647510 **BBAresEC607D** **Seat No :_____**

B.B.A. Semester - 6 (*CBCS*) Examination

Oct/Nov-2020

ADVANCED RESEARCH OPERATION TECHNIQUES (ELECTIVE)

Time: 2:00 Hours **Marks: 56**

Instructions:

1. Figure to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any four of the following questions.

Q.1(A) Explain following in terms of Game. (07)

1. Saddle Point.
2. Two persons zero sum game.
3. Max min pay off.

Q.1(B) Explain graphic method in terms of Game Theory. (07)

OR

Q.1(A) Solve the Game.

$$\begin{pmatrix} 35 & 35 & 25 & 5 \\ 30 & 20 & 15 & 0 \\ 40 & 50 & 0 & 10 \\ 55 & 60 & 10 & 15 \end{pmatrix}$$

Q.1(B) Solve the Game using graphic Method.

$$\begin{pmatrix} -6 & 7 \\ 4 & -5 \\ -1 & -2 \\ -2 & 5 \\ 7 & 6 \end{pmatrix}$$

Q.2 (A) Define inventory, what are the different types of inventor in industries? (07)

(B) What is inventory Management? Briefly explain the major decision concerning inventory. (07)

OR

Q.2 (A) A Plumbing supply company stocks thousands of plumbing items sold to regional plumbers, contractors and retailers Mr. X, the firms general manager, wonders how much money could be saved annually if EOQ are used instead of the firm's present rule of Thumb. He instructs Mr. Y to conduct an analysis of one material only to examine if significant savings might result from using EOQ. Mr. Y develops the following estimates from accounting information

D=10,000 Q=400 valves per order Ch= Rs.4 per unit per year Co=Rs.55 per order

(B) If the annual demand for an item is 3200 units. The unit cost is Rs.6 and inventory carrying charges 25% peer annuam. If the cost of one procurement is Rs. 150 determine.

1. Economic order quantity.
2. No. of order per year.
3. Time between two consecutive orders.
4. The optimal cost.

Q.3 (A) Define: (07)

1. Critical Path.
2. Slack time.
3. Total time.

(B) Give difference between PERT and CPM. (07)

OR

Q.3 Mr. X has been commissioned by the food manufacturer Y to carry out market research in a new product development project, prior to a test market launch. The table below lists required activities and their durations in weeks: (14)

Activity	Immediate predecessor	duration
A	-	6
B	-	4
C	A	20
D	B	12
E	B	11
F	C	5
G	C, D, E	4
H	E	30
I	G	8
J	G	10
K	F, I	7
L	H, J, K	6
M	H, J, K	4
N	L	10
O	M, N	3

1. Draw the new product development network. State and explain the critical path and its duration.
2. Prepare a table of the EST, EFT, LST, LFT Total and free float. Explain the important of the float for management.

Q.4 (A) What is replacement? Describe some important replacement situations and replacement polices. (07)

(B) Explain how the theory of replacement is used in the following problems. (07)

1. Replacement of items whose maintance cost varies with time.
2. Replacement of items that fail completely.

OR

Q.4 Machine A cost of Rs. 80000. Annual operating costs are Rs. 2000 for first year, and they increase by Rs. 15000 every year Determine the least age at which to replace machine. If optimal replacement policy is followed what will be the average yearly cost of operating and owning the machine? Another machine B costs Rs. 1,00,000. Annual operating cost for the first year is Rs. 4,000 and they increase by a Rs. 7000 every year. The firm has machine of type A which is one year old. Should the firm replace it with B and if so, when? (14)

(A) Suppose the firm is just ready to replace the machine A with another machine of same type, just then the firm gets information that the machine B will become available in a year. What should the firm do?

Q.5 A refrigeration company has six plants located in different parts of a city. Every year it is necessary for each plant to be completely overhauled. The overhauling is carried out in two stages A and B, and each stage requires a crew of workman with completely different skills. The work on stage B can start only when stage A has been completed. The plant has to be closed for the entire period of its overhauling. The present schedule of the overhaul of the six plants as follows. (14)

Time Required by crew(days)

Plant	P1	P2	P3	P4	P5	P6
Crew A	10	10	8	10	9	12
Crew B	8	6	14	9	7	10

(A) Determine the optimal sequence.

(B) If downtime of any of the six plant costs Rs. 4000 per day for a plant, idle time for crew A costs Rs. 1250 per day, and idle time for crew B costs Rs. 2150 per day, which of the two schedules, the present one and the one determine in (a) will be more economical? What are their respective costs?

OR

Q.5 (A) What is a sequencing problem? Explain and illustrate. (07)

(B) Give johnson's procedure for determining an optimal sequence for procersing n items on two machines. (07)

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