Roll No. | | | | | | |

Answer Sheet No._____

Sig. of Candidate._____

Sig. of Invigilator._____

# STATISTICS HSSC–I

## SECTION – A (Marks 17)

**Time allowed: 25 Minutes**

**NOTE:- Section–A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.**

**Q. 1 Circle the correct option I.e. A / B / C / D. Each part carries one mark.**

(i) The data which have **NOT** undergone any statistical treatment are_____

A. Primary data B. Secondary data

C. Discrete data D. Qualitative data

(ii) An Ogive is a_____

A. Frequency curve B. Frequency polygon

C. Cumulative frequency polygon D. Frequency histogram

(iii) The process of arranging data into rows and columns is called_____

A. Frequency distribution B. Classification

C. Tabulation D. Array

(iv) Histogram is a graph of_____

A. Frequency distribution B. Time series

C. Qualitative data D. Ogive

(v) When a distribution is symmetrical and has one mode, the highest point on the curve is called the_____

A. Mode B. Median

C. Mean D. All of these

(vi) Sum of squares of deviations of the values is least when deviation is taken from_____

A. Median B. Mode

C. Mean D. Harmonic mean

(vii) The geometric mean of 'a' and 'b' is_____

A. ab B. $(a+b)^2$

C. $\sqrt{ab}$ D. $\sqrt{a+b}$

(viii) Mode of the series 2,2,2,3,3,3,2,3,3,4 is_____

A. 3 B. 2 and 3

C. 4 D. None of these

**DO NOT WRITE ANYTHING HERE**

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(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:**

# STATISTICS HSSC–I

**Time allowed: 2:35 Hours** **Total Marks Sections B and C:**

**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 interquantile 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.**

**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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