

Bankura University

B.Sc (Honourse) FIFTH SEMESTER EXAMINATIONS, 2021

Subject: Computer Science

Course ID: 51516

Course Title: Operational Research

Full Marks: 25

Time: 1 hr 15 mins

The figures in the margin indicate full marks

Answer all the questions.

UNIT I

1. Answer *any five* of the following questions: (5×1=5)

- a) What is operational research?
- b) What do you mean by linearly independent vectors?
- c) What is convex set?
- d) Write the full form of LPP?
- e) What do you mean by artificial variable?
- f) What do you mean by constraint?
- g) What do you mean by unbounded solution?
- h) What do you mean by infeasible solution?

UNIT II

2. Answer *any two* of the following questions: (2×5=10)

- a) Write a short note on applications and limitations of operational research.
- b) Write a short note on different methods used in operational research?
- c) Write a short note on sensitivity analysis?
- d) Write a short note on primal-dual relationship.

UNIT III

3. Answer any one of the following questions:

(1×10=10)

a) Solve the following LPP using Graphical method:

$$\text{Max } Z = 15X_1 + 10X_2$$

Subject to:

$$2X_1 + 3X_2 \leq 180$$

$$X_1 \leq 60$$

$$X_2 \leq 40$$

$$X_1 \geq 0, X_2 \geq 0$$

b) Solve the following LPP using Simplex method:

$$\text{Max } Z = 15X_1 + 10X_2$$

Subject to:

$$2X_1 + 3X_2 \leq 180$$

$$X_1 \leq 60$$

$$X_2 \leq 40$$

$$X_1 \geq 0, X_2 \geq 0$$