Code : 07MB203

M.B.A. II Semester Supplementary Examinations, January-2009
QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS
(Common to R05 & R07)

Time: 3 hours **Max Marks: 60**

Answer any FIVE Questions
All Questions carry equal marks
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1. Discuss the significance and scope of operations research in modern management.
2. A Finance Manager is considering drilling a well. In the past only 70 percent of wells drilled were successful at 20 meters depth in that area. Moreover on finding no water at 20 meters, some persons in that area drilled it further up to 25 meters but only 20 percent struck water at that level. The prevailing cost of drilling is Rs. 500 per meter. The Finance Manager estimated that in case he does not get water in his own well, he will have to pay Rs.15,000 to buy water from outside for the same period of getting water from the well. The following decisions are considered
   (a) Do not drill any well.
   (b) Drill up to 20 meters and
   (c) If no water is found at 20 meters drill further up to 25 meters.

   Draw an appropriate decision tree and determine Finance Manager's optimal strategy.
3. An animal feed company must produce 200 kgs of mixture consisting of ingredients X_1 and X_2 daily. X_1 cost Rs.3 per kg and X_2 costs Rs.8 per kg. Not more than 80 kg of X_1 can be used and at least 60 kg X_2 must be used. Find out how much of each ingredient should be used, if the company wants to minimize costs. What is the cost? Use LP simplex method.
4. Consider a problem of assigning four clerks to four tasks. The time in hours required to complete the task is given below

		Tasks			
		A	**B**	**C**	**D**
Clerks	**1**	**4**	**7**	**5**	**6**
	2	**-**	**8**	**7**	**4**
	3	**3**	**-**	**5**	**3**
	4	**6**	**6**	**4**	**2**

   Clerk 2 cannot be assigned task A and clerk 3 cannot be assigned task B. Find all the optimum assignment schedules and the total time.
5. Obtain the optimal strategies for both players and value of the game for two person zero sum game whose pay off matrix is given below:

		Player B		
		B_1	B_2	B_3
Player A	A_1	**1**	**3**	**11**
	A_2	**8**	**5**	**2**

6. In a railway marshalling yard, goods train arrives at a rate of 30 trains per day. Assuming that 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 of 36 minutes, calculate
   (a) Expected queue size (line length).
   (b) Probability that the queue size exceeds 10.
   (c) If the arrival rate of train increases to 33 per day, What will be the change in (a) and (b)?
7. A project has the following activities with the time as shown.

Activity	Immediate Predecessor	**Duration(days)**		
		Most likely	Optimistic	Pessimistic
A	-	3	1	7
B	A	6	2	14
C	A	3	3	3
D	B,C	10	4	22
E	B	7	3	15
F	D,E	5	2	14
G	D	4	4	4

   (a) Draw the network, find the critical path, the expected project completion time.
   (b) What project duration will have 95% confidence of completion?
8. Write short notes on any three:
   (a) Drawbacks of simulation method
   (b) Steps of simulation process
   (c) Group replacement
   (d) Sensitivity analysis.

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