C 43515 (Pages : 3) Name..

Reg. No...................................

SECOND SEMESTER M.B.A. DEGREE EXAMINATION, JULY 2023

M.B.A. (CUCSS)

BUS 2C 14—MANAGEMENT SCIENCE

(2016 Scheme)

Time : Three Hours Maximum : 36 Weightage

Part A

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

1. What is meant by decision making under risk ?

2. What do you mean by surplus variables ?

3. List down the applications of network techniques ?

4. What is shadow price ?

5. State the situations when the transportation problem will become unbalanced ?

6. Explain the concept of duality in Linear Programming Problem ?

$(6 \times 1 = 6$ weightage$)$

Part B

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

7. Discuss the role of queuing theory in management ?

8. Bring out the basic assumptions in transportation technique ?

9. Explain the limitations of management science ?

10. Examine which act is optimal X or Y :

X		Y	
Pay-off	Probability	Pay-off	Probability
12	.5	10	.4
15	.2	20.	.3
20	.3	20	.3

Turn over

11. A firm can produce three types of cloths say A, B and C. Three kinds of wool were required for it, say red wool ; green wool and blue wool. One unit length of type A cloth needs 2 yards of red wool and 3 yards of blue wool. One unit length of type B cloth needs 3 yards of red wool, 2 yards of green wool and 2 yards of blue wool, and one unit of type C cloth needs 5 yards of green wool and 4 yards of blue wool. The firm has only a stock of 8 yards of red wool, 10 yards of green wool and 15 yards of blue wool. It is assumed that the income obtained from one unit length of type A cloth is Rs. 3.00, of type B cloth is Rs. 5.00 and of type C cloth is Rs. 4.00. Formulate mathematical model to the problem.

12. Explain the components of a decision problem.

(4 × 3 = 12 weightage)

Part C

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

13. Explain the process of management science ?

14. Find the optimum solution to the following assignment problem showing the cost (in INR) for assigning workers to the jobs :

		Job		
		I	II	III
	A	18	17	16
Workers	B	15	13	14
	C	19	20	21

15. The following table gives the activities in a construction project and other relevant information :

Activity	Duration
1–2	20
1–3	25
2–3	10
2–4	12
3–4	6
4–5	10

    a)   Draw the network for the project ?

    b)   Find total float for each activity ?

    c)   Which are the critical activities ?

16.   What is meant by LPP ? Discuss the advantages and dis advantages of LPP ?

17.   Compare between Critical Path Method and Program Evaluation Review Technique ?

$(3 \times 4 = 12$ weightage)

Part D (Compulsory)

It carries 6 *weightage.*

18.   Solve the transportation problem using Vogel's Approximation Method :

Origins	Destinations				
	D_1	D_2	D_3	D_4	Supply
S_1	19	30	50	10	7
S_2	70	30	40	60	9
S_3	40	8	70	20	18
Demand	5	8	7	14	

$(1 \times 6 = 6$ weightage)