B. B. A. (Sem. VI) (CBCS) Examination

March/April - 2020

Statistics : Paper - 610

(Operation Research - 2) (Old Course)

Faculty Code : 010

Subject Code : 001610

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

Instructions :

(1)   Attempt all five questions.

(2)   Each question carries equal marks.

(3)   Figures to the right indicate marks.

1   (a)   Write rules for construction of Network Diagram.   **7**

     (b)   Explain : CPM.   **7**

OR

1   A project has following activities.   **14**

Activity	A	B	C	D	E	F	G	H	I
Immediate Predecessor	-	A	A	A	B	B,C	E	E,F	F,D
Optimistic time	14	14	13	16	15	13	14	16	14
Most likely time	17	14	15	19	18	17	18	20	16
Pessimistic time	25	21	18	28	27	21	20	41	22

Draw diagram and find critical path. Determine mean project completion time, within how many days would you expect the project is completed with 95% sure ?

2 (a) What is group replacement policy ?   **7**

     (b) Explain : Types of replacement situations.   **7**

OR

2 The maintenance cost and resale value per year of a   **14** machine whose purchase price is Rs. 7,000 is given below. When should the machine be replaced ?

Year	1	2	3	4	5	6	7	8
Maintenance cost (Rs.)	900	1200	1600	2100	2800	3700	4700	5900
Resale value (Rs.)	4000	2000	1200	600	500	400	400	400

3 What is meant by sequencing problem ? Give the   **14** assumptions made in sequencing problem.

OR

3 Six jobs go first on machine A, then on machine B and lastly on machine C. The order of completion of jobs has no significance. The data is as below.   **14**

Jobs	Processing Time (in hours)		
	Machine A	Machine B	Machine C
1	8	3	8
2	3	4	7
3	7	5	6
4	2	2	9
5	5	1	10
6	1	6	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.

4   What is inventory management ? Explain in detail.   **14**
                              OR
4   A manufacturer has to supply his customers 600 units of his   **14**
    product per year. Shortages are not allowed and the inventory
    carrying cost amount to be Rs. 0.60 per unit year. The set up
    cost per run is Rs. 80.
    Find :
    (1) The economic order quantity
    (2) The minimum average yearly cost.
    (3) The optimal no. of order per year.
    (4) The optimal period of supply per optimal order.
    (5) The increase in total cost associated with 20% more
         than EOQ.

5   (a) Explain : Procedure of O.R.   **7**
    (b) Explain : Characteristics of O.R.   **7**
                              OR
5   (a) Explain : Scope of O.R. in different areas.   **7**
    (b) Explain the methodology of O.R. process of O.R.   **7**

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