



- (ix) If any value in a series is zero, then we can not calculate the\_\_\_\_\_
- A. Mean B. Geometric mean  
C. Mode D. Median
- (x) The positive square root of the variance of a distribution is known as\_\_\_\_\_
- A. Standard deviation B. Mean deviation  
C. Absolute deviation D. None of these
- (xi) If  $\bar{x} = 5$ , then which of the following expressions is minimum?
- A.  $\sum(x - 25)^2$  B.  $\sum(x - 5)^2$   
C.  $\sum|x - 5|$  D.  $\sum|x - 25|$
- (xii) Standard deviation of 2,2,2,2 and 2 is equal to\_\_\_\_\_
- A. 2 B. 8  
C. Zero D. 4
- (xiii) If the moment Ratio  $\beta_2 = 3$  then the distribution is\_\_\_\_\_
- A. Platykurtic B. Positively skewed  
C. Symmetrical D. Mesokurtic
- (xiv) The price used in the construction of consumer price index numbers is \_\_\_\_\_
- A. The retail price B. The wholesale price  
C. The fix price D. None of these
- (xv) Base year weighted index numbers are also known as\_\_\_\_\_
- A. Laspeyre's B. Paasche's  
C. Fisher's D. None of these
- (xvi) Long term variation is regarded as\_\_\_\_\_
- A. Secular trend B. Seasonal variation  
C. Cyclical variation D. Irregular variation
- (xvii) The graph of a time series is called a\_\_\_\_\_
- A. Histogram B. Historigram  
C. Trend line D. Scatter diagram

For Examiner's use only:

Total Marks:

17

Marks Obtained:

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# STATISTICS HSSC-I

36

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE:- Sections 'B and C' comprise pages 1-2. Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

## SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. All parts carry equal marks.

(14 x 3 = 42)

- (i) Give three examples of Discrete variable.
- (ii) Define Frequency distribution.
- (iii) Describe the empirical relation between Mean, Median and Mode.
- (iv) The mean of three groups each containing 15 values is 10, 20 and 30.  
Find mean for all forty-five values.
- (v) Find two numbers whose arithmetic mean is 5.0 and geometric mean is 4.0.
- (vi) Define **Arithmetic mean**, **Geometric mean** and **Harmonic mean**.
- (vii) Define **Semi interquartile range**, **Mean deviation** and **Standard deviation**.
- (viii) A student calculated mean and standard deviation of 25 values as 20 and 4, respectively.  
Find the value of coefficient of Variation.
- (ix) If  $x$ : - 5.2, 4.4, 3.1. Find its Variance.
- (x) Write three properties of Variance.
- (xi) If Paasche's index number is 105.72 and Laspeyre's index number is 107.22.  
Find Fisher's index number.
- (xii) Distinguish between the Fixed base method and Chain base method used in the construction of index number.
- (xiii) Find the regression coefficient  $y$  on  $x$  and the regression coefficient  $x$  on  $y$  from the following data  
 $n = 10, \sum D_x = -8, \sum D_y = 0, \sum D_x^2 = 66, \sum D_y^2 = 99$  and  $\sum D_x D_y = 72$
- (xiv) Define the two regression coefficients.
- (xv) Find the correlation coefficient from the regression coefficients.
  - a. 1.2 and 0.6
  - b. -0.76 and -0.82
- (xvi) Given  $n = 100, \sum x = 5000, \sum y = 6000, \sum xy = 300300, \sum x^2 = 250400$  and  $\sum y^2 = 360900$ .  
Calculate the correlation coefficient 'r'
- (xvii) Define Correlation coefficient.
- (xviii) Define Irregular movements.
- (xix) Define **Time series** and **Historigram**.

**SECTION – C (Marks 26)**

**Note:** Attempt any TWO questions. All questions carry equal marks.

**( 2 x 13= 26 )**

**Q. 3 a.** Find  $Q_3$  and Mode for the following data:

| Marks     | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 2     | 3     | 11    | 20    | 32    | 25    | 7     |

**b.** Calculate Variance and Mean deviation (from mean) for the following frequency distribution:

| Classes   | 70-74 | 75-79 | 80-84 | 85-89 | 90-94 |
|-----------|-------|-------|-------|-------|-------|
| Frequency | 3     | 8     | 12    | 18    | 9     |

**Q. 4** Calculate Laspeyres', Paasches' and Fisher Ideal price index number for the data given below, taking 1946 as base year:

| Commodities | Price |      | Quantity |      |
|-------------|-------|------|----------|------|
|             | 1946  | 1950 | 1946     | 1950 |
| A           | 64    | 75   | 270      | 276  |
| B           | 40    | 45   | 124      | 118  |
| C           | 18    | 21   | 130      | 121  |
| D           | 58    | 68   | 185      | 267  |

**Q. 5 a.** Fit two lines  $y=a+bx$  and  $x=c+dy$  by method of least square to the following data:

| X | 1 | 2 | 3  | 4  | 5  |
|---|---|---|----|----|----|
| Y | 8 | 9 | 13 | 18 | 27 |

**b.** Compute seven-day moving averages for the following record of attendance:

| Week | Sun | Mon | Tues | Wed | Thur | Fri | Sat |
|------|-----|-----|------|-----|------|-----|-----|
| I    | 24  | 55  | 22   | 48  | 52   | 55  | 61  |
| II   | 27  | 52  | 32   | 43  | 53   | 56  | 65  |

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