Name of Student:..... **Roll No:**.....

TKM COLLEGE OF ENGINEERING, KOLLAM-5

Internal Assessment (Second series test) (Feb-2022)

DETAILS OF THE QUESTION PAPER

Programme: MCA

Semester:3

Course Code and Name: 20MCA261, ELECTIVE 3, OPERATIONS RESEARCH

Assessment Title\ Number: SERIES TEST **2**

1. *This examination has 4 Questions in Part A and 6 questions in Part B.*
2. Answer ***ALL*** questions from PART A and ***Three*** questions from PART B
3. Duration of Exam: 2 hours
4. Maximum Marks: 30

PART A(4×3=12)

1. Define (i) Activity and Event (ii) Total float (iii) Free float (iv) Independent float.
2. A small project consists of seven activities for which the relevant data is given below

Activity	:	A	B	C	D	E	F	G
Preceding activities:		-	-	-	A, B	A,B	C,D,E	C,D,E
Duration(days)	:	4	7	6	5	7	6	5

Draw the network and find the project completion time.

3. What are the steps involved in Vogel's Approximation Method (VAM).
4. Obtain an initial basic feasible solution to the following Transportation problem using North West Corner Rule (NWCR method)

	DI	D2	D3	D4	Capacity
O1	1	2	3	4	6
O2	4	3	2	0	8
O3	0	2	2	1	10
Demand	4	6	8	6	

PART B **(6×3=18)**

5. A project schedule has the following characteristics.

Activity:	1-2	1-3	2-4	3-4	3-5	4-6	5-6	5-7	6-8	7-8	8-10	9-10
Time :	4	1	1	1	6	5	4	8	1	2	5	7

(i) Construct the network

(ii) Compute E and L for each event

(iii) Find the critical path and calculate the three floats for each activity

OR

6. Tasks A, B, C,....., H, I constitute a project. The precedence relationships are A<D; A<E; B<F; D<F; C<G; C<H; F<I; G<I. Draw a network to represent the project and find the minimum time of completion of the project when time, in days, of each task is as follows:

Task:	A	B	C	D	E	F	G	H	I
Time:	8	10	8	10	16	17	18	14	9

Also identify the critical path and determine the total, free and independent floats.

7. Solve the following assignment problem

	I	II	III	IV
A	2	3	4	5
B	4	5	6	7
C	7	8	9	8
D	3	5	8	4

Or

8. Obtain an initial basic feasible solution to the following Transportation problem using VAM method .

	DI	D2	D3	D4	Capacity
O1	1	2	3	4	6
O2	4	3	2	0	8
O3	0	2	2	1	10
Demand	4	6	8	6	

9. Solve the assignment problem

	I	II	III	IV
A	16	10	14	11
B	14	11	15	15
C	15	15	13	12
D	13	12	14	15

Or

10. A project consists of eight activities with the following relevant information:

Activity	Immediate predecessor	Estimated duration (days)		
		Optimistic	Most likely	Pessimistic
A	--	1	1	7
B	--	1	4	7
C	--	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D, E	3	6	15
H	F, G	1	2	3

(i) Draw the PERT network and find out the expected project completion time.

(ii) Find the variance of the project?