Gurudas College STATISTICS [General] Semester-V, Paper-DSE-A Internal Assessment Exam, 2021-22

Timing:	12pm-12:30pm Marks:	10
	Attempt any 10 of the following questions	-
1. (a)	Define basic solution of a system of m linearly independent equations with unknowns $(n > m)$	n
(b)	Which of the following statement is correct?(a) If a LPP gives two optimal solutions it has infinite number of solution.(b) Every LPP admits an optimal solution.(c) Every LPP admits unique optimal solution.(d) None of these.	
(c)	Write the initial system of equations for the linear programming models Maximize $P = -9x_1 + 0.5x_2$ Subject to: $2x_1 + 4.5x_2 \le 85$, $4x_1 + 3x_2 \le 70$ $x_1 \ge 0, x_2 \ge 0$	
(d)	Write the initial simplex tableau for $MaximizeP = 5x_1 - 3x_2 + 2x_3$ Subject to: $6x_1 + 8x_2 + x_3 \le 100$ $4x_1 + 3x_2 - 2x_3 \le 90$ $x_1, x_2, x_3 \ge 0$	
(e)	Convert the inequalities to an equation using surplus variables. $3x_1 + 2x_2 \ge 60$	
(f)	Give an example of LPP where variable is unrestricted in sign.	
(g)	Write the initial system of equations for the linear programming models Maximize $P = 2x_1 + 6x_2$ Subject to: $6x_1 + 8x_2 \le 85$ $4x_1 + 3x_2 \le 70$ $x_1, x_2 \ge 0$	
(h)	Write down the assumptions of linear programing problems.	

(i)	How can you convert a maximization problem to a minimization problem?	(1)
(j)	$\mathbf{TRUE}/\mathbf{FALSE}$: If an optimal solution exists, then an optimal extreme point exists.	(1)
(k)	What do you mean by cost vector?	(1)
(1)	Is the feasible region of the graph of the following LPP bounded? Minimize $2000x_1 + 1500x_2$ Subject to: $6x_1 + 2x_2 \ge 8$ $2x_1 + 4x_2 \ge 12$ $x_1, x_2 \ge 0$	(1)
(m)	Write down the components of linear programming problem.	(1)
(n)	$4x_1 + 2x_2 - 3x_3 = 1$ $-6x_1 - 4x_2 + 5x_3 = -1$ Is $x_1 = 2$, $x_2 = 1$ and $x_3 = 3$ a feasible solution of the set of equations or not? Give reason with proper justifications.	(1)
(o)	TRUE/FALSE : In Linear programming the objective function and constraints are linear.	(1)

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