STATISTICS HSSC-I
SECTION – A (Marks 17)

Time allowed: 25 Minutes

| Version Number | 1 | 8 | 5 | 5 |

Q. 1 Choose the correct answer A / B / C / D by filling the relevant bubble for each question on the OMR Answer Sheet according to the instructions given there. Each part carries one mark.

1) A specific characteristic of a sample is called:
  A. Variable   B. Constant   C. Parameter   D. Statistic

2) Census collects the:
  A. Official data   B. Fictitious data   C. Primary data   D. Secondary data

3) The number of tally sheet count for each value or a group is called:
  A. Class limit   B. Frequency   C. Class boundary D. Class width

4) Total angle of pie chart is:
  A. $270°$ B. $300°$ C. $320°$ D. $360°$

5) In a moderately skewed distribution, the mean is 11 and the median is 13 then the value of mode is:
  A. 17   B. 13   C. 11   D. 15

6) Ten families have an average of 2 boys. How many boys do they have together?
  A. 2   B. 10   C. 12   D. 20

7) The geometric mean of the two numbers X_1 and X_2 is 9. If $X_1 = 3$, then X_2 is equal to:
  A. 3   B. 9   C. 27   D. 81

8) Mean of 200 times of 2 is:
  A. 200   B. 0.01   C. 100   D. 2

9) Population variance is also called:
  A. Sigma squared B. Negative sigma C. Square root   D. Cubic root

10) Standard deviation is always calculated from:
  A. Mean   B. Median   C. Mode   D. Lower quartile

11) If the price of a kg of mutton was Rs.200/- in 2001 and Rs.350 in 2005, the simple price relative in 2005 is:
  A. 175   B. 57   C. 100   D. 350

12) The price relative are the percentage ratios of current year price and:
  A. Base year quantity   B. Previous year quantity
  C. Base year price   D. Current year quantity

13) The dependent variable is also called:
  A. Regressor   B. Explanatory variable
  C. Predictor   D. Response variable

14) Regression coefficient and slope of a line are:
  A. Dependent   B. Same   C. Not same   D. Independent

15) Which of the following could **NOT** be the value of r?
  A. -0.683 B. 0.197 C. -1.369 D. 1.000

16) A business cycle has:
  A. One phase   B. Two phases   C. Three phases   D. Four phases

17) Value of b in the trend line $Y = a + bX$ is:
  A. Always negative   B. Always positive
  C. Always zero   D. Both negative and positive

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. Graph paper will be provided on demand.

SECTION – B (Marks 42)

Q. 2　Attempt any FOURTEEN parts. All parts carry equal marks.　　　　　　**(14 x 3 = 42)**

(i)　　Differentiate between parameter and statistic.

(ii)　　Name the sources of primary data.

(iii)　　Differentiate between grouped data and ungrouped data.

(iv)　　Write down the names of the important graphs of frequency distribution.

(v)　　Arithmetic mean of 20 values is 25. By adding 4 more values the mean becomes 30. Find the four values if the ratio between these values is $1:2:3:4$.

(vi)　　For a frequency distribution of X: $X = 180 + 5u, \sum fu = 80, \sum f = 100$. Calculate Arithmetic Mean.

(vii)　　Given $l = 62, h = 11, f = 22, n = 80$ and $C = 32$. Find median.

(viii)　　The mean of 10 numbers is 8. If an eleventh number is included, the mean becomes 9. What is the value of the eleventh number?

(ix)　　If $X = 5.2, 4.4, 3.1$. Find its variance.

(x)　　Given $\sum fX = 296, \sum f = 120, Q_1 = 25.2, Q_3 = 34.1$, **Median** $= 26.7, S^2 = 1.42$. Calculate Bowley Coefficient of Skewness and Coefficient of Variation.

(xi)　　The first four moments about the arithmetic mean of a distribution are $0, 4, 6$ and 48. Find β_2.

(xii)　　Given $\sum p_0 q_0 = 3600, \sum p_1 q_0 = 4300, \sum p_1 q_1 = 4890$, and $\sum p_0 q_1 = 4100$. Find Fisher's ideal Price Index.

(xiii)　　Given $p_0 = 5, 4, 3$ and $q_0 = 70, 75, 80$. Find $\sum W$.

(xiv)　　What is meant by regression?

(xv)　　Given $\bar{X} = 150, \bar{Y} = 68, S_X = 2.5, S_{XY} = 30$. Find the regression line of Y on X.

(xvi)　　Write down any three properties of the correlation coefficient.

(xvii)　　Two regression lines are: $Y = 19.55 + 0.5423X$ and $X = -3.62 + 1.2387Y$. Find correlation coefficient 'r'.

(xviii)　　Distinguish between seasonal and irregular variations.

(xix)　　A study of the relationship between the IQ's of husbands and wives yielded the least square equation $\hat{Y} = 48 + 0.5X$. Given that this equation is based on the following data.

X	90	114	102
Y	90	102	Y_3

Where Y_3 is missing, find the missing value.

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

Q. 3 **a.** Find arithmetic mean, geometric mean and harmonic mean for the following data and prove that A.M>G.M>H.M. **(06)**

Marks	0 –10	10–20	20–30	30–40	40–50
No of students	5	10	15	7	3

b. Given the following results, find the combined coefficient of variation. **(07)**

$n_1 = 40$ $\bar{x}_1 = 65$ $s_1 = 10.5$

$n_2 = 25$ $\bar{x}_2 = 66$ $s_2 = 9.2$

$n_3 = 35$ $\bar{x}_3 = 72$ $s_3 = 8.3$

Q. 4 **a.** Calculate base year weighted and Current year weighted price index numbers from the following data. Also calculate Fisher's Index price number for the data given below. **(07)**

Items	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	3	70	4	75
B	5	80	6	90
C	8	40	10	55
D	10	50	12	60

b. An inquiry into budgets of the middle class families in a city for year 1989–1990 was conducted. The following price relatives are given. **(06)**

Expenses	Food	Rent	Clothing	Fuel	Misc.
Weight (W)	35%	15%	20%	10%	20%
Price relatives (I)	116	120	125	125	150

Construct consumer price index.

Q. 5 **(a)** Ten students got the following percentages of marks in statistics (X) and Physics (Y). Calculate the Correlation Coefficient between X and Y. **(06)**

Student	1	2	3	4	5	6	7	8	9	10
X	30	65	62	90	82	75	25	96	36	78
Y	47	53	58	86	62	68	60	91	51	84

(b) Compute the trend values by method of semi-averages from the following time series data. **(07)**

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production (Million)	17	19	20	24	32	25	35	38	42

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