Roll	No.
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COER University

END SEMESTER EXAMINATION, EVEN SEM 2022-23

Time : 3 hours Program Name : BBA

Total Marks : 100 Semester : IV Course Code : SOS204

Course Name : Operations Research Note: All guestions are computered to advect the standard to be advected to a standard to be advected to be

Note: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the time.

Q. No 1	Attempt Any Four Parts Fach Question Carries 5 Marks	CO	BL
(a)	What is Operations Research? Discuss the scope and importance of Operations	CO 1	1,2
	Research in decision making		
(b)	Explain the characteristics and phases of Operations Research. How does Operations	CO 1	1,2
	Research aid in decision making?		
(c)	Discuss the limitations of Operations Research models. How can these limitations be	CO 1	1,2
	overcome?		
(d)	What are decision variables in an LPP?	CO 1	1,2
(e)	What is the difference between a feasible solution and an optimal solution?	CO 1	1,2
Q. No 2	Attempt Any Four Parts. Each Question Carries 5 Marks.	СО	BL
(a)	What are the different applications of Linear Programming in industry? Explain each	CO 2	2,5
	application with the help of an example.	1	
(b)	Write the difference between infeasible and unbounded linear program. Explain your	CO 2	2,5
	answer with example.		_
(c)	Solve the following linear programming problems graphically:	CO 2	2,5
	Maximize: $Z = 8x + y$		
	and the constraints are :	1	
	$\mathbf{x} + \mathbf{y} \leq 40$,	/	
	$2x + y \leq 60$,		
(4)	$x \ge 0, y \ge 0$	CO 2	25
(a)	Using simplex method, solve the following Lr problem		-,5
	Subjected to $2x_1 + 3x_2 \le 8$		
	Subjections Extension		
	$3X_1 + 2X_2 \le 12^{-1}$		
	$X_1, X_2 \ge 0$		
(e)	Explain the term degeneracy in the context of linear programming problem.	CO 2	2,5
(•/			
O No 2	Attempt Any Four Parts, Fach Question Carries 5 Marks,	CO	BL
Q. NO 3	In a linear programming problem, the primal problem has 3 constraints and 4 variables.	CO 3	2,3
(a)	What would be the dimensions of the dual problem? Explain.		
(h)	Write the dual of the following primal linear programming problem: maximize $5x + 2y$	CO 3	2,3
(0)	subject to: $2x + 3y \le 12 4x + y \le 8x$, $y \ge 0$		
(c)	What is the relationship between the primal and dual problems in Linear	CO 3	2,3
	Programming?		
(d)	How is an unbounded solution detected in Linear Programming?	CO 3	2,3
(e)	Prove that the dual of the dual of a LPP is the problem itself.	CO 3	2,3

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Q. No 4	Attempt Any Two Parts. Each Question Carries 10 Marks.	СО	BL
(a)	What is the transportation problem and how is it formulated? Explain with an example.	CO 4	4,5
(b)	Differentiate between the balanced and unbalanced transportation problem. What are the implications of unbalanced transportation problems?	CO 4	4,5
(c)	State the necessary and sufficient condition for the existence of a feasible solution to a transportation Problem.	CO 4	4,5

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Q. No 5	5 Attempt Any Two Parts, Each Question Carries 10 Marks		BI
(a)	Define the term 'game' in game theory Discuss the verieus to Marks.		
(b)	Define the term game ingame incory. Discuss the various types of games.		2,4,5
(5)	betwee the term value of the game in game theory. Explain how it is calculated in a	CO 5	2,4,5
	two-person zero-sum game.		
(c)	Using the principle of dominance, solve the following	COF	245
	. I be and good and the to how mg	05	2,4,5
	Player B		
	3 -2 -4		
	Player A -1 4 2		
	Z Z G	1	
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