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) The data which have already been collected by someone are called _____ data.
- A. Secondary   B. Primary   C. Array   D. None of these

(ii) The number 143.9500 rounded off to the nearest tenth (one decimal place) is _____
- A. 143.9   B. 144.0   C. 143.0   D. 144

(iii) Weight of the earth is _____
- A. Discrete variable   B. Qualitative variable
- C. Continuous variable   D. Difficult to tell

(iv) The budgets of two families can be compared by _____
- A. Sub-divided rectangles   B. Pie-diagram
- C. Both A and B   D. Histogram

(v) A relative frequency distribution presents frequencies in terms of _____
- A. Fractions   B. Whole numbers
- C. Percentage   D. None of these

(vi) If $\overline{X} = 25$, which of the following will be minimum?
- A. $\Sigma(X-27)^2$ B. $\Sigma(X-25)^2$ C. $\Sigma(X-22)^2$ D. $\Sigma(X+25)^2$

(vii) Harmonic mean for any two positive numbers a and b is _____
- A. $\dfrac{2}{a+b}$ B. $\dfrac{2ab}{a+b}$ C. $\dfrac{a+b}{2}$ D. $\dfrac{a+b}{2ab}$

(viii) To compare the variation of two or more than two series, we use _____
- A. Mean Absolute deviation   B. Variance
- C. Coefficient of variation   D. Corrected Standard deviation

(ix) In symmetrical distribution if $Q_1 = 4, Q_3 = 12$ then median is _____
- A. 4   B. 6   C. 8   D. Zero

(x) The first three moments of a distribution about the mean $\overline{X}$ are 1, 4 and 0. The distribution is _____
- A. Symmetrical   B. Skewed to the left
- C. Skewed to the right   D. Normal

(xi) The distribution is positively skewed if _____
- A. Arithmetic mean < Mode   B. Arithmetic mean > Mode
- C. Arithmetic mean > Median   D. Both B and C

(xii) _____ method uses quantities consumed in the base period when computing a weighted index.
- A. Laspeyre's   B. Paasche's   C. Fisher's   D. None of these

(xiii) Prices used in the construction of consumer price index number are _____ prices
- A. Retail   B. Wholesale   C. The fixed   D. None of these

(xiv) The mean of 10 observations is 10. All observations are increased by 10%. The mean of the increased observations shall be_____
- A. 20   B. 11   C. 10   D. 100

(xv) If all the actual and estimated values of Y are the same on the regression line, the sum of squares of errors will be _____
- A. Zero   B. Minimum   C. Maximum   D. Unknown

(xvi) The value of the coefficient of correlation lies between _____
- A. 0 and 1   B. 0 and –1   C. –1 and +1   D. –2 and +2

(xvii) In time series a business cycle has _____
- A. One phase   B. Two phases   C. Four phases   D. Three phases

For Examiner's use only:

Total Marks:	17
Marks Obtained:	

--------1HA 1113--------

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)   Differentiate between Descriptive and Inferential Statistics.

(ii)   What are the functions of Statistics?

(iii) What are the common types of frequency distribution?

(iv) Differenate between Histogram and Historigram.

(v)   A given stock was purchased at the following prices at various times, 20 shares at Rs. 8.20 a share, 100 shares at Rs. 10.90 a share, 50 shares at Rs. 9.40 a share and 200 shares at Rs. 7.80 a share. Find the mean cost per share.

(vi) The mean and geometric mean of three numbers are 7 and 4, respectively. Find all the three numbers if mean of two numbers is 10.

(vii) What are the desirable qualities of good average?

(viii) The first four moments about X= 17.5 of a distribution are 0.3,74,45 and 12125. Find whether the distribution is Leptokurtic or Platykurtic.

(ix) Given :

No. of children	0	1	2	3	4	5
No. of families	4	7	14	22	12	6

Calculate Median, Mode, Q_3 and D_7

(x)   Given :

$n_1=15, n_2=25, n_3=40$

$\overline{X}_1 = 15.8, \overline{X}_2 = 22.5, \overline{X}_3 = 30.2$

$S_1=2.45, S_2=4.65, S_3=7.28$

Compute combined coefficient of variation.

(xi) What will be the standard deviation and the variance in each of the following cases?

(i)   2X   (ii)   X+2   (iii)   2X+4 if Var(X)=25

(xii) Compute chain index taking 1920 as base for the following data:

Year	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Price relative	100	116	120	120	137	136	149	156	137	162	149

(xiii) What are the important uses of index numbers?

(xiv) Given the following information:

$\sum p_1 q_o = 41140, \sum p_o q_o = 35310, \sum p_o q_1 = 40048$ and $\sum p_1 q_1 = 46707$. Compute

Base year and current year weighted price index numbers.

(xv) What is meant by Regression?

(xvi) Given $n = 10, \sum D_x = -8, \sum D_y = 0, \sum D_x^2 = 66, \sum D_y^2 = 99$ and $\sum D_x D_y = 72$. Find

r   , b_{xy} , b_{yx}

(xvii) Differentiate between Signal and Noise.

(xviii) Fit a straight line to the following results for the years 1951-58 both inclusive $\sum x = 0, \sum y = 2861.1, \sum x^2 = 168, \sum xy = 2215.5$. Also compute trend values.

(xix) Find 4- years moving averages centred from the following data:

Year	1990	1991	1992	1993	1994	1995	1996
Y	45	88	65	59	95	81	788

SECTION – C (Marks 26)

Note:- Attempt any TWO questions. All questions carry equal marks. (2 x 13= 26)

Q. 3 Calculate:
  (i) Mean deviation from median
  (ii) Coefficient of variation
  for the following frequency distribution:

Max: load (Short tons)	No. of cables
9.3—9.7	2
9.8—10.2	5
10.3—10.7	12
10.8—11.2	17
11.3—11.7	14
11.8—12.2	6
12.3—12.7	3
12.8—13.2	1

Q. 4 Construct consumes price index number of 1980 on the basis of 1978 using:
  (i) Aggregative method
  (ii) Family budget method

Articles	Quantity consumed in 1978	Unit of Price	Prices (Rs)	
			1978	1980
Rice	6 maunds	Per seer	6.00	6.50
Wheat	10 maunds	Per maund	35.00	40.00
Grain	3 maunds	Per maund	60.00	90.00
Pulses	5 maunds	Per maund	120.00	144.00
Ghee	5 Seers	Per seer	8.00	10.00
Sugar	1 maund	Per maund	240.00	300.00

Q. 5 The following table shows the ages (X) and systolic blood pressures (Y) of 12 women:

X	Y
56	147
42	125
72	160
36	118
63	149
47	128
55	150
49	145
38	115
42	140
68	152
60	155

  (i) Compute regression lines (X on Y and Y on X).
  (ii) Compute coefficient of correlation between X and Y
  (iii) show that $r = \sqrt{b_{xy} . b_{yx}}$

--------1HA 1113---------