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Version No.			
3	1	3	1

ROLL NUMBER					

STATISTICS HSSC–I

SECTION – A (Marks 17)

Time allowed: 25 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed.

Do not use lead pencil.

حصہ اوّل لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر نگران مرکز کے حوالے کریں۔ کاٹ کر دوبارہ لکھنے کی اجازت نہیں ہے۔ لیڈ پنسل کا استعمال ممنوع ہے۔

Answer Sheet No. _____

ہر سوال کے سامنے دیے گئے، کریکولم کے مطابق درست دائرہ کو پر کریں۔ **Invigilator Sign.** _____

Fill the relevant bubble against each question according to curriculum: **Candidate Sign.** _____

	Question سوال	A	B	C	D	A	B	C	D
1.	The branch of statistics that is concerned with procedures for obtaining valid conclusions is called:	Descriptive statistics	Inferential statistics	Theoretical statistics	Applied statistics	○	○	○	○
2.	Issuing a national identity card is an example of:	Census	Registration	Sampling	Investigation through enumerators	○	○	○	○
3.	The process of systematic arrangement of data into rows and columns is called:	Classification	Tabulation	Frequency distribution	Array	○	○	○	○
4.	An Ogive is also called:	Frequency polygon	Frequency curve	Histogram	Cumulative frequency polygon	○	○	○	○
5.	The modal letter(s) of the word "STATISTICS" is/are:	S	T	S,T	I,T	○	○	○	○
6.	If $\overline{X} = 10$ and $Y = 2X + 5$, then $\overline{Y} =$ _____	10	15	20	25	○	○	○	○
7.	The sum of squared deviations from mean is always:	Negative	Maximum	Minimum	Zero	○	○	○	○
8.	Geometric Mean of $2,4,6,8,64$ is:	7	7.55	16.8	8.5	○	○	○	○
9.	For normal distribution, approximately 68% of the values are included by an interval:	$\overline{X} \pm S$	$\overline{X} \pm 2S$	$\overline{X} \pm 3S$	$\overline{X} \pm 4S$	○	○	○	○
10.	If $Var(x) = 2$, then $Var(3X + 4) =$ _____	10	15	18	20	○	○	○	○
11.	Time reversal test is satisfied by:	Laspeyre's index	Paasche's index	Fisher's Index	Un-weighted Index number	○	○	○	○

	Question سوال	A	B	C	D	A	B	C	D
12.	The index number is given by $\frac{\Sigma p_n q_n}{\Sigma p_o q_o} \times 100$ is called:	The Laspeyre's index	The Paasche's index	The value index	Wholesale price index	○	○	○	○
13.	The price relative is the percentage ratio of current year price and:	Current year quantity	Base year quantity	Current year price	Base year price	○	○	○	○
14.	In method of least square , the sum of errors will be:	Less than zero	Greater than zero	Zero	Not equal to zero	○	○	○	○
15.	The regression line always passes through:	$(a,\overline{Y})$	$(b,\overline{Y})$	(a,b)	$(\overline{X},\overline{Y})$	○	○	○	○
16.	When two variables move in same direction, the correlation will be:	Positive	Negative	Zero	Neutral	○	○	○	○
17.	'A decline in death rate due to advancement of Science' is an example of:	Seasonal variation	Secular variation	Cyclical variation	Random variation	○	○	○	○

ROLL NUMBER					

STATISTICS HSSC–I

Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C'. Write your answers neatly and legibly. Statistical table 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) Distinguish between primary and secondary data.

(ii) Differentiate between discrete variable and continuous variable.

(iii) Make class boundaries and find missing frequencies of the following frequency distribution.

Classes	Frequency	Cumulative frequency
0.7312 – 0.7313	5	5
0.7314 – 0.7315	7	?
0.7316 – 0.7317	?	22
0.7318 – 0.7319	8	?
0.7320 – 0.7321	?	35

(iv) Calculate Arithmetic Mean from the following deviations.

D=X-10	-5	-3	0	3	6	8	10	13

(v) Calculate Geometric Mean and Harmonic Mean for five values of X for the following reciprocal values:

$\frac{1}{X}=$ 0.2, 0.1, 0.05, 0.04, 0.025

(vi) Calculate combined Arithmetic mean for the following two groups.

	Boys	Girls
Number of Persons	20	30
Mean Weight (kg)	62.5	53.4

(vii) What is meant by range and semi-interquartile range?

(viii) If lower Quartile $(Q_1)=40$, upper quartile $(Q_3)=90$ and Median=60, Compute Quartile Coefficient of Skewness.

(ix) Given $n=5, \Sigma x=180, \Sigma x^2=6660$. Compute variance, Standard deviation and Coefficient of variation.

(x) Differentiate between un-weighted and weighted index number.

(xi) Compute index number taking 2010 as base:

Year	2010	2011	2012	2013	2014	2015
Price	10	14	15	20	25	33

(xii) If Laspeyre's index number is 150 and Fisher's index is 147, Calculate the Paasche's index number.

(xiii) Compute two regression coefficients b_{yx} *and* b_{xy} of the following data:

$n=10, \Sigma D_x=12, \Sigma D_y=-5, \Sigma D_x D_y=390, \Sigma D_x^2=2830, \Sigma D_y^2=91$

(xiv) The two regression lines are $\hat{Y}=25+0.83X$ and $\hat{X}=40+0.97Y$ are given, identify the two regression coefficients and compute the correlation coefficient (r).

(xv) Write down the properties of correlation coefficient (r).

(xvi) If $r_{xy}=060, U=\frac{X-50}{10}, V=\frac{Y-60}{5}$, then what is the value of r_{yx} and r_{UV} ?

(xvii) Describe seasonal variation with examples in time series.

(xviii) If the least square line fitted to the data for the years 1960-65 (both inclusive) with the origin at the middle of 1962 and 1963 is $\hat{Y}=75+0.85X$, the unit of X is being half year, then find the trend values for 1960 to 1965.

(xix) Estimate the trend values by semi average method for 1970 to 1975.

Year	Semi – Total	Semi – Average
1970		
1971	720	240
1972		
1973		
1974	990	330
1975		

SECTION – C (Marks 26)

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

Q. 3 **a.** Find Arithmetic Mean, Median and Mode from the following data: **(06)**

Classes	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39
Frequency	3	5	10	12	6	4

b. Calculate Coefficient of Skewness by Karl Pearson's method. **(07)**

Marks	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49
Frequency	1	4	8	11	15	6

Q. 4 **a.** Construct chain indices using Geometric Mean as an average **(08)**

Year	**Prices**		
	Wheat	**Rice**	**Ghee**
1990	120	30	20
1991	132	32	24
1992	140	38	30
1993	144	40	40
1994	150	45	50

b. Compute the consumer price index number by aggregative expenditure method **(05)**

Item	**Quantity consumed in base year** (q_0)	**Base year price** (P_0)	**Current year price** (P_1)
Rice	60	150	200
Wheat	80	35	40
Pluses	10	120	150
Ghee	20	225	250
Sugar	15	100	110

Q. 5 **a.** Calculate regression line Y on X and Correlation Coefficient (r) form the following data **(06)**

X	10	9	8	7	6	4	3
Y	8	12	7	10	8	9	6

b. Smooth the variation of following data with the help of 4-years centered moving average method. **(07)**

Year	2008	2009	2010	2011	2012	2013	2014	2015
Profit (in Rs. 000)	100	120	150	160	190	210	350	415