B.M.S COLLEGE FOR WOMEN, AUTONOMOUS
BENGALURU – 560004
SEMESTER END EXAMINATION – JANUARY/FEBRUARY 2023

Open Elective – I Semester

CORPORATE MATHEMATICS
(NEP Scheme 2021-22 onwards F+R)

Course Code: MAT1OE01   **QP Code: 1203**
Duration: 2 ½ Hours   **Max. Marks: 60**

I. Answer any Six Questions: (6x2=12)

1. Sum of two consecutive numbers is 59, find the numbers.
2. Factorize $x^2 + 4x - 12 = 0$.
3. Solve $2x - 5y + 4 = 0,\ 2x + y - 8 = 0$.
4. Solve $\dfrac{1}{3}x^2 + \dfrac{1}{5}x - 2 = 0$.
5. Draw the graph for $x + y \leq 10, x \geq 0\ and\ y \geq 0$
6. Define optimal solution of a linear programming problem with suitable example.
7. Define grouped and ungrouped data.
8. Calculate the Coefficient of variation of 23,51,81,52,47,61,55.

II. Answer any Six Questions: (6x8=48)

1. a) Solve for x and y by elimination method $2x + 5y = 1, 2x + 3y = 3$.
   b) Solve by substitution method $x + y = 3, 4x - 3y = 26$.   **(5+3)**
2. a) 36 pens and 24 pencils together cost Rs.702 while 24 pens and 36 pencils together cost Rs.558, find the cost of a pen and that of a pencil.
   b) Five years ago, A was thrice as old as B and ten years later A shall be twice as old as B, what are the present ages of A and B.   **(4+4)**
3. a) Solve for x, $\dfrac{(x+3)}{(x+2)} = \dfrac{(3x-7)}{(2x-3)}$.
   b) Solve $x^2 + 5x + 6 = 0$ by using formula.   **(5+3)**
4. The following are the runs score by two batsmen X and Y in 10 innings. Find which of the batsmen are more consistent   **(8)**

X	Y
101	97
27	12
0	40
36	96
82	13
45	8
7	85
13	8
65	56
14	15

5. a) Compute Harmonic mean from the following data **(5+3)**

Marks	Frequencies
30 – 40	15
40 – 50	13
50 – 60	8
60 – 70	6
70 – 80	15

b) Construct a histogram for the following frequency distribution

Variable	35 - 40	40 - 45	45 - 50	50 - 55
Frequency	12	30	22	30

6. Calculate mode for the following Frequency distribution **(8)**

Income (Rs.)	1000-2000	2000 - 3000	3000 - 4000	4000 - 5000	5000 - 6000	6000 - 7000
No. of Workers	15	18	30	17	18	22

7. a) Draw a pie chart for the following data **(5+3)**

Agriculture	14%
Irrigation and power	16%
Small industries	29%
Transport	17%
Social service	16%
Miscellaneous	8%

b) Draw the line graph for the data relating to Foreign trade of India during the years

Year	Exports (Rs.in Crore)
1991	3300
1992	4000
1993	5700
1994	6300
1995	6700

8. Solve the following LPP by the Graphical method **(8)**

$$\text{Maximize } Z = 5x + 7y ,$$
$$x + y \le 4$$
$$3x + 8y \le 24$$
$$10x + 7y \le 35, x, y \ge 0$$

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