

**B.B.A. Semester - 6 (CBCS) Examination
July-2025 (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) Give difference between PERT and CPM. (07)

Que-1 (B) Explain (07)

- 1) Marge event
- 2) Burst event
- 3) Dummy activity

OR

Que-1 The activities involved in a PERT project are detailed in the adjoining table (14)

Job (i-j)	1-2	2-3	3-5	7-8	5-8	6-7	4-5	1-6	2-4
A	3	6	5	4	1	3	3	2	2
M	6	12	11	19	4	9	6	5	5
B	15	30	17	28	7	27	15	14	8

A = optimistic, M = most likely time, B = pessimistic time

- 1) Draw a network diagram.
- 2) Find the critical path after estimating the earliest and latest event times for all nodes.
- 3) Find the probability completing the project before 31 days.
- 4) What is the chance of project duration exceeding 46 days.

What will be the effect on the current critical path if the most likely time of activity 3 – 5 gets revised to 14 instead of 11 days given above?

Que-2 (A) What is replacement? (07)

Que-2 (B) Explain different situation of replacement. (07)

OR

Que-2 A Manufacturer is offered two machines A and B. A is priced at Rs.5,000 and running costs are (14)

estimated at Rs.800 for each of the first five years, increasing by Rs.200 per year in the 6th and subsequent years. Machine B. Which has the same capacity as A costs Rs.2500 but will have running costs of Rs.1200 per year for six years increasing by Rs.200 per year thereafter. If money is worth 10% per year, which machine should be purchased?

Que-3 (A) What is sequencing problem? (07)

Que-3 (B) Explain 2 machines n jobs process. (07)

OR

Que-3 Six jobs go first on machine A, then on machine B and lastly on machine C. The order (14)

completion of jobs has no significance .The following table gives machine time (In hours) for the six jobs and three machines :

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

Find the sequence of the jobs that minimizes elapsed time to complete the jobs. Find also the idle time of the machines A, B and C.

Que-4 (A) Explain different types of inventories. (07)

Que-4 (B) Give the role of inflation and credit system in inventory management. (07)

OR

Que-4 The ABC manufacturing company has determined from an analysis of its accounting and production data for part number 625; that its cost to purchase is rs.36 per order and rs.2 per part. Its inventory carrying charge is 9% of the average inventory. The demand of this part is 10,000 units per annum. (14)

Determine

- 1) what should be the economic order quantity?
- 2) what is the optimal number of orders?

Que-5 (A) What is game theory? (07)

Que-5 (B) Explain (07)

- 1) saddle point
- 2) two person zero sum game.

OR

Que-5 (A) Solve the game by graphic method. (07)

$$\begin{matrix} & \text{B} \\ \text{A} & \begin{pmatrix} 8 & 4 & -2 \\ -2 & -1 & 3 \end{pmatrix} \end{matrix}$$

Que-5 (B) Player A is paid Rs. 8.00 if two coins turn both heads and rs.10.00 if two coins turn both tails. (07)
Player B is paid 3.00 when the two coins do not match. Given the choice of being A or B
which one would you choose and what would be your strategy?
