Name:

**Enrolment No:** 



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022

Course: Operations Research Program: BBA All / B.Com.( H) /Int. BBA-MBA Course Code: DSQT 2006 Semester: III Time : 03 hrs. Max. Marks: 100

## Instructions:

	SECTION A		
	10Qx2M=20Marks		
S. No.		Marks	CO
1	If a LPP has no feasible region, then we say that LPP has <ul> <li>(a) Bounded Solution</li> <li>(b) Unbounded solution</li> <li>(c) No solution</li> <li>(d) None of the above</li> </ul>	2	CO1
2	The constraint inequality $4X + 3Y \le 24$ , then the point of intersection (a) (0,8) (6,0) (b) (8,0) (0,6) (c) (0,0) (0,8) (d) (8,0) (0,0)	2	CO1
3	<ul> <li>In a zero-sum game,</li> <li>(a) what one player wins, the other loses.</li> <li>(b) the sum of each player's winnings if the game is played many times must be zero.</li> <li>(c) long-run profits must be zero.</li> <li>(d) None of the above</li> </ul>	2	CO1
4	<ul> <li>In standard form of LPP, the constraint X + Y - Z = 24 then Z is said to be</li> <li>(a) Slack variable</li> <li>(b) Surplus variable</li> <li>(c) Artificial variable</li> <li>(d) None</li> </ul>	2	CO1
5	<ul> <li>The set of values of the decision variables X<sub>1</sub>, X<sub>2</sub>,, X<sub>n</sub> satisfying the constraints and non-negativity restrictions of the problem is called</li> <li>(a) Optimal solution</li> <li>(b) Feasible solution</li> <li>(c) Bounded solution</li> <li>(d) No solution</li> </ul>	2	CO1
6	<ul> <li>What happens when maximin and minimax values of the game are same?</li> <li>(a) no solution exists</li> <li>(b) solution is mixed</li> <li>(c) saddle point exists</li> <li>(d) saddle point does not exists</li> </ul>	2	CO1

$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	7	For finding an initia	l feasible solutio	n in transporta	tion problem			
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		(a) Simplex met	thod				2	COL
(d) Hungerian methodImage: Constraints of the game is called8Each participant of the game is called(a) Winner(b) Looser(b) Looser2(c) Player2(d) None29In northwest corner method first allocation is made at(a) Lower right corner of the table2(b) Upper right corner of the table2(c) Upper fiel/hand corner of the table210An assignment problem is considered as a particular case of a(a) Transportation problem2(b) Game theory2(c) Queuing problem2(d) Sequencing problem2(d) Sequencing problem21Solve the following LPP by graphical method1Solve the following LPP by graphical method1Solve the following LPP by graphical method2Define simulation and list all the steps of simulation.3Discuss the objective of inventory control and list the cost associated with inventories.4The matrix given below illustrates a game, where competitors A and B are assumed to be equal in ability and intelligence. A has a choice of strategy l or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B.1Ars is strategy52COI2Define simulation strategy for player A and B.2COI3Discuss the objective of inventory control and list the cost associated with inventories.4The matrix given below illustrates a game, where competitor							2	COI
8       Each participant of the game is called       2       CO         (a) Winner       (b) Looser       2       CO         (c) Player       2       CO         (d) None       2       CO         9       In northwest corner method first allocation is made at       2       CO         (a) Lower right corner of the table       2       CO         (b) Upper left-hand corner of the table       2       CO         (c) Highest costly cell of the table       2       CO         (d) Upper left-hand corner of the table       2       CO         (c) Queuing problem       2       CO         (d) Sequencing problem       5       CO         (d) Sequencing problem       5       CO         1       Solve the following LPP by graphical method       MaxZ = 6X_1 + 8X_2       Stipiect to constraints       5         5       Stipiect to constraints       5       Stipiect to constraints       5       CO         3       Discuss the objective of inventory con								
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$\begin{array}{ c c c c c c } \hline MaxZ = 6X_1 + 8X_2 \\ Subject to constraints \\ 5X_1 + 10X_2 \le 60 \\ 4X_1 + 4X_2 \le 40 \\ X_1, X_2 \ge 0 \end{array} \qquad 5 \qquad CO2$ $\begin{array}{ c c c c } \hline 2 & \text{Define simulation and list all the steps of simulation.} & 5 & CO2 \\ \hline 3 & \text{Discuss the objective of inventory control and list the cost associated with inventories.} & 5 & CO2 \\ \hline 4 & The matrix given below illustrates a game, where competitors A and B are assumed to be equal in ability and intelligence. A has a choice of strategy 1 or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B. \\ \hline & \hline & \hline & \hline & \hline & & & & & & \hline & & & & & \hline & & & & \hline &$	1	Solve the following	g LPP by graph	ical method				
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$4X_1 + 4X_2 \le 40$ $X_1, X_2 \ge 0$ 52Define simulation and list all the steps of simulation.53Discuss the objective of inventory control and list the cost associated with inventories.54The matrix given below illustrates a game, where competitors A and B are assumed to be equal in ability and intelligence. A has a choice of strategy 1 or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B.5 $1000000000000000000000000000000000000$			-		_		5	CO2
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3       Discuss the objective of inventory control and list the cost associated with inventories.       5       CO2         4       The matrix given below illustrates a game, where competitors A and B are assumed to be equal in ability and intelligence. A has a choice of strategy 1 or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B. <b>B</b> 's strategy       5       CO2         4 <b>B</b> 1       B2       5       CO2         A's       A1       4       6       5       CO2         A's       A1       4       6       6       5       CO2	2	Define simulation :			tion.		5	CO2
4     The matrix given below illustrates a game, where competitors A and B are assumed to be equal in ability and intelligence. A has a choice of strategy 1 or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B.     B's strategy     5     CO2       B1     B2     5     CO2       A's     A1     4     6       strategy     A2     3     5	3	Discuss the objecti	ve of inventory	control and li	st the cost as	ssociated with		
assumed to be equal in ability and intelligence. A has a choice of strategy 1 or strategy 2, while B can select strategy 1 or strategy 2. Find the value of the game and optimum strategy for player A and B. $\begin{array}{ c c c c c c c c c c c c c c c c c c c$		•	5				5	CO2
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of the game and optimum strategy for player A and B. B's strategy B1 B2 A's A1 4 6 strategy A2 3 5 CO2		assumed to be equa	al in ability and	l intelligence.	A has a choi	ice of strategy		
of the game and optimum strategy for player A and B. B's strategy B1 B2 A's A1 4 6 strategy A2 3 5 CO2		1 or strategy 2, wh	ile B can selec	t strategy 1 or	strategy 2. I	Find the value		
Bi         B2         5         CO2           A's         A1         4         6         5         CO2           strategy         A2         3         5         CO2								
A's         A1         4         6           strategy         A2         3         5				B's st	trategy			
A's         A1         4         6           strategy         A2         3         5				B1	B2		5	CO2
strategy A2 3 5			Δ1					
						-		
		Stra	A2	3	5	]		
CECTION C								
SECTION-C				SECTIO	N-C			
3Qx10M=30 Marks								

