First Year MHA Degree Examinations, September 2015
(2013 Scheme)

OPERATIONS RESEARCH

Time: 3 Hours   **Max Marks: 100**

- **Answer all the questions**
- *Ordinary calculator can be used*

Essays: **(2x20=40)**

1. Draw the network of the project and calculate the slack for each event. Find critical path and the probability of completing the project in 35 days.

Activity	1-2	1-3	2-5	3-4	4-5	5-8	4-6	4-7	6-9	8-9	7-10	9-10
Optimistic time	3	1	6	8	0	5	6	3	1	3	8	2
Most likely time	5	2	8	12	0	7	9	6	2	5	15	5
Pessimistic time	7	3	12	17	0	9	12	8	3	8	20	6

2. Solve the following LPP by simplex method
   Maximize $Z = 40X_1 + 35X_2$ show that $2X_1 + 3X_2 \leq 60$, $4X_1 + 3X_2 \leq 96$, $X_1 X_2 \geq 0$

Short Essays: **(2x10=20)**

3. In which situation we can use simulation technique. What are the advantages and disadvantages of simulation model.

4. Solve the following transportation problem for maximize profit.

To	A	B	C	D	Availability
Ware house					
X	12	18	6	25	200
Y	8	7	10	18	500
Z	14	3	11	20	300
Demand	180	320	100	400	

Short notes: **(8x5=40)**

5. Linear programming.
6. Explain briefly PERT and CPM.
7. Define operation research and describe its scope.
8. Explain the methods used for finding basic solution in transportation problem.
9. ABC analysis.
10. Queuing theory.
11. Method of estimating the time required for each activity in network analysis.
12. Game theory in decision making.

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