A (Printed Pages 7) (20622) Roll No.
BCA-IV Sem.

18019

B.C.A. Examination, June-2022 OPTIMIZATION TECHNIQUES

(BCA-404)

Time: Three Hours | Maximum Marks: 75

Note: Attempt attempt the sections as per instructions.

Section-A

(Very Short Answer Type Questions)

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

- Define optimal solution of a linear programming problem.
- Define deterministic model in inventory theory.

P.T.O.

- Define sequencing problem.
- Explain queue length, waiting time and traffic intensity.
- Explain group replacement and individual replacement.

Section-B

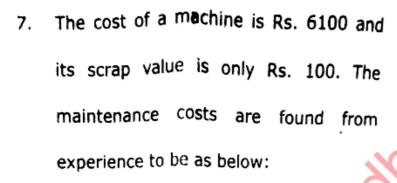
(Short Answer Type Questions)

Note: Attempt any **two** questions from this section. Each question carries $7\frac{1}{2}$ marks.

Solve the following assignment problem:

			Mar	ו	
		1	2	3	4
	I	12	30	31	15
Job	II	18	33	9	31
	III	44	25	24	21
	IV	23	30	28	14

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Year 1 2 3 4 5 6 7 8

Maintenance 100 250 400 600 900 1250 1600 2000

Cost in Rs.

When should he machine be replaced.

8. we have five jobs each of which must go through two machines A and B in the order AB. Processing times in hours are given in the table below:

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

Determine the sequence for the five jobs that will minimize the ellipse time.

Section-C

(Long Answer Type Questions)

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

Solve the following LPP:

Max.
$$Z=5x_1+3x_2$$

s.t.
$$3x_1 + 5x_2 \le 15$$

$$5x_1 + 2x_2 \le 10$$

$$x_1 > x_2 \ge 0$$

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10. Solve the following transportation problem:

То					
		1	2	3	Supply
	1	2	7	4	5
From	2	3	3	1	8
	3	5	4	7	_. 7
_	4	1	6	20	14
Demand		7	9	16	34

go through the machines A,B and c in the order ABC, Processing times are as follows:

Processing times in hours					
Jobs	Α	В	С		
1	4	5	8		
2	9	6	10		
3	8	2	6		
4	6	3	7		
5	5	4	11		

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

12. The cost of a new machine is Rs. 5000.

The maintenance cost of nth year is given by C_n=500(n-1), n=1,2,3,----.

Suppose that the discount rate per year is 0.5. After how many years it will be economical to replace the machine?

manned by a single person according to a poissen process with a mean rate of 20 per hour. The time required to serve a customer has an exponential distribution

dominada frant Suvidina. Com with a mean of 100 seconds. Find the