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(**Pages : 3**)

Name..... Reg. No.....

SECOND SEMESTER M.B.A. DEGREE EXAMINATION, JULY 2022

(CUCSS)

M.B.A.

BUS 2C 14-MANAGEMENT SCIENCE

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer **all** questions. Each question carries 1 weightage.

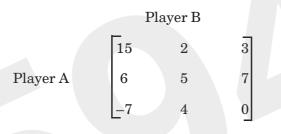
- 1. What do you mean by sensitivity analysis?
- 2. Identify the significance of game theory.
- 3. State the merits of CPM.
- 4. What is slack variable?
- 5. What do you mean by an Initial basic feasible solution in a transportation problem ?
- 6. What do you mean by Expected Monetary Value?

 $(6 \times 1 = 6 \text{ weightage})$

Part B

Answer any **four** questions. Each question carries 3 weightage.

- 7. What do you mean by an assignment problem ? Explain how it is different from transportation problem.
- 8. Solve the game whose pay off matrix is given by :



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- 9. A baking company must produce atleast 200 kgs of a mixture consisting of ingredients X1 and X2 daily. X1 costs Rs. 3 per kg and X2 Rs. 8 per kg. No more than 90 kg of X1 can be used and at least 60 kgs of X2 must be used. Formulate a mathematical model to the problem.
- 10. What is management science ? Discuss the various applications of management science.
- 11. Write down the dual of the following problem :

12. Explain the different methods for finding out Initial feasible solution in transportation problem.

 $(4 \times 3 = 12 \text{ weightage})$

Part C

Answer any **three** questions. Each question carries 4 weightage.

13. Find the initial solution using Vogel's method to the following transportation problem :

					_
	W1	W2	W3	Supply	
X1	2	7	4	5	
X2	3	3	1	8	
X3	5	4	7	7	
X4	1	6	2	14	
Demand	7	9	18		

- 14. Explain the advantages of simulation compared to other models.
- 15. A project work consist of five major jobs for which five contractors have submitted tenders. The tender amounts quoted in lakhs of rupees are given in the matrix below :

		Job					
		L	М	Ν	0	Р	
	Ι	8	4	2	6	1	
Contractors	II	0	9	5	5	4	
	III	3	8	9	2	6	
	IV	4	3	1	0	3	
	V	9	5	8	9	5	

Determine the optimum assignment schedule.

- 16. In bank customers arrive at a rate of 30 per day. Assuming that the inter-arrival time follows an exponential distribution and, the service time distribution is also exponential with an average 36 minutes. Calculate the following :
 - (a) Average length of non-empty queue.
 - (b) The probability that the queue size exceeds 10.
- 17. Explain various criteria's used for decision making under uncertainty.

 $(3 \times 4 = 12 \text{ weightage})$

Part D (Compulsory)

It carries 6 weightage.

18. Assuming that the expected time are normally distributed. Find the critical path and project duration.

	Days					
Activity	a	m	Ь			
1-2	2	5	14			
1-3	9	12	15			
2-4	5	14	17			
3-4	2	5	8			
3-5	8	17	20			
4-5	6	9	12			

 $(1 \times 6 = 6 \text{ weightage})$

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