 3$ and $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$.

15. Find minors of a_{11} , a_{22} , a_{33} and cofactors of a_{13} , a_{21} , a_{31} of the matrix $\begin{bmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{bmatrix}$.

IV. Answer any TWO FULL questions

(2 x 6 = 12)

16. i) The car that I own can go 150 km with 25 litres of petrol. How far can it go with 30 litres of petrol?
ii) In an examination, 20% of total number of students failed in Paper I, 15% of total number of students failed in Paper II and 5% of the total number of students failed in both. Find the % of students who passed in both the papers. (3+3)
17. i) Rahul bought a sweater and saved Rs. 20 when a discount of 25% was given. What was the price of the sweater before the discount?
ii) Ratio of incomes of two person is 4:3 and expenditure ratio is 3:2. If each person saves Rs. 2500, find their income. (2+4)
18. i) If $a : b = 3 : 5$ and $b : c = 4 : 7$ find $a : c$.
ii) If Rs. 1500 is to be divided among 3 persons, so that the person 1 gets two parts, person 2 gets three parts and person 3 get five parts. What is the share of each? (2+4)