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. 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) A statistics which is not measureable is called:
A. a constant B. an attribute C. a variable D. a parameter

(ii) The process of arranging data into rows and columns is called:
A. frequency distribution B. classification
C. tabulation D. array

(iii) Graph of a time series is called:
A. Histogram B. Ogive C. Historigram D. Polygon

(iv) If a curve has longer tail to right it is called:
A. Positively skewed curve B. Negatively skewed curve
C. J-shapped curve D. Symmetric curve

(v) When all the values in a series occur the same number of time, then it is not possible to compute:
A. Mean B. Median C. Mode D. Weighted mean

(vi) If $\bar{X} = 100$ and $Y = 2X - 200$ then the Mean of Y values will be:
A. 0 B. 2 C. 100 D. 200

(vii) Sum of squares of deviation of the values is least when deviation are taken from:
A. Median B. Mode C. Mean D. Harmonic Mean

(viii) For a positively skewed distribution:
A. Mean > Mode B. Mode > Mean C. Median > Mean D. None of these

(ix) The Geometric Mean of numbers 2, 4, 8 and 64 is:
A. 2 B. 4 C. 8 D. 64

(x) If $S.D(X) = 5$, then $S.D\left(\frac{2X+5}{2}\right)$ is equal to:
A. 5 B. 10 C. 15 D. 15.5

(xi) For a Moderately skewed distribution which of the following hold:
A. $M.D = \frac{4}{5}S.D$ B. $Q.D = \frac{2}{3}S.D$ C. $Q.D = \frac{5}{6}M.D$ D. All of these

(xii) The distribution is symmetrical if the moment co-efficient of skewness $\sqrt{b_1}$ is:
A. Negative B. Positive C. 0 D. 3

(xiii) If X and Y are independent then $S.D(X - Y)$ is equal to:
A. $\sqrt{var(X) - var(Y)}$ B. $\sqrt{var(X) + var(Y)}$
C. $S.D(X) + S.D(Y)$ D. $S.D(X) - S.D(Y)$

(xiv) If all values are considered of equal importance in calculation of an index number, the index number is:
A. Weighted B. Simple C. Un-weighted D. None of these

(xv) Base year weighted index numbers are given by:
A. Laspeyer's B. Paasche's C. Fisher's D. C.P.I

(xvi) If all the points (X, Y) in the scatter diagram lie near a line the correlation co-efficient is:
A. Linear B. Inverse C. Non-Linear D. None of these

(xvii) Long term variations are regarded as:
A. Secular trend B. Seasoned variations
C. Cyclical variations D. Irregular variations

For Examiner's use only:

Total Marks: 17

Marks Obtained:

STATISTICS HSSC–I

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) Name the sources of secondary data.

(ii) What is classification?

(iii) The $A.M, G.M$ and $H.M$ of a distribution of a continuous variable were calculated as $23.95, 24.85$ and 25.15. Identify the $A.M, G.M$ and $H.M$.

(iv) The Mean of three groups each consists of ten values are $10, 20, 30$. Find Mean for all 30 values.

(v) In a skewed distribution if Mode is 15 and Mean = 10.5, find Median.

(vi) State any three qualities of a good average.

(vii) Can all Quartiles be expressed as Percentiles? Explain.

(viii) What is meant by dispersion?

(ix) A Manufacturer of T.V tubes has two types of tubes A and B. The tubes have respective Mean life ti $\bar{X}_A = 1495$ hours, $\bar{X}_B = 1800$ hours and Standard Deviation $S_A = 280$ hours, $S_B = 310$ hours. Which has greater (a) Absolute Dispersion (b) Relative Dispersion?

(x) If Lower Quartile is 20 and Quartile Deviation is 30, find Upper Quartile.

(xi) Describe theoretical tests for Index numbers.

(xii) IF Paasche's Index number is 74.76 and Fisher's Index number is 75.76. then find Laspeyer's Price Index number.

(xiii) Define the term Linear Regression.

(xiv) Give $\bar{X} = 150, \bar{Y} = 68, S_X = 2.5, S_Y = 20, S_{XY} = 30$. Find the regression lines of X on Y and Y on X.

(xv) Explain correlation and causation.

(xvi) Given $n = 100, \sum X = 5000, \sum Y = 6000, \sum XY = 300300, \sum X^2 = 250400, \sum Y^2 = 360900$. Calculate Correlation co-efficient 'r'.

(xvii) Find regression co-efficient 'Y' on 'X' and the regression co-efficient of 'X' on 'Y' from the following d $n = 10, \sum D_X = -8, \sum D_Y = 0, \sum {D_X}^2 = 66, \sum {D_Y}^2 = 99, \sum D_X D_Y = 72$

(xviii) What is meant by Analysis of time series?

(xix) Given $\sum X = 0, \sum Y = 245, \sum X^2 = 28, \sum XY = 66$ and $n = 7$. Fit a Linear trend.

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. **(2 x 13= 2**

Q. 3 a. The following table gives the frequency distribution of heights recorded to the nearest inch of 100 students. Find Mean, Median and G.M from the Data.

Height (in)	60–62	63–65	66–68	69–71	72–74
No. of Students	5	18	42	27	8

b. The first three moments about $X = 2$ are $1, 16$ and -40.

(i) Show that the mean is 3 and variance 15, $m_3 = -86$

(ii) Discuss symmetric, positively skewed or negatively skewed.

Q. 4 Find (i) Base year weighted (ii) Current year weighted Price Index numbers for 1965 taking 1960 as base year Also show that Fisher's Index number is the $G.M$ between (i) and (ii).

Commodities	Price		Quantity	
	1960	1965	1960	1965
A	70	75	300	310
B	72	80	240	275
C	25	32	132	148
D	60	85	280	360

Q. 5 **a.** Compute the regression line of Y on X and X on Y from the following data. Also show that $r = \sqrt{b \times d}$

X	5	7	9	11	13	15
Y	10	12	10	14	15	20

b. Calculate 7-day Moving average for the following record of attendance.

Week	SUN	MON	TUE	WED	THU	FRI	SAT
I	24	55	22	48	52	55	61
II	27	52	32	43	53	56	65