

B.B.A. Semester - 6 (CBCS) Examination**April/May-2022 (OLD COURSE)****ADVANCED RESEARCH OPERATION TECHNIQUES(ELECTIVE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 (a) what is Sequencing Problem? (07)

(b) Explain 2 machines n – jobs method in terms of sequencing problem. (07)

OR

Que-1 Six jobs j₁, j₂.....j₆ are required to be processed on four machines,M₁,M₂,M₃ and in that order. Using the processing times given below, determine the optimal sequence of the job performance and total elapsed time.

Job	M1	M2	M3	M4
J1	14	8	8	10
J2	10	5	8	14
J3	15	6	8	11
J4	11	4	6	16
J5	12	8	9	14
J6	14	9	4	12

Que-2 (a) what is replacing problem? Describe some important situations of replacement. (07)

(b) Why does problem of replacement arise? (07)

OR

Que-2 (a) Machine A cost of Rs. 80,000. Annual operating costs are Rs.2,000 for the first year, and they increase by Rs. 15,000 every year. Determine the least age at which to replace the machine. If the optimal replacement policy is followed, what will be the average yearly cost of operating and owning the machine?

(b) Another machine B costs Rs. 1, 00,000. Annual operating cost for the first year is Rs. 4,000 and they increase by Rs. 7,000 every year. The firm has a machine of type A which is one year old. Should the firm replace it with B and if so, when?

Que-3 (a) Give difference between PERT and CPM. (07)

(b) Briefly mention the area of application of network technique. (07)

OR

Que-3 A small assembly plant assembles PC s through 9 interlinked stages according to adjoining process:

Stage	1-2	1-3	1-4	2-5	3-6	3-7	4-6	5-8	6-9	7-8	8-9
Duration	2	2	1	4	8	5	3	1	5	4	3

- I. Draw an arrow diagram
- II. Tabulate EST, EFT, LST and LFT for all the stages.
- III. Find the critical path and assembly duration

Tabulate total float, free float and independent float.

Que-4 (a) Explain two persons zero sum game. (07)

(b) Explain dominance rule. (07)

OR

Que-4 (a) Using Dominance Rule find the value of game.

B

	2	4	3	8	4
A	5	6	3	7	8
	6	7	9	8	7
	4	2	8	4	3

(b) Solve the game.

B

	8	4	-2
A	-2	-1	3

Que-5 Explain the following (any two) (14)

- I. Explain EOQ
- II. Explain Inventory quality control
- III. Explain different types of inventories.
