

Total No. of Printed Pages : 2

Total No. of Questions : 9

552

Sl.No. : 0018

IV Semester M.B.A. Degree Examination, May - 2018

(Repeaters) (Old Syllabus)

BUSINESS ADMINISTRATION

Operations Research

Time : 3 Hours

Max. Marks : 70

SECTION - A

Note: Answer any **two** questions. Each question carries **10** marks. Answer to the question should not exceed **5** pages. **(2 × 10 = 20)**

Q1) Describe the scope of operations research.

Q2) Elucidate the business applications of simulation models.

Q3) Explain the steps involved in the formation of linear programming problems.

SECTION - B

Note: Answer any **Three** questions. Each question carries **12** marks. Answer to the question should not exceed **6** pages. **(3 × 12 = 36)**

Q4) Bring out and explain the decision making environment.

Q5) Solve the following LPP using graphical method.

Maximise $Z = 4x_1 + 6x_2$

Subject to $x_1 + x_2 \leq 3$

$3x_1 + 7x_2 \leq 21$

$9x_1 + 5x_2 \leq 45$

$x_1, x_2 \geq 0.$

Q6) In a railway yard, goods trains arrive at a rate of 30 trains per day. Assuming that the inter arrival time follows an Exponential distribution and the service time (the time taken to hump a train) distribution is also exponential with an average 36 minutes.

Compute:

- The average number of trains in the system.
- The probability that the queue size exceeds 10.

Q7) An engineering company is offered a material handling equipment A. It is priced at Rs. 60,000 including cost of installation. The costs for operations and maintenance are estimated to be Rs. 10,000 for each of the first five year, increasing every year by Rs. 3000 in the sixth and subsequent years. The company expects a return of 10 percent on all its investments. What is the optimal replacement period?

Q8) Determine an initial basic feasible solution to the following transportation problem by using VAM.

	D ₁	D ₂	D ₃	D ₄	Supply
S ₁	21	16	15	3	15
S ₂	17	18	14	23	18
S ₃	32	27	18	41	20
Demand	8	8	14	23	

SECTION C

(Compulsory)

Note: Answer to this question should not exceed 6 pages. (1 × 14 = 14)

Q9) A project has twelve activities whose duration is given in the following table. Find total, free and independent float for each activity. Identify the critical activity and critical path.

Activity	1-2	1-3	1-4	2-5	3-6	3-7	4-7	5-8	6-8	7-9	8-9	9-10
Duration (Days)	2	2	2	4	5	8	4	2	4	5	3	4

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