MBA II Semester Regular & Supplementary Examinations June/July 2017

OPERATIONS RESEARCH
(For students admitted in 2014, 2015 & 2016 only)

Time: 3 hours   Max. Marks: 60

PART – A
(Answer the following: (05 X 10 = 50 Marks)
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1   Discuss the nature and scope of quantitative analysis.

OR

2   Solve the following LPP.
Maximize $Z = 4X_1 + 7X_2$
Subject to $2X_1 + 3X_2 \leq 12$
$\qquad X_1 + X_2 \leq 5$
$\qquad X_1, X_2 \geq 0$

3   Find maximum profit for the given matrix.

	P	Q	R	S	Supply
A	10	12	10	24	100
B	17	10	11	9	180
C	10	15	18	16	120
Demand	90	110	125	75	400

OR

4   Five men are available to do five different jobs. From past records, the time (in hours) that each man takes to do a job is known and is given in the following matrix.

	P	Q	R	S
A	12	10	8	3
B	14	16	6	2
C	10	25	23	6
D	19	12	15	3
E	11	15	12	5

Find the assignment of men to jobs that will minimize the total time taken.

5   Consider the following problem in which six jobs must each be processed on two machines starting with machine 1 and then going to machine 2. The following processing times and due dates are in hours.

Job	Machine 1	Machine 2	Due Date
A	7	5	15
B	3	8	18
C	1	8	11
D	2	7	6
E	3	1	23
F	9	4	19

Use the information above, what sequence would you use if you want to minimize the make span of the jobs?

OR

6   Solve the game for the given pay off matrix.

	B_1	B_2	B_3
A_1	30	40	-80
A_2	0	15	-20
A_3	90	20	50

7   Explain in detail various types of waiting line models with examples.

OR

8   A TV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they come and if the arrival of sets is Poisson with an average rate of 10 per 8 hour day. What is his expected idle time each day? How many jobs are ahead of the set just brought in?

9   Discuss in detail the concept of replacement and its policies.

OR

10   Construct network and compute earliest and latest times. Also identify critical path.

Activity	1-2	2-3	2-6	3-4	3-5	4-6	5-6	6-7
Time	2	4	8	3	2	4	3	8

PART – B

(Compulsory question)   01 X 10 = 10 Marks

11   A manufacturing unit has three products on their production line. The production capacity is 50, 30 and 45 respectively. The limitation in the production shop is that of 300 man hours as total availability and the manufacturing time required per product is 0.5, 1.5 and 2.0 man hours. The products are priced to result in profits of Rs.10, Rs.15 and Rs.20 respectively. If the company has a daily demand of 25 units, 20 units and 35 units for respective products, formulate the problem as a LPP so as to maximize the total profit.

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