



# STATISTICS HSSC-I

## SECTION – A (Marks 17)

27

Time allowed: 25 Minutes

Version Number 3 1 3 1

**Note:** Section – A is compulsory. All parts of this section are to be answered on the separately provided OMR Answer Sheet which 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** 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 population is called:  
A. Statistic      B. Parameter      C. Variable      D. Sample
- 2) In a Census \_\_\_\_\_ is collected.  
A. Official data      B. Fictitious data      C. Primary data      D. Secondary data
- 3) For graphic presentation of a frequency distribution, the paper to be used is:  
A. Butter paper      B. Graph paper      C. Ordinary paper      D. Carbon paper
- 4) A pie diagram is represented by a:  
A. Rectangle      B. Triangle      C. Circle      D. Square
- 5) In a moderately skewed distribution, the mean is 11 and the median is 13 then the value of mode is:  
A. 15      B. 13      C. 11      D. 17
- 6) If the arithmetic mean of the two numbers  $X_1$  and  $X_2$  is 5 if  $X_1 = 3$ , then  $X_2$  is:  
A. 3      B. 5      C. 7      D. 10
- 7) Median from the values 6, 7, 4, 5, 3, 7, 4 is:  
A. 3      B. 4      C. 5      D. 7
- 8) If the distribution has two modes then it is called:  
A. Uni-modal      B. Bi-modal      C. Tri-model      D. By-model
- 9) The lack of uniformity or symmetry is called:  
A. Skewness      B. Dispersion      C. Kurtosis      D. Standard deviation
- 10) The range of the scores 29, 3, 143, 27, 99 is:  
A. 140      B. 143      C. 146      D. 70
- 11) If Laspeyre's index number is 200, Paasche's index number is 200, the Fisher's index number is:  
A. 100      B. 200      C. 20000      D. 400
- 12) The Link relatives are the percentage ratios of current year price and:  
A. Previous year quantity      B. Base year quantity  
C. next year price      D. Preceding year price
- 13) The independent variable is also known as:  
A. Regressand      B. Predicted      C. Explained      D. Predictor
- 14) In a simple regression equation, the number of variables involved is:  
A. 2      B. 1      C. 0      D. 3
- 15) When  $b_{xy}$  is positive, then  $b_{yx}$  will be:  
A. Negative      B. Zero      C. Positive      D. One
- 16) An era of prosperity is an example of:  
A. Secular trend      B. Seasonal variation  
C. Cyclical variation      D. Irregular variation
- 17) The graph of a time series is called a:  
A. Histogram      B. Historigram      C. Trend line      D. Scatter diagram



# STATISTICS HSSC-I

28

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) Name any three sources of primary data.
- (ii) Write any two limitations of statistics.
- (iii) Write down the important graphs of frequency distributions.
- (iv) Write down the general rules of tabulation.
- (v) If for ten observations  $\sum (X - 23) = -17$ , then find mean.
- (vi) If sum of 15 values is 300 and by addition of **two** more values, it becomes 360. Find the new values if the ratio between them is 1:4.
- (vii) Three teachers of statistics reported mean examination grades of 75, 82 and 85 in their classes, which consisted of 30, 25 and 17 students **respectively**. Determine the mean grade for all the classes.
- (viii) The logarithms of 3 values  $X$  are 1.8062, 1.6812 and 1.6532. Find the geometric Mean of these values.
- (ix) If  $X = 5.2, 4.4, 3.1$ . Find its variance.
- (x) A series comprises of 60 values each equal to 6. What will be the average and dispersion of the series?
- (xi) For a frequency distribution of  $X$ , it is given that, Mean = 50, Mode = 45 and variance = 64. Find coefficient of variation and coefficient of skewness.
- (xii) If Paasche's price index = 74.76 and Fisher's price index = 75.76 then find Laspeyre's price index.
- (xiii) What is cost of living index number?
- (xiv) If  $\bar{X} = 40, \bar{Y} = 124$  and  $a = 4$  find the value of ' $b$ '.
- (xv)  $\bar{X} = 52, \bar{Y} = 237, \sum (X - \bar{X})^2 = 2800, \sum (X - \bar{X})(Y - \bar{Y}) = 9871$ . Determine the estimate regression equation  $Y$  on  $X$ .
- (xvi) Write down any three properties of the correlation coefficient.
- (xvii) Given  $r = 0.8, S_{xy} = 20, S_x = 4$ . Find  $S_y$ .
- (xviii) Distinguish between secular trend and cyclical variations.
- (xix) If  $Y = 16, 18, 20, 22, 24$ .  $X = -2, -10, 1, 2$  and  $\hat{Y} = 20 + 2X$ . Compute the errors sum of squares.

**SECTION – C (Marks 26)**

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

( 2 x 13= 26 )

**Q. 3 a.** The expenditure of 100 families is given below: (06)

Expenditure	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of families	14	$F_1$	27	$F_2$	15

Mode for the distribution is 24 . Calculate the missing frequencies  $F_1$  and  $F_2$ .

**b.** The following scores are made by two batsmen  $A$  and  $B$  in a series of innings. (07)

A	84	29	12	15	6	73	7	19	199	36
B	13	0	47	12	76	48	4	51	37	48

- i) Who is better as a run getter?  
 ii) Who is more consistent player?

**Q. 4 a.** Compute the weighted price index number for 1997 from the following data with 1995 as base using (i)Laspeyre's (ii)Paasche's and (iii)Fsher's ideal formulae. (07)

Items	Price		Quantity	
	1995	1997	1995	1997
A	70	75	300	310
B	72	80	240	275
C	35	35	132	148
D	60	85	280	360

**b.** An inquiry into budgets of the middle class families in a city gave the following information (06)

Articles	Food	Rent	Clothing	Fuel	Misc.
	35%	15%	20%	11%	19%
Prices (1990)	150	50	75	25	60
Prices (1995)	135	30	65	23	45

What changes in cost of living the figures of 1995 show as compared to 1990 ?

**Q. 5 (a)** The following table shows the marks obtained by the students in Economics and Statistics: (07)

Economics ( $X$ )	48	40	32	34	30	50	26	50	22	43
Statistics ( $Y$ )	76	56	40	50	34	70	56	68	40	57

Find the two regression Coefficients and Correlation Coefficient. Show that  $r = \pm \sqrt{b_{XY} \times b_{YX}}$

**(b)** Find 4-quarters centered moving averages from the following time series data. (06)

Years	Quarters			
	I	II	III	IV
2009	5.8	5.6	5.9	4.9
2010	3.8	4.4	5.0	5.1
2011	5.5	5.6	5.3	5.0