CHAPTER 12

LPP

CASE STUDY BASED QUESTIONS

Q No	Quest	ions		
1	A tra and I class exect class Optir	A train can carry a maximum of 300 passengers. A profit of Rs. 800 is made on each executive class and Rs. 200 is made on each economy class. The IRCTC reserves at least 40 tickets for executive class. However, atleast 3 times as many passengers prefer to travel by economy class, than by executive class. It is given that the number of executive class ticket is Rs. x and that of economy class ticket is Rs. y. Optimize the given problem.		
Based on the above information, answer the following questions.(1) The objective function of the LPP is: (a) Maximise $Z = 800x + 200y$ (b) Maximise $Z = 200x + 800y$ (c) Minimise $Z = 800x + 200y$ (d) Minimise $Z = 200x + 800y$		on the above information, answer the following questions. The objective function of the LPP is: (a) Maximise $Z = 800x + 200y$ (b) Maximise $Z = 200x + 800y$ (c) Minimise $Z = 800x + 200y$ (d) Minimise $Z = 200x + 800y$ Which among these is a constraint for this LPP?		
		(a) $x+y \ge 300$ (b) $y \ge 3x$		
		(c) $x \le 40$ (d) $y \le 3x$		
 (3) Which among these is not a corner point for this LPP? (a) (40,120) (b) (40,260) (c) (30,90) (d) (75,225) 		Which among these is not a corner point for this LPP? (a) (40,120) (b) (40,260) (c) (30,90) (d) (75,225)		
	(4)	The maximum profit is: (a) Rs.56000 (b) Rs. 84000		
	(5)	(c) KS. 205000 (d) KS. 105000 Which corpor point the objective function has minimum value?		
	(5)	(a) (40.120) (b) (40.260)		
		(c) (30.90) (d) (75.225)		
<u> </u>				

Suppose a dealer in rural area wishes to purchase a number of sewing. machines. He has only Rs. 5760 to invest and has space for at most 20 items for storage. An electronic sewing machine costs him Rs. 360 and a manually operated sewing machine Rs. 240. He can sell an electronic sewing machine at a profit of Rs. 22 and a manually operated sewing machine at a profit of Rs. 18.



Based on the above information, answer the following questions.

(1) Let x and y denote the number of electronic sewing machines and manually operated sewing machines purchased by the dealer. If it is assumed that the dealer purchased at least one of the given machines, then:

(a) $x+y \ge 0$ (b) x+y < 0

(c) x+y>0 (c) $x+y\leq 0$

(2) Let the constraints in the given problem is represented by the following inequalities: $x+y\leq 20$; $360x+240y\leq 5760$ and $x,y\geq 0$. Then which of the following point lie in its feasible region

(a) (0,24) (b) (8,12)

(c) (20,2) (d) None of these

(3) If the objective function of the given problem is maximizing Z = 22x+18y, then its optimal value occurs at:

(a)	(0,0)	(b)	(16,0)
(c)	(8,12)	(d)	(0,2)

(4) Suppose the following shaded region APDO, represent the feasible region corresponding to mathematical formulation of the given problem. Then which of the following represent the coordinates of one of its corner points.



	(b)8,16		
	(c) 16,8		
	(d) 16,0 (ii) Corner points of feasible region are		
	(ii) corner points of reasible region are		
	(a)(0,24) (b)(8.16)		
	(b)(0,10)		
	(d) (12.0)		
	(iv) Maximum profit earned by the firm is equal to		
	(a)6440		
	(b)4560		
	(c) 5000		
	(d) 4800		
4	Linear programming is a method for finding the optimal values (maximum or minimum) of quantities		
	subject to the constraints when relationship is expressed as linear equations or inequations.		
	Based on the above information, answer the following questions.		
	(i) The optimal value of the objective function is attained at the points		
	(d) none of (a) on X- (b) on Y- (c) which are corner points of the feasible		
	axis axis region these		
	(ii) The graph of the inequality 3x + 4y < 12 is		
	(a) half plane that (b) half plane that neither contains the (c) whole XOY-plane (d) none		
	contains origin nor the points of the line 3x + 4y excluding the points of these		
	the origin =12. on line $3x + 4y = 12$		
	(iii) The feasible region for an LPP is shown in the figure. Let Z = 2x + 5y be the objective function. Maximum of Z occurs at		
	6 (0, 6)		
	(4,5)		
	(6,3)		
	(7,0)		
	0 2 4 6 8		
	(a) (7,0) (b) (6,3) (c) (0,6) (d) (4,5)		
	(iv) The corner points of the feasible region determined by the system of linear constraints are		
	(0, 10), (5, 5), (15, 15), (0, 20). Let Z = px + qy, where p, q > 0. Condition on p and q so		
	that the maximum of Z occurs at both the points (15, 15) and (0, 20) is		
	(a) $p = q$ (b) $p = 2q$ (c) $q=2p$ (d) $q=3p$		



