

N.B :

1. Attempt all questions.
2. Figures to the right indicate marks.
3. Graph paper, log tables will be supplied on request.
4. Use calculator is allowed.
5. In each questions (a) is compulsory and (b) attempt ANY THREE OUT OF FIVE questions.

Q.1 a) What is despersion ? Explain the importance of standard deviation as a measure of dispersion.. [3]

b) i) What are the merits and demerits of quartile deviation mean deviation. [4]

ii) Calculate r for the following data. [4]

| | | | | | | |
|---|---|----|----|----|----|----|
| X | 7 | 8 | 12 | 14 | 17 | 19 |
| Y | 8 | 10 | 20 | 21 | 13 | 24 |

iii) Calculate Laspeyer's I.N. and Paaschis I.N for the following data. [4]

| Commodity | Base Year | | Current Year | |
|-----------|-----------|----------|--------------|----------|
| | Price | Quantity | Price | Quantity |
| A | 2 | 3 | 4 | 6 |
| B | 5 | 10 | 6 | 5 |
| C | 4 | 14 | 5 | 10 |
| D | 2 | 19 | 2 | 13 |

iv) What is an index number ? Mention any three of its uses. [4]

v) State the extreme values of the coefficient of correlation r and interpret them. [4]

Q.2 a) Explain relative measure of dispersion and state its utility. [3]

b) i) For the following data find the mean deviation from mean.
x : 37 39 40 43 45 47 50 [4]

ii) Write a short note on skewness and kurtosis. [4]

iii) What are moments ? Explain their use in dispersion. [4]

iv) The mean of a certain distribution is 50; its standard deviation is 15 and coefficient of skewness is -1. Find the median. [4]

- v) Write a short note on - [4]
- i) Co-efficient of variation
 - ii) Range

Q.3 a) Describe Scatter diagram & explain how it is used measure correlation. [3]

b) i) From the following data calculate r.

No. of observations = 3

$\Sigma x = 6, \Sigma y = 9, \Sigma xy = 22, \Sigma x^2 = 14, \Sigma y^2 = 41.$ [4]

ii) What is rank correlation ? Write down the formula for Spearman's rank correlation in case of repeated ranks. [4]

iii) Calculate Karl Pearson's correlation coefficient from the following data. [4]

| | | | | | |
|---|---|----|----|---|---|
| X | 6 | 2 | 10 | 4 | 8 |
| Y | 9 | 11 | 5 | 8 | 7 |

iv) Write a short notes on. [4]

I) Negative correlation.

II) Spurious correlation.

v) Define Karl Pearson's coefficient of correlation. How will you interpret (i) $r = +1$ (ii) $r = -1$ (iii) $r = 0$ [4]

Q.4 a) Explain various problems involved in the construction of Index Numbers. [3]

b) i) Define I) Laspeyre's Price Index Number [4]
II) Cost of Living Index Number

ii) Calculate I) Simple average price relatives [4]
II) Weighted average price relatives

| Commodity | Price | | Weights |
|-----------------|-----------------|--------------------|---------|
| | 2001 Base year) | 2008 Current year) | |
| Food | 10 | 120 | 7 |
| Clothing | 60 | 100 | 4 |
| Housing | 40 | 60 | 3 |
| Fuel & Lighting | 20 | 20 | 1 |
| Miscellaneous | 80 | 120 | 5 |

- iii) Write down the limitations of Index Numbers. [4]

- iv) Fisher's index number is known as Fisher's ideal index number - Explain. [4]

- v) Calculate I_{ME} and I_{DB} for the following data. [4]

| Commodity | Base Year | | Current Year | |
|-----------|-----------|----------|--------------|----------|
| | Price | Quantity | Price | Quantity |
| A | 10 | 15 | 18 | 30 |
| B | 19 | 29 | 40 | 50 |
| C | 30 | 40 | 50 | 50 |
| D | 34 | 15 | 60 | 19 |
| E | 45 | 10 | 110 | 8 |

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