(20519)   Roll No. ....

Total Questions : 13]   [Printed Pages : 7

18019

B.C.A. IVth Semester Examination, May-2019

OPTIMIZATION TECHNIQUES

(BCA-404)

Time : 3 Hrs.]   *[M.M. : 75*

Note :– Attempt all the Sections as per instructions.

Section–A

(Very Short Answer Type Questions) 3×5=15

Note :– Attempt all the *five* questions. Each question carries 3 marks.

1. Write a linear programming problem in matrix form.

2. Describe classification of inventory models.

3. Describe present value and discount rate.

NA–572   (1)   **Turn Over**

4. Explain sequencing problem.

5. Explain queue length. waiting time and traffic intensity.

Section–B

(Short Answer Type Questions) 7½×2=15

Note :– Attempt any *two* questions from this section. Each question carries 7½ marks.

6. Solve the following assignment problem :

Person

		A	B	C
	1	120	100	80
Job	2	70	90	110
	3	110	140	120

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7. The cost of a machine is Rs. 6,100 and its resale value is only Rs. 100. The maintenance costs are found from experience to be as under :

Year	1	2	3	4	5	6	7	8
Maintenance Cost in Rs.	100	250	400	600	900	1250	1600	2000

When should machine be replaced.

8. We have fine jobs each of which must to through two machines A and B in the order AB. Processing times in hours are given below :

Job	1	2	3	4	5
Machine A (A_i)	5	1	9	3	10
Machine B (B_i)	2	6	7	8	4

Determine sequence for the fine jobs that will minimize the elapsed time T.

Section–C

(Long Answer Type Questions) 3×15=45

Note :– Attempt any *three* questions out of the following *five* questions. Each question carries 15 marks.

9. Solve the following LPP.

$$\max. Z = 2x_1 + 4x_2$$

s.t. $2x_1 + 3x_2 \le 48$

$x_1 + 3x_2 \le 42$

$x_1 + x_2 \le 21$

$x_1, x_2 \ge 0$

10. Solve the following transporation problem :

To

	1	2	3	4	Supply
From 1	3	6	8	5	20
2	6	1	2	5	28
3	7	8	3	9	17
Demand	15	19	13	18	

11. Let the value of money be assumed to be 10% per year and suppose that machine A is replaced after every 3 years whereas machine B is replaced after every six years. The yearly costs of the machines are given as under :

Year	1	2	3	4	5	6
Machine A	1000	200	400	1000	200	400
Machine B	1700	100	200	300	400	500

Determine which machine should be purchased.

12. We have five jobs each of which must go through the machines A, B and C in order ABC. Processing times are :

Job	A	B	C
1	4	5	8
2	9	6	10
3	8	2	6
4	6	3	7
5	5	4	11

Determine a sequence for the fine jobs that will minimize the elapsed time.

13. ATV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which

they came in and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day. What is repairman's expected idle time each day ? How many jobs are ahead of the average set just brought ?

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