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(Printed Pages 4)

(20524) Roll No. .....

BBA VI Sem.

18107

B.B.A. Examination, May-2024

Operation Research

(BBA-602)

(New Course)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt **all** the Sections as per instructions.

Section-A

(Very Short Answer Type Questions)

Note : This question contains five parts, **all** parts will be **compulsory**. There will be no internal choice. 3×5=15

1. Write any two characteristics of operation research. 3
2. What is simplex method? 3
3. What is meant by an oplimality test in transportation problem? 3

4. What is assignment problem? 3
5. What is meant in 'CPM'? 3

Section-B

(Short Answer Type Questions)

Note : This section contains three questions, attempt any **two** questions. Each question carries 7.5 marks. 7½×2=15

6. Discuss the methods of finding initial feasible solution of a transportion problem and state the advantages for each of them. 7½
7. Solve the following linear programming problem by graphic method. 7½

   Maximise the objective function $Z=6x_1+7x_2$

   Subject to the following constraints

   $2x_1+3x_2 \leq 12$

   $2x_1+x_2 \leq 8$

   $x_1, x_2 \geq 0$
8. Find the optimal solution for the assignment problem with the following cost matrix. 7½

Persons	Jobs			
	I	II	III	IV
A	11	17	08	16
B	09	07	15	06
C	13	16	12	12
D	14	10	12	11

Section-C

(Descriptive Answer Type Questions)

Note : This section contains five questions, attempt any **three** questions. Each question carries 15 marks. Answer must be descriptive. 15x3=45

9. Given the following information: 15

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration (Days)	2	8	10	6	3	3	7	5	2	8

(i) Draw the arrow diagram.

(ii) Identify critical path and find the total project duration.

10. Find an optimal solution to the following transportation problem. 15

Sources	Destination			Supply
	A	B	C	
I	200	700	400	50
II	300	300	700	70
III	500	400	100	80
IV	100	600	200	140
Demand	70	90	180	340

11. Maximise $z = 28x_1+30x_2$

subject to $6x_1+3x_2 \leq 18$

$3x_1+x_2 \leq 8$

$4x_1+5x_2 \leq 30$

$x_1, x_2 \geq 0$ 15

12. Explain clearly the difference between the following: 15

(i) Maximin and Maximax decision rules

(ii) PERT & CPM

(iii) Pay off and opportunity loss.

13. Write short notes on the following topic: 15

(i) Decision tree approach

(ii) Unbalanced Assignment problem

(iii) EMV