1	Suppose an ind	ustry is ma	nufacturi	ng two t	ypes of	produ	cts P1 and P2.		
	The profits per These two prod								
	following table required on each								
	Profit/kg	P1	- <b>I</b>	P2		Tota			
	I Iont/kg	11		12		avail	ability s/day	10	CO3
	Machine 1			2		600			
	Machine 2			5		800			
	Machine 3	5		6		1100	)		
	a. Formulate the b. Form the dua			of linea	r progr	amming	g model.		
2	Solve the follow			lem usin	g Hung	arian N	Method. The		
	matrix entries an	re processir	ng times in	n hours.					
				Operato	or				
		Iob C	01 (		03	O4		10	CO3
		J1 2	2 1	0	9	7		- •	
		J2 1	5	4	14	8			
				4	16	11			
				15	13	8			
3	Explain the follo	-	-			-			
	strategy (c) Mix	•••		ain the v	alue of	the gai	me and find		
	the best strategy	for player	A and B.						
		<b>G</b>		Pl	ayer B			10	CO2
		Strategy	B1	B2	В	3	B4	10	CO3
		A1	-5	-3	(		4		
	Player A	A2 A3	5 4	6 0	-	4 2	8-3		
	11	A3 A4	3	0		3	8		
				SECT	ION-E	)			
			2	Qx15M=	= 30 M	arks			
4.1	Develop a linea				-	-			
	the optimal solu	ution by No	orthwest-c	corner ce	ll meth	od and	least cost cell		
	method.							15	CO4

	Source		Desti	nation		Supply		
	Source	А	В	C	D	Supply		
	Ι	3	1	7	4	300		
	II	2	6	5	9	400		
	III	8	3	3	2	500		
	Demand	250	350	400	200			
4.2	The marketing of yearly net p	departmen profits for	t of the compleach of the s	any worked ou trategies of th	it the payo			
4.2	The marketing of yearly net p sales). This is p	departmen profits for	t of the comp each of the s l in the follow	any worked ou trategies of th	it the payo aree events			
4.2	The marketing of yearly net p sales). This is p Cou	departmen profits for represented	t of the comp each of the s l in the follow	any worked ou trategies of th ving table:	it the payo aree events	s (expected	15	
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