END TERM EXAMINATION

SECOND SEMESTER [BBA] MAY-JUNE-2014

Paper Code: BBA106	**Subject: Quantitative Techniques &**
BBA(B&I)106	**Operations Research in Management**
BBA(TTM)106	
BBA(MOM)106	

Time : 3 Hours   **Maximum Marks :75**

Note: Attempt any five questions. All questions carry equal marks.

Q1   Consider incomplete distribution of the Protein intake/consumption unit/day(g) of 400 families-

Protein intake	No. of families
15-25	30
25-35	?
35-45	100
45-55	110
55-65	80
65-75	?
75-85	10

If the median is found to be 47.73, find missing frequency compute mode of completed distribution.

Q2   The raw data displayed below are the observations on the number of passengers who have chosen to fly on Air India in 32 cities, in a particular month.

25	37	23	26	30	40	25	26
39	32	21	26	19	27	32	23
18	26	34	18	31	35	21	33
33	9	16	32	35	42	15	24

(a) Construct a frequency distribution using the above data.
(b) Develop and interpret a Histogram from the frequency table you constructed from the above data.
(c) Calculate and interpret mean, median, variance and coefficient of variation for the above data.
(d) Are the data skewed? Give the coefficient of skewness.

Q3   A consulting firm is preparing a study on consumer behavior. The company collected the following data in thousand rupees to determine whether there is a relationship between consumer income and consumption levels:

Consumer No.	1	2	3	4	5	6	7	8	9	10
Income	24.3	12.5	31.2	28.0	35.1	10.5	23.2	10.0	8.5	15.9
Consumption	16.2	8.5	15	17	24.2	11.2	15	7.1	3.5	11.5

Calculate correlation coefficient for the above data.

Q4   (a) What is regression coefficient? How is it different from coefficient of correlation?

(b) Distinguish between Correlation and Regression.

(c) What is spurious regression? How will you identify it?

Q5   (a) Describe the applications of Linear Programming in management various fielding.

(b) Vitamin A and B are found in two foods F1 and F2. One unit of food F1 contains 3 units of Vitamin A and 4 units of vitamin B. One unit of food F2 contains 6 units of vitamin and 3 units of vitamin B. 1 unit fo F1 and F2 cost Rs.4 and Rs.5 respectively. The minimum daily requirement for a person of vitamin A and B is 80 units and 100 units respectively. Assuming that anything in excess of daily requirement of vitamin A and B is not harmful. Find out optimal mixture of food F1 and F2 at the minimum cost that meets the daily requirements and also write the dual of primal.

Q6   A company makes two kinds of leather belts. Belt A is a high quality belt and belt B is of lower quality. The respective profits are Rs.4 and Rs.3 respectively. The production of each of type A requires twice as much time as belt of type B and if all the belt are of type B, the company could make 100/day (Both A and B combined). Belt A requires fancy buckle and only 400 are available. There are only 700 buckles a day available for belt B. What should be daily production of each type of belt? Formulate as LPP and solve it by simplex method. Write the dual of give problem and use it for checking the optimal solution.

Q7   For the following transportation problem find the initial feasible solution using VAM method and further find optimal solution by applying optimality check.

	Destination			
	A	B	C	Supply
Plant 1	20	12	18	10
Plant 2	14	16	22	25
Plant 3	12	12	20	35
Demand	15	15	40	

Q8   Solve the following assignment problem using Hungarian Method to minimize the total cost.

Job code	Work center I	Work center II	Work center III	Work center IV	Work center V
A	270	280	310	340	290
B	320	380	290	300	330
C	390	360	290	370	310
D	350	370	330	340	360
E	290	350	320	330	300

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