

BENGALURU CITY UNIVERSITY

I SEM B.SC MATHEMATICS(OPEN ELECTIVE)

CORPORATE MATHEMATICS

MODEL PAPER - I(2021-22 onwards) NEP

Time : 3 Hours

Total Marks : 60

I Answer any SIX

(6x2=12)

1. Solve $\frac{x+2}{x-1} = \frac{5}{2}$ for x.
2. Sum of two consecutive integers is 39. Find the numbers.
3. Write the formula to find the roots of $ax^2 + bx + c = 0$.
4. Solve $x - y = 2$, $2x + y = 4$ by substitution method.
5. Explain cumulative frequency with an example.
6. For the following data, calculate the coefficient of range 23, 53, 81, 52, 47, 61, 55
7. Mention any four types of Statistical averages.
8. What is central tendency and measure of central tendency?
9. What is Histogram? Mention its significance.
10. Define LPP.

II Answer any THREE

(3x4=12)

11. Solve for x: $\frac{2(x-1)}{x-3} - \frac{3}{x+1} = 2$
12. Solve for x and y by RCM: $7(y+3) - 2(x+2) = 14$, $4(y-2) + 3(x-3) = 2$
13. Solve for x using Sridharacharya method $8x^2 - 22x - 21 = 0$
14. The marks obtained by 35 students in an examination are given below,
370,290,318,175,170,410,378,405,380,375,315,305,325,275,241,288,261,
355,402,380,178,253,428,240,210,175,154,405,380,370,306,460,328,440,
425.
Form a frequency distribution table with class interval of length 50.
15. A company produces two articles A and B. There are two departments through which it passes, the maximum potential capacity of the assembly is 60 hrs and finishing department is 48 hrs. Production of one unit of A requires 4 hrs assembly and 2 hrs in finishing. Each unit of B requires 2

hrs of assembly and 4 hrs in finishing. If the profit is Rs 80 for A and Rs 60 for B, formulate LPP to maximize the profit.

16. Draw the line graph for the following data:

Year	Income	Expenditure
1993	150	90
1994	180	100
1995	160	120
1996	190	190
1997	170	200

III Answer any SIX

(6x6=36)

17. The sum of two digits of a two digit number is 5. If 9 is added to the number the digits are reversed. Find the number.
18. Solve $\frac{(x+3)}{(x+2)} = \frac{(3x-7)}{(2x-3)}$ by formula method.
19. The gain in selling an article is as much percent of its cost as the cost in rupees. If the sale price is Rs 144. Find the cost price.
20. If 5 men and 12 boys can finish a work in 4 days and 15 men and 16 boys can finish the same work in 2 days, in how many days a man and a boy can finish the work independently?
21. Calculate the standard deviation and Variance for the following :

Marks	No of students
10	8
20	12
30	20
40	10
50	7
60	3

22. Calculate the Harmonic mean for the following data

X	12	14	16	18	20
F	3	5	9	4	2

23. Calculate median from the following data

Weight(gm)	410-419	420-429	430-439	440-449	450-459	460-469	470-479
No of Mangoes	10	20	42	54	45	18	7

24. Represent the following marks of two students, scored in the subjects by a percentage bar diagram

Subjects	Student A	Student B
Statistics	80	85
Mathematics	75	92
Accountancy	90	70
Bussiness Studies	60	75

25. A factory uses three different resources for the manufacture of two different products, 20 units of the resource A, 12 units of B and 16 units of C being available. 1 unit of the first product requires 2, 2 and 4 units of the respective resources and 1 unit of the second product requires 4, 2 and 0 units of the respective resources. It is known that the first product gives a profit of 2 monetary units/unit and the second gives 3 monetary units/unit. How many product should be manufactured for maximizing the profit? Solve it graphically.

26. Solve the following LPP by the graphic method

$$\text{Minimize } z = 3x_1 + 5x_2$$

$$-3x_1 + 4x_2 \leq 12$$

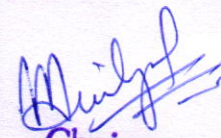
$$2x_1 - x_2 \geq -2$$

$$2x_1 + 3x_2 \geq -2$$

$$x_1 \leq 4$$

$$x_2 \geq 2$$

$$x_1, x_2 \geq 0$$



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