B. B. A. (Sem. VI) (CBCS) (WEF 2016) Examination
August - 2019
Statistics
(Advanced Operations Research Techniques)
(New Course)

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)   State clearly the distinction between PERT and CPM.   **7**

      (b)   Discuss in brief :   **7**

          (1)   Total float

          (2)   Independent float

OR

1   Draw Network diagram of the following activities and find   **14**
critical path, also calculate total float, free float for each
activity :

Activity	A	B	C	D	E	F	G	H	I	J	K
Immediate Predecessor	-	A	B	C	D	E	F & D	F	H	G & I	J
Time (in days)	13	8	10	9	11	10	8	6	7	14	18

2   (a)   What is replacement ? Describe important replacement   **7**
situations and replacement policies.

      (b)   Why does the problem of replacement arise ? What   **7**
is group replacement ? When it is more economical ?
Justify your answer.

OR

2 The data on the operating costs per year and resale   **14**
   prices of machine A whose purchase price is Rs. 10,000 are
   given below :

Year	1	2	3	4	5	6	7
Operating cost (Rs.)	1500	1900	2300	2900	3600	4500	5500
Resale value (Rs.)	5000	2500	1250	600	400	400	400

What is the optimum period of replacement ?

3 (a) Give Johnson's procedure for determining and optimal   **7**
        sequence for processing n-jobs in 2 machines.

   (b) Give 3 different examples of sequencing problems   **7**
        from your daily life.

OR

3 Given following data :   **14**

	Job	J_1	J_2	J_3	J_4	J_5	J_6
Machine time	M_1	12	10	9	14	7	9
in hours	M_2	7	6	6	5	4	4
	M_3	6	5	6	4	2	4

(1) Sequence suggested for the jobs is J_5, J_3, J_6, J_2, J_1,
     J_4. Determine the total elapsed time for the suggested
     sequence.

(2) Is the given sequence optimal ? If not determine the
     optimal sequence and calculate total elapsed time, idle
     time on each machine. If the order of processing each
     job is M_1, M_2, M_3.

4   (a)   What is inventory management ? Explain in detail.   **7**

       (b)   Explain EOQ models.   **7**

<center>**OR**</center>

4   The annual demand for an item is 3200 units. The unit   **14** cost is Rs. 6 and inventory carrying charges are 25% per annum. If the cost of the procurement is Rs. 150,
Find :

       (1)   Economic Order quantity

       (2)   No. of orders per year

       (3)   Time between two consecutive order

       (4)   The optimum cost.

5   (a)   Explain the difference between pure strategy and   **7** mixed strategy.

       (b)   Explain : Saddle point, Dominance rule.   **7**

5   Solve the following game whose pay off matrix is given below   **14**

		Player B			
		B_1	B_2	B_3	B_4
	A_1	35	65	25	5
Player A	A_2	30	20	15	0
	A_3	40	50	0	10
	A_4	55	60	10	15

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