FYBFM

SEMESTER – 2

BUSINESS STATISTICS

[TIME : $2\frac{1}{2}$ Hours]   Marks : 75

NOTE: i) All questions are compulsory.
         ii) In Q.1, both A and B are compulsory .
         iii) Figures to the right indicate marks.
         iv) Use of non-programmable calculator is allowed.
         v) Graph paper will be provided on request.

Q 1) A. Fill in the blanks with correct alternative. (Attempt any Eight)   [8]

1. The data which is collected by first hand sources is known as _____.
    (Information, secondary data, Primary data)
2. The graphical representation of data joining the points by smooth curve is called as _____.
    (Histogram, frequency polygon, frequency curve, bar diagram)
3. The middle most observation is known as ____.
    (median, decile, mode)
4. If the value of coefficient of variation is more then the consistency of data is _____.
    (more, less, equal)
5. If coefficient of correlation between x and y is less than zero then there is _____
    correlation.
    (positive, negative, none)
6. If two variables vary together in the same direction the correlation is _____.
    (positive, negative, none)
7. If $b_{xy} = \frac{2}{5}$ and $b_{yx} = \frac{3}{20}$ then r = _____.
    (- 0.25, 0.4, none of these)
8. The sum of all the relative frequencies in a sample is equal to _____.
    (sample size, zero, one, infinity)
9. Median is equal to _____.
    (50th percentile, 5th octille, 6th decile, all of these)
10. If high value of one variable corresponds to low values of the other, they are said to be ____.
    (negatively correlated, positively correlated, both, none)

Q 1) B. State whether the following statements are True or False. (Attempt any seven)   [7]

1. The difference of highest and smallest observation is known as range.
2. Pie diagram is represented by circle separated in sectors.
3. Standard deviation is relative measure of dispersion.
4. The difference between upper and lower quartiles is known as quartile deviation.
5. Statistical technique can be misused.
6. Coefficient of correlation lies between 0 and 2.
7. For a data r = 0.3, byx =0.24 and bxy = -0.375.
8. Median can be located by histogram.
9. Mean is measure of dispersion.
10. Supply and price of any commodity are positively correlated.

Q 2)

i. Calculate fourth decile and median for the following data : [8]

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	5	6	8	2	1	3

ii. Draw the histogram and also locate the mode for the following marks distribution : [7]

Marks	0-2	2-4	4-6	6-8	8-10	10-12
No. of students	5	7	10	6	8	2

[OR]

Q 2) B.

i. Draw ogive curve for the following data : [8]

Expenditure (in Rs. 1000)	10-20	20-30	30-40	40-50	50-60	60-70
No. of family	3	4	6	8	2	1

ii. Find the missing frequency if the mean is 21.9 [7]

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	2	5	---	13	21	16	8	3

Q 3) A.

i. Calculate the quartile deviation and coefficient of quartile deviation for the following data: [8]

Class interval	0-20	20-40	40-60	60-80	80-100	100-120	120-140
Frequency	6	8	10	6	4	7	3

ii. Calculate spearman's rank coefficient of correlation for the following distribution: [7]

X	25	30	15	42	29	40
Y	20	40	42	28	39	24

[OR]

Q 3) B.

i. Find regression equation of y on x for the following data and hence estimate y when x = 25 [8]

X	15	12	10	19	20	22
Y	19	17	14	27	29	31

ii. Calculate Karl Pearson's coefficient of correlation for the following data : [7]

X	5	8	2	4	6	10
Y	10	15	6	8	12	18

Q 4) A.

i. Calculate mean deviation from mode for the following data: [8]

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	5	8	2	4	6	7

ii. Solve the following LPP graphically:
Minimise: $z = 6x + 7y$
subject to: $2x + 3y \geq 12, 2x + y \geq 8, x \geq 0, y \geq 0$. [7]

OR

Q 4) B.

i. Vitamins A and B are found in foods M and N. One unit of food M contains 3 units of vitamins A and 4 units of vitamin B. One units of food N contains 6 units of vitamins A and 3 units of vitamins B. One unit of food M costs Rs.5 and one unit of food N costs Rs.5. The minimum daily requirement for vitamin A and B are 80 and 100 units respectively. Assuming anything in excess is not harmful, how many units of M and N should be bought so as to minimize the cost? Formulate LPP and solve it. [8]

ii. Calculate coefficient of correlation for the following data : [7]

X	3	5	4	6	3	2
Y	12	4	6	3	14	18

Q 5) Write short Notes on any 3: [15]
   a) Merits and demerits of median
   b) Interquartile range
   c) Regression analysis
   d) Limitations of statistics
   e) Difference between primary and secondary data

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