



Aditya Group of Degree Colleges
ADITYA DEGREE COLLEGES

* ANDHRA PRADESH *

PRE FINAL - EXAMINATIONS

III B.SC :: VI SEMESTER

STATISTICS-CLUSTER

OPERATIONS RESEARCH – I

Date:08.03.2019

Max. Marks : 75 M

Time: 3 Hours

SECTION-A

I. Answer any FIVE of the following questions:

5 x 5 = 25 M

1. Explain bounded variables.
2. Write the tabular representation of transportation problem.
3. Explain briefly degeneracy transportation problem.
4. Explain travelling salesman problem.
5. Write the assumptions of sequencing problem.
6. Determine an initial basic feasible solution to the following transportation problem using North-West Corner Method.

	D1	D2	D3	D4	Availability
O1	6	4	1	5	14
O2	8	9	2	7	16
O3	4	3	6	2	5
Demand	6	10	15	4	35

7. Solve the following assignment problem.

	A	B	C	D
I	5	7	11	6
II	8	5	9	6
III	4	7	10	7
IV	10	4	8	3

8. We have five jobs, each of which must go through the two machines A and B in the order AB. Processing times in hours are given in the table below.

Job	1	2	3	4	5
Machine A	5	1	9	3	10
Machine B	2	6	7	8	4

Determine a sequence for the five jobs that will minimize the elapsed time.

SECTION-B**II. Answer the following questions:****5 x 10 = 50 M**

9. a) Explain Revised Simplex Algorithm.

(Or)

b) Use revised simplex method to solve the following L.P.P.

$$\begin{aligned} \max Z &= 2x_1 + x_2 \\ \text{S.t.c } 3x_1 + 4x_2 &\leq 6 \\ 6x_1 + x_2 &\leq 3 \text{ and} \\ x_1, x_2 &\geq 0 \end{aligned}$$

10. a) Explain matrix minima method.

(Or)

b) Determine an initial basic feasible solution to the following transportation problem by using the VAM-Method.

	I	II	III	IV	Supply
A	13	11	15	20	2000
B	17	14	12	13	6000
C	18	18	15	12	7000
Demand	3000	3000	4000	5000	

11. a) Explain MODI method.

(Or)

b) Find the optimum solution to the following problem using UV-Method.

		Destination				Supply
		I	II	III	IV	
	O ₁	21	16	25	13	11
	O ₂	17	18	14	23	13
	O ₃	32	17	18	41	19
Demand		6	10	12	15	43

12. a) Explain an algorithm to solve Assignment Problem by Hungarian method

(Or)

b) Solve the following assignment problem of maximization.

5	11	10	12	4
2	4	6	3	5
3	12	5	14	6
6	14	4	11	7
7	9	8	12	5

13. a) Explain sequential procedure for solving a 2 machines 'n' jobs problem.

(Or)

b) Determine the optimal sequence of jobs that minimizes the total elapsed time based on the following information processing time on machines is given in hours and passing is not allowed.

3	12	5	2	9	11
8	6	4	6	3	1
13	14	9	12	8	13