First Year MHA Degree Regular/Supplementary Examinations
December 2022
Operations Research
(2013 Scheme)

Time: 3 Hours   Max Marks: 100

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary • Ordinary calculator can be used*

Essays: (2x20=40)

1. A hospital project consists of activities from A to J as given below.

Activity	Immediate Predecessor (S)	Duration [Weeks]
A	-	4
B	-	3
C	A, B	2
D	A, B	5
E	B	6
F	C	4
G	D	3
H	F, G	7
I	F, G	4
J	E, H	2

- Draw the network diagram.
- Find the critical path and project completion time
- Calculate the ES, LS, EF, LF
- Calculate total float and free float for each of the non-critical activities.

2. Consider the linear programming model and solve it using the simplex method.
   Maximize Z = 6X + 8Y
   Subject to: 5X + 10Y ≤ 60
            4X + 4Y ≤ 40
            X ≥ 0, Y ≥ 0

Short Essays: (2x10=20)

3. Solve the game:

	Player B			
	1	2	3	4
Player A 1	6	2	4	8
2	2	-1	1	12
3	2	3	3	9
4	5	2	6	10

4. Explain about the application of Operations Research in the field of health care.

Short notes: (8x5=40)

5. Explain the concept of ABC analysis.
6. Discuss in detail about the decision making under certainty.
7. Outline a sketch about the capital equipment replacement
8. Discuss about sequencing problems with 'n' jobs and two machines.
9. What is Monte Carlo simulation.
10. Describe transportation problems, discuss the various types and methods of solving transportation problems.
11. Elaborate on the structure of a queueing model and the terms associated with queue.
12. What do you mean by sensitivity analysis

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