

**BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)**

**B.Tech.Sem - VII PRODUCTION : : SUMMER - 2022**

**SUBJECT : OPERATIONS RESEARCH**

Day : Monday  
Date : 30-05-2022

Time : 02:30 PM-05:30 PM  
Max. Marks : 60

**S-13483-2022**

**N. B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Assume suitable data. If necessary.

**Q.1** Vitamins  $B_1$  and  $B_2$  are found in two foods  $F_1$  and  $F_2$ . 1 unit of  $F_1$  contains 3 units of  $B_1$  and 4 units of  $B_2$ . 1 unit of  $F_2$  contains 5 units of  $B_1$  and 3 units of  $B_2$  respectively. Minimum daily prescribed consumption of  $B_1$  and  $B_2$  is 50 and 60 units respectively. Cost per unit of  $F_1$  and  $F_2$  is Rs. 6 and Rs. 3 respectively. Formulate as a LPP. **(10)**

**OR**

**Q.1** Explain what is meant by decision variables, objective function and constraints in linear programming.

**Q.2** What are the various methods used to find initial approximation in a transportation problem? **(10)**

**OR**

**Q.2** Consider the problem of assigning 5 operators to 5 machines. The assignment costs are as given below

		Operators				
		I	II	III	IV	V
Machines	A	10	5	13	15	16
	B	3	9	18	3	6
	C	10	7	2	2	3
	D	5	11	9	7	12
	E	7	9	10	4	12

**Q.3** What are the different costs associated with inventory? **(10)**

**OR**

**Q.3** Describe the price break model for inventory control.

**Q.4** Describe the process to sequence  $n$  jobs through two machines. **(10)**

**OR**

**Q.4** Describe the various queue disciplines in queuing system?

**Q.5** What is the meaning of present value and future value of money? How are they calculated? **(10)**

**OR**

**Q.5** How do you solve a two person zero sum game?

**Q.6** Describe various floats in a network modelling. **(10)**

**OR**

**Q.6** What are the various time estimates used in PERT? What is its significance?

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