U.S.N

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

First Semester, Master of Business Administration (M.B.A)

Make-up Examination; Feb -2016

Quantitative Techniques - I

Time: 3 hrs   *Max. Marks: 100*

Note: Answer any *FOUR* full questions from *PART -A* and *PART-B*- (Case study) is compulsory.

PART - A

1 a. "There are three types of lies in the world, one-lie, Two-damn life, three-statistics" Justify.   10

  b. Explain different methods of classifying the data.   10

OR

2 a. Represent the following data in a suitable diagram.

Expenditure on	Family A Income ` 15,000/-	Family B Income ` 20,000/-
Food	4000	5,400
Clothing	2800	3300
House rent	3000	3500
Education	2200	2800
Miscellaneous	3000	5000

10

  b. Present the following information in suitable form supplying the figures not directly given.

In 2014, out of a total of 4000 workers in a factory, 3300 were members of a trade union. The number of women workers employed was 500. Out of which 400 did not belong to any union. In 2003, the number of workers in the union 3450 of which 3200 were men. The number of non-union workers was 760 of which 330 were women.   10

3 a. Explain the properties of Arithmetic mean.   10

  b. Calculate Arithmetic Mean, Mode, Quartiles, P_{70}, D_4 from the following:

Marks Scored	10-15	15-20	20-25	25-30	30-35	35-40
No. of Students	11	20	35	20	8	6

10

OR

4 a. (i) The mean marks in to statistics of 100 students in a class was 70%. The mean marks of boys was 65% while their number was 60%. Find out the mean marks of girls in the class.

(ii) The mean salary paid to 2000 employees of an organization was found to be ` 20,000.Later on, after disbursement of salary, it was discovered that the salary of two employees was wrongly entered as ` 15,400 & ` 10,600. Their correct salaries ` 14,500 and ` 16,000. Calculate the correct Mean.   10

b. Find the missing frequencies from the following:

X	0	1	2	3	4	5	
F_i	46	x	y	25	10	5	= 200

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$\overline{X} = 1.46$; $x = ?$ $y = ?$

5 a. Calculate the Quartile Deviation and its co-efficient to evaluate the variation in the following data

Farm Size	No. of Farms	Farm size	No. of Farms
Below 40	394	161-200	169
41-80	461	201-240	113
81-120	391	241 & above	148
121-160	334		

10

b. Calculate the standard deviation from the following Data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	8	6	11	4	9	3	10

10

Also calculate the percentage of observations lying between $\overline{x} \pm 2\sigma$

OR

6 a. To verify the length of life of tube lights, the following samples were drawn from each of the two brands Lunar and Bata.

Life (in days)	No. of pairs	
	Lunars	Bata
0-20	04	11
20-40	06	24
40-60	20	15
60-80	30	10

10

You are required to suggest: i) which brand is more durable?

ii) which brand is having more variability

b. The sum of 50 observations is 500, its sum of squares is 6000 and Median 12. Find the C.V. and SKp.

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7 a. A financial Analyst wanted to find out whether inventory turnover influences any company's EPS (in %) A random sample of 7 companies listed in a stock exchange was selected and the following data were recorded in each.

Company	Inventory turnover (in times)	EPS (%)
A	4	11
B	5	9
C	7	13
D	8	7
E	6	13
F	3	8
G	5	8

10

Find the strength of association between inventory turnover & EPS by applying Rank correlation method.

b. The data about the sales and advertising expenditure of a firm is given in the following table:

	Sales (in Crores)	Adv. Expenses(in crores)
Mean ($\overline{X}$)	40	6
Standard deviation (σ)	10	1.5

10

$r = 0.9$

i) Estimate most likely sales for a proposed advertisement expenditure of ` 10 crores.

ii) What should be the advertisement expenses if the firm has a sales budget of ` 60 crores.

OR

8 a. A food processor uses a moving average to forecast next month's demand. Past actual demand in units is shown below:

Months	43	44	45	46	47	48	49	50	51
Demand	105	106	110	110	114	121	130	128	137

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Compute a simple 5- months moving average.

b. For the following data, calculate the price Index number of 1999 with 1998 as the base year using

i) 'Laspeyres' method.   ii) 'Paasces' Method

iii) 'Dorbish and Bowley's method   iv) Fisher's Ideal method.

	1998		1999	
Commodity	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

10

PART - B

9. **Case Study:**

Following are marks in Maths and Statistics of a student

Mathematics	93	85	90	75	86
Statistics	59	67	70	62	60

i) Find regression equation on Mathematics on Statistics &

   Find regression equation Statistics on Mathematics

20

ii) Show the calculations of regression co-efficient

iii) Find most likely marks of Mathematics when Statistics is 70 and most likely marks of Statistics when Mathematics is 65

iv) Find Co-efficient of Correlation and probable error.

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