JHARGRAM RAJ COLLEGE

JHARGRAM – 721 507

DEPARTMENT OF MATHEMATICS

INTERNAL EXAMINATION – 2021- 2022

SEM: V SUBJECT: MATHEMATICS PAPER: DSE - I (LINEAR PROGRAMMING)

Date: 06.01.2022

Maximum Marks: $(\mathbf{2.5 \times 2 = 5})$

ANSWER ANY FIVE QUESTIONS FROM THE FOLLOWING

1. Define convex set.
2. Show that the set $S = \{(x, y) \in E^2 : x + y \leq 5\}$ is a convex set.
3. Find extreme points of the set $X = \{(x, y) \in E^2 : 0 \leq x \leq 1, 0 \leq y \leq 2\}$.
4. Define hyperplane.
5. Show that hyperplane is a convex set.
6. Define slack variable with an example.
7. Define surplus variable with an example.
8. Solve the following LPP graphically –

$$\text{Maximize } Z = 2x_1 + x_2$$
$$\text{Subject to } 4x_1 + 3x_2 \leq 12$$
$$x_1, x_2 \geq 0$$

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