BBA - V Semester

COURSE CODE (CREDITS): 24BB1HS512 (4) MAX. MARKS: 15

COURSE NAME: QUANTITATIVE TECHNIQUES FOR MANAGEMENT

COURSE INSTRUCTORS: ASA MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.
(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	Short answers (max 100 words) a) What is the objective of a Linear Programming Problem (LPP)? b) Define the term feasible region in the context of LP. c) What are the assumptions of Linear Programming models?	1	1x3=3
Q2	A small workshop produces two products: Desks (D) and Bookcases (B). The profit earned per unit is ₹40 for each desk and ₹60 for each bookcase. Producing one desk requires 4 hours of carpentry work, 8 units of wood, and 2 hours of machine time, whereas producing one bookcase requires 6 hours of carpentry work, 10 units of wood, and 1 hour of machine time. The total availability of resources is limited to 240 hours of carpentry, 520 units of wood, and 100 hours of machine time. Additionally, the marketing department allows a maximum of 60 bookcases to be produced, and there is a standing order that requires the workshop to produce at least 20 desks. Formulate a linear programming problem.	2	4
Q3.	Solve the following LP problem using simplex method **Max Z = $60x_1 + 40x_2$** subject to $4x_1 + 2x_2 \leq 80$; $2x_1 + 3x_2 \leq 60$; $x_1, x_2 \geq 0$	3	3
Q4.	A rubber company is engaged in producing three different kinds of tyres A, B and C. These three different tyres are produced at two different plants of the company, which have different production capacities. In a normal 8-hour working day, Plant 1 produces 50, 100 and 100 tyres of types A, B and C, respectively. Plant 2, produces 60, 60 and 200 tyres of types A, B and C, respectively. The monthly demand for types A, B and C is 2,500, 3,000 and 7,000 units, respectively. The daily cost of operation of Plants 1 and 2 is Rs 2,500 and Rs 3,500, respectively. Formulate this problem as an LP model and solve it graphically to determine how the company can minimize the number of days on which it operates, per month, at the two plants, so that the total cost is also minimized, while the demand is also met.	3	5