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Roll No. Total No. of Questions : 07]

[Total No. of Pages : 03

MBA (Sem. - 3rd) APPLIED OPERATIONS RESEARCH <u>SUBJECT CODE</u> : MB - 301 (2K4 Batch) <u>Paper ID</u> : [C0111]

"-ase fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

 $(10 \times 2 = 20)$ Ddeveloperz

Instruction to Candidates:

- 1) Section A is Compulsory.
- 2) Attempt any Four questions from Section B.

Section - A

Q1)

- a) Give the advantages of matrix organization.
- b) Explain PERT time estimate.
- c) Define saddle point.
- d) Explain total float in the project network.
- e) List any two project management software packages.
- f) Discuss traveling salesman problem.
- g) Explain total slack with reference to networking of a project.
- h) Enumerate the advantages of matrix organization.
- i) What is resource leveling in relation to PERT/CPM?
- j) List two uses of replacement model.

Section - B

 $(4 \times 10 = 40)$

P.T.O.

Q2) Describe the origin and development of operations research.

R-165

Q3) Solve the following linear programming problem graphically:

Maximize

 $z = 4x_1 + 6x_2$

Subject to the constraint

$$x_1 + x_2 = 5$$

 $x_1 > 2$
 $x_2 < 4$
 $x_1, x_2 > 0.$

Q4) Discuss the various parameters for a queuing problem.

Q5) Solve the following game:

1	7	2	
6	2	7	
5	1	6	1

Q6) A project comprising of eight tasks (A toH) has the following characteristics :

Tasks	Predecessor	Time duration (weeks)		
		Optimistic	Most Likely	Pessimistic
А	None	2	4	12
В	None	10	12	26
С	Α	8	9	10
D	Α	10	15	20
Е	Α	7	7.5	11
F	B,C	9	9	9
G	D	3	3.5	7
Н	E,F,G	5	5	5

(a) Calculate the time duration of each activity and the variance.

- (b) Draw the network diagram, determine the critical path and mark in the network. What is the total project duration?
- (c) What is the probability of achieving the project within the deadline of 30 weeks?

R-165

Q7) Find the optimum solution to the following transportation problem:

To From	Sales office A	Sales office B	Sales office C	Total
Factory - A	1	2	15	100
Factory - B	3 3	2	1	130
Factory - C	12	5	6	75
Factory - D	. 3	1	2	95
Total	120	80	200	

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