Professor Vishwanathan Iyer's

HERAMB COACHING CLASSES

XII/MATHS **Marks: 30** **Duration: 1Hour** **Date: 06/12/18**

ATTEMPT ANY 6: (5 marks each)

1) An electronic device is to be operated in an environment with relative humidity 'h' in the interval defined by $|h-60| \leq 35$. What is the minimum and maximum relative humidity for the operation of this device?

2) Find solution set of the inequation $\frac{x+5}{x-3} < 0$. Represent it on the real number line.

3) If the motor cyclist rides at the speed of 50 km/hour, he has to spend Rs. 20 per km on petrol. If he rides at a faster speed of 70 km/hour, the petrol cost increase to Rs. 25 per km. He has Rs. 1000 to spend on petrol and wishes to travel the maximum distance within an hour. Formulate the above problem as LLP.

4) An aeroplane can carry a maximum of 250 passengers. A profit of Rs. 1500 is made on each executive class tickets and a profit of Rs. 900 is made on each economy class ticket. The airline reserves at least 30 seats for executive class. However, at least 4 times as many passengers prefer to travel by economy class than by executive class. Formulate this problem as a LPP in order to maximize the profit for the airline.

5) Divija wants to buy some filing cabinets for her office, the cost of cabinet X is Rs. 1000 per unit, requires six square feet of floor space and holds twelve cubic feet of files. She has Rs. 8000 for this purchase though she does not have to spend that much. The office has room for no more than 72 square feet of cabinets. Formulate this problem as a LPP in order to maximize strong volume.

6) Maximize $Z = 25x_1 + 20x_2$. Subject to constraints

$3x_1 + 2x_2 \leq 1800$ $\quad$ $2x_1 + 7x_2 \leq 1400$

$0 \leq x_1 \leq 350$ $\quad$ $0 \leq x_2 \leq 150$

7) Maximize $Z = 0.08x_1 + 0.10x_2$.

Subject to constraints: $x_1 + x_2 \leq 15000$; $x_1 \geq 3000$; $x_2 \geq 5000$.

8) Minimize $Z = 3x_1 + x_2$.

Subject to constraints: $5x_1 + 9x_2 \leq 45$; $x_1 + x_2 \geq 2$; $x_2 \leq 4$.

……