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(a) ${}^{400}x^+ {}^{300}y$ (b) ${}^{300}x^+ {}^{400}y$ (c) $x^+ y$ (d) none of the above

Kalpana starts a bakery shop . She chocolate cakes blue berry cakes for children . Chocolate cake requires of flour and 25gm of fat and Blue cake requires 100gm of flour and of fat.



(i)

(ii)

(iii)

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If bakery makes *x* chocolate cake and *y* blue berry cake and it can use maximum 5kg flour ,then which of the following constraint is correct.

(i)	$2_x + y \ge 50$
(ii)	$x^+ y^{\leq 50}$
(iii)	$2_x + y \le 50$
(iv)	$2_{x} + y = 50$
If Bakery	can use maximum 1kg fat , then which of the following is correct.
(i)	$x^{+} 2y \ge 40$
(ii)	$x^+ y^{\geq 40}$
(iii)	x + 2y = 40
(iv)	$x + 2y \le 40$
If total nu	imber of cakes made by bakery is represented by 7 then 7 is equal to
(i)	$Z^{=2}x^{+}y$
(ii)	$Z^{=} x^{+} {}^{2} y$

(iii)
$$Z^{=}x^{+}y$$

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	(iv) $Z^{=2}x^{+3}y$
(iv)	The maximum number of total cakes which can be made by bakery, assuming that there is no shortage
	of ingredients used in making the cakes is
	(i) 40
	(ii) 30
	(iii) 20
	(iv) 25
8	After retirement Mr.A.K Barik wants to invest at most Rs 12,000 in two type of shares X and Y
	According to the rule he has to invest at least Rs 2000 in "X" and at least Rs 4000 in "Y". If the rate of
	interest on "X" is 8% p.a and on share "B" is 10% p.a .
(i)	If Mr.Barik invests Rs x in share A ,then which of the following is correct?
	i) _x = 2000
	ii) _x < 2000
	iii) _X ≤ 2000
	iv) _x ≥ 2000
(;;)	If he invested Rev in share "V" then which of the following is correct?
(11)	= 4000
	i) y^{-4000}
	ii) $y^{\geq 4000}$
	iii) $y^{>} 4000$
	iv) y ^{≤ 4000}
(iii)	If the total interest received by Mr. Barik from both type of shares is represented by Z, then Z is equal to
	Rs
	i) $Z^{=2}x^{+}y$
	$ii) \qquad Z^{=} x^{+} {}^{2} y$

	iii)	$Z = \frac{2}{25} + \frac{y}{10}$
		<i>iv</i>) $Z = \frac{2}{10} + \frac{y}{25}$
(iv)	The maxi	mum interest received by him is
	i)	Rs1040
	ii)	Rs3000
	iii)	Rs1160
	iv)	Rs1200

ANSWERS

O No	Answer
1(i)	a
(ii)	b
(iii)	с
(iv)	d
(v)	а
2 (i)	С
(ii)	b
(iii)	С
(iv)	С
(v)	В
3 (i)	В
(ii)	В
(iii)	

С
D
С
D
D
D
D
Α
В
D
D
Α
D
А
А
iii)
iv)
iii)
ii)
(iv)
(ii)
(ii)
(iii)

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