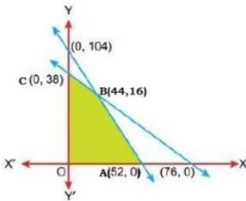
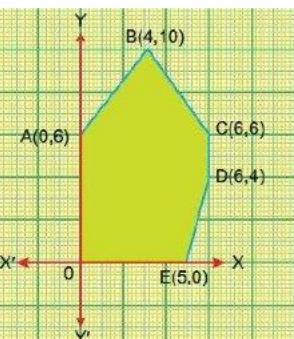


CBT CLASS XII MATHS DECEMBER-2023

GENERAL INSTRUCTION :

CHAPTER: LINEAR PROGRAMMING PROBLEM

Sr.No	Question	Marks
	<p>Case Study 1 Based on the following diagram, answer the following questions</p> 	
1	<p>The feasible region of an LPP is given in following figure then the constraint of LPP are</p> <p>(a) $2x + y \leq 52, x + 2y \leq 76, x, y \geq 0$ (b) $2x + y \leq 104, x + 2y \leq 76, x, y \geq 0$ (c) $x + 2y \leq 104, 2x + y \leq 76, x, y \geq 0$ (d) $x + 2y \leq 104, 2x + y \leq 38, x, y \geq 0$</p>	1
2	<p>In above LPP optimal solution occurs, if objective function for LPP is Max Z = 2x + y</p> <p>(a) at point B (b) at point A (c) at point C (d) on line segment AB</p>	1
3	<p>In above LPP objective function is Max Z = px + qy, and objective function attain its max value at (0,38) and (44,16) then relation between p and q is</p> <p>(a) $2p = q$ (b) $p = 2q$ (c) $p = q$ (d) $3p = 2q$</p>	1
4	<p>In above LPP objective function is Min Z = 3x - 4y then optimum solution of LPP is</p> <p>(a) (0,0) (b) (44,16) (c) (0,38) (d) (52,0)</p>	1
	<p>Case Study 2 Read the following passage and answer the following questions</p> <p>Linear programming Problem is a method of or finding the optimal values (maximum or minimum) of quantities subject to constraints when relationship is expressed as a linear equations or linear inequations.</p> <p>The corner points of a feasible region determined by the system of linear constraints are as shown below</p> 	
5	<p>Number of corner points in the feasible region</p> <p>(a) 4 (b) 5 (c) 6 (d) 7</p>	1
6	<p>If Z = 2x - 5y then the minimum value of this objective function</p> <p>(a) -30</p>	1

	(b) -42 (c) -50 (d) -18	
7	If objective function $Z = 2x - 5y$ then $\max(Z) + \min(Z) =$ (a) -32 (b) -30 (c) -28 (d) -26	1
8	In a LPP, the linear inequalities or restrictions on the variables are called (a) Objective Function (b) Feasible Region (c) Decision Variables (d) Constraint	1
	Directions: (Q.9 – Q.10) Each of these questions contains two statements: Assertion (A) and Reason (R). Each of these questions also has four alternative choices, any one of which is the correct answer . You have to select one of the options (a) , (b) , (c) and (d) given below : (a) A is true , R is true and R is a correct explanation for A (b) A is true , R is true and R is not a correct explanation for Assertion (c) A is true and R is false (d) A is false and R is true	
9	Assertion: The maximum value of $Z = x + 3y \leq 20, x + 2y \leq 20, x \geq 0, y \geq 0$ is 30 Reason: The variable that enter into the problem are called decision variable a b c d	1
10	Assertion: The maximum value of $Z = 5x + 3y$, satisfying the conditions $x \geq 0, y \geq 0$ and $5x + 2y \leq 10$ is 15 Reason: The feasible region may be bounded or unbounded a b c d	1

Answer Key

Ans1	(b)
Feedback	Option (b) is correct, Since constraint LPP are $2x + y \leq 104, x + 2y \leq 76, x, y \geq 0$
Ans2	(d)
Feedback	Option (d) is correct, Since optimum solution occurs on A and B and on line segment AB
Ans3	(a)
Feedback	Option (a) is correct, Since Max Z at (0,38) is $38q$ and max Z at (16,44) is $16p + 44q$ therefore $38q = 16p + 44p$ $22q = 44p$ hence $2p = q$
Ans4	(c)
Feedback	Option (c) is correct, Since value of Z at (0,0), (52,0), (16,44) (0,38) are respectively 0 , 156 , 68, -152 hence optimum solution on (0,38)
Ans5	(c)
Feedback	Option (c) is correct, Since as per given diagram 6 corners
Ans6	(b)
Feedback	Option (b) is correct, Since values of objective function $2x-5y$ at $O(0,0)$ $E(5,0)$, $D(6,4)$, $C(6,6)$, $B(4,10)$, $A(0,6)$ are 0,10,-8,-18 , -42, -30 so min value of objective function is -42 at (4,10)
Ans7	(a)
Feedback	Option (a) is correct, Since Since values of objective function $2x-5y$ at $O(0,0)$ $E(5,0)$, $D(6,4)$, $C(6,6)$, $B(4,10)$, $A(0,6)$ are 0,10,-8,-18 , -42, -30 so sum of minimum and maximum value is -32
Ans8	(d)
Feedback	Option (d) is correct, Since In a LPP, the linear inequalities or restrictions on the variables are called Constraints
Ans9	(b)
Feedback	Option (b) is correct, Since A is true , R is true and R is not a correct explanation for Assertion
Ans10	(b)
Feedback	Option (b) is correct, Since A is true , R is true and R is not a correct explanation for Assertion