

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B. TECH. (D.T.) DEGREE COURSE 2018-19**

Semester	: VII (New Syllabus)	Academic Year	: 2018-2019
Course No.	: ST-702	Course Title	: <b>Operation Research</b>
Credits	: 2+0=2	Total Marks	: 50
Day & Date	: Thursday, 10/01/2019	Time	: 15.00 to 17.00 Hrs.

- Note :**
- 1) All questions from **Section 'A'** are compulsory.
  - 2) Solve **Any Five** questions from **Section 'B'**.
  - 3) All questions carry equal marks.

**SECTION – 'A'**

- Q. 1    A) Choose the most appropriate answer from the options given below. (05)
- i) Function of linear programming problem is to maximize the .....
    - a) Cost
    - b) Profit
    - c) Loss
    - d) None of these
  - ii) The game where algebraic sum gains and losses of all the players is zero is called a .....
    - a) Zero sum game
    - b) Fare game
    - c) Pay off game
    - d) None of these
  - iii) Hungarian method is used for .....
    - a) Transportation problem
    - b) Assignment problem
    - c) Game theory
    - d) None of these
  - iv) During world war II, the military management in the UK and USA engaged a team of scientists in a plan under the name .....
    - a) Operation flood
    - b) Operation research
    - c) Operation extension
    - d) None of these
  - v) In PERT and CPM, the value or cost of dummy activity is .....
    - a) 1
    - b) 0
    - c) -1
    - d) None of above
- B) Elaborate the following. (05)
- i) NWCM
  - ii) PERT
  - iii) VAM
  - iv) LCM
  - v) CPM
- Q. 2    A) Answer the following question in one sentence. (05)
- i) What is unbalanced assignment problem?
  - ii) What is penalty?
  - iii) What is slack element?
  - iv) What is artificial variable?
  - v) What is LPP?
- B) Define the following terms (05)
- i) Feasible solution
  - ii) Operation research
  - iii) Row deduction
  - iv) Optimal solution
  - v) Model

## SECTION – 'B'

- Q. 3 Explain the scope and objectives of operation research. (06)
- Q. 4 Determine transformation schedule from following data as to minimize total transportation cost by using VAM method. Transportation cost / unit is given as below (06)

Ware houses		$W_1$	$W_2$	$W_3$	$W_4$	$W_5$	Availability
Demand	$D_1$	15	10	6	5	10	250
	$D_2$	20	5	12	8	25	300
	$D_3$	24	20	6	15	10	150
		150	125	200	125	100	

- Q. 5 Discuss the principle and application of operation research. (06)
- Q. 6 A) Explain the characteristics of OR model. (02)  
 B) Explain the advantages of transportation problem. (02)  
 C) Explain the application of assignment problem. (02)
- Q. 7. A) Explain the queuing theory in detail. (03)  
 B) Enlist the steps involve in PERT and CPM. (03)
- Q. 8 A) What do you mean by inventory control? (02)  
 B) State different notations used in inventory control. (02)  
 C) Write note on economic lot size model of inventory. (02)
- Q. 9 A) What is LPP? (02)  
 B) Write an explanatory note on simplex technique for solving simple L.P. Problem. (04)

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