Note:-
   1. All Questions are compulsory.
   2. Numbers on the right indicate full marks.

Section A

Q.1 Select and write the correct answer. (4)

1. The value of objective function is maximum under linear constraints _____

   A) at the centre of feasible region   B) at (0, 0)

   C) at a vertex of feasible region   D) the vertex which is of maximum distance from (0, 0)

2. The maximum value of z = 10x + 6y subjected to the constraints $3x + y \leq 12$, $2x + 5y \leq 34$, $x \geq 0$, $y \geq 0$._____

   A) 56   B) 65

   C) 55   D) 66

Q.2 Answer the following. (3)

1. Solve graphically $x \leq 0$ and $y \leq 0$

2. Solve graphically $y \leq 0$

3. Solve graphically $x \geq 0$

Section B
Attempt any Four

Q.3   Solve graphically $5y + 3 \leq 0$ **(2)**

Q.4   Sketch $x + 51 \leq y$ in XOY co-ordinate system. **(2)**

Q.5   A company manufactures two types of chemicals A and B. Each chemical requires two types of **(2)** raw material P and Q. The table below shows number of units of P and Q required to manufacture one unit of A and one unit of B and the total availability of P and Q.

Chemical Raw Material	A	B	Availability
P	3	2	120
Q	2	5	160

The company gets profits of Rs.350 and Rs.400 by selling one unit of A and one unit of B respectively. (Assume that the entire production of A and B can be sold). How many units of the chemicals A and B should be manufactured so that the company get maximum profit? Formulate the problem as L.P.P. to maximize the profit.

Q.6   Solve graphically $2x - 5y \geq 0$ **(2)**

Q.7   Solve $-11x - 55 \leq 0$ graphically using XY plane. **(2)**

Q.8   Solve graphically $2x - 3 \geq 0$ **(2)**

Section C
Attempt any Two

Q.9   Solve graphically $3x + 2y \geq 0$ **(3)**

Q.10 Find feasible solution for each $2x + 3y \leq 12$, $2x + y \leq 8$, $x \geq 0$, $y \geq 0$ **(3)**

Q.11 Find the feasible solution of the $3x + 4y \geq 12$, $4x + 7y \leq 28$, $y \geq 1$, $x \geq 0$, $y \geq 0$ **(3)**

Section D
Attempt any One

Q.12 Minimize the L.P.P. by graphical method $z = 6x + 21y$ subject to $x + 2y \geq 3$, $x + 4y \geq 4$, $3x + y \geq 3$, $x \geq 0$, $y \geq 0$ **(4)**

Q.13 A firm manufactures two products A and B on which profit earned per unit Rs. 3/- and Rs. 4/- respectively. Each product is processed on two machines M_1 and M_2. The product A requires one minute of processing time on M_1 and two minute of processing time on M_2, B requires one minute of processing time on M_1 and one minute of processing time on M_2. Machine M_1 is available for use for 450 minutes while M_2 is available for 600 minutes during any working day. Find the number of units of product A and B to be manufactured to get the maximum profit. **(4)**