

(STA N 5306 A2)
B.Sc Degree (CBCS) Examinations- 11 July 2023
SEMESTER-V (REGULAR)
OPERATION RESEARCH -II

MaxMarks:60

TIME: 3Hrs

Section-A

Answer Any FIVE questions

5 x 4 = 20 M

1. Define transportation problem.
2. Explain VAM.
3. Explain unbalanced assignment problem.
4. Describe the mathematical model of assignment problem.
5. Explain the assumptions of sequencing problem.
6. Explain the sequencing algorithm for n jobs and 3 machines.
7. Write the rules of networking.
8. Define event and activity.
9. Explain about queuing system.
10. Explain classification of queuing models.

Section-B

Answer All the questions

5 x 8 = 40 M

11. Solve the following transportation problem by Northwest corner and least cost cell methods.

Source		A	B	C	D	Supply
	1	3	1	7	4	
2	2	6	5	9	400	
3	8	3	3	2	500	
		250	350	400	200	

(OR)

12. Explain

i) MODI method

ii) degeneracy in TP

iii) unbalanced in TP iv) mathematical formulation of TP

13. Explain the Travelling salesman problem with an illustration.

(OR)

14. Solve the following problem by Hungarian method

Job	Operator				
	1	2	3	4	5
1	9	11	14	11	7
2	6	15	13	13	10
3	12	13	6	8	8
4	11	9	10	12	9
5	7	12	14	10	14

15. There are 9 jobs, each of which has to go through the machine A and B in the order AB. Processing times in hours are given as

Jobs	1	2	3	4	5	6	7	8	9
Machine-A	5	3	12	15	6	10	11	9	5
Machine-B	6	8	10	10	6	12	1	3	7

Determine a sequence of these jobs that will minimize the total elapsed time. Also find idle time for machine A and B.

(OR)

16. Explain the sequencing algorithm for n jobs and 3 machines.

17. Consider the following table summarizing the details of a project

Activity	Predecessor(s)	Duration (Weeks)		
		O	m	P
A	-	5	6	7
B	-	1	3	5
C	-	1	4	7
D	A	1	2	3
E	B	1	2	9
F	C	1	5	9
G	C	2	2	8
H	E,F	4	4	10
I	D	2	5	8
J	H,G	2	2	8

i) Construct the project network.

ii) Find the elapsed duration and variance of each activity.

iii) find the critical path and expected project completion time.

(OR)

18. A project schedule has the following characteristics

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
time in days	4	1	1	1	6	5	4	8	1	2	5	7

i. construct network diagram

ii. computer the earliest time event time and latest event time

iii. determine the critical path and total project duration

19. Explain the characteristic of queuing model $(M/M/1):(\infty/FIFO)$.

(OR)

20. Explain the characteristic of queuing system.