



Federal Board HSSC-I Examination
Model Question Paper Statistics

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.

ROLL NUMBER					
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Version No.			
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Candidate Sign. _____

Invigilator Sign. _____

Q1. Fill the relevant bubble against each question. Each part carries one mark

Sr no.	Question	A	B	C	D	A	B	C	D
i.	The branch of statistics that is concerned with procedures for obtaining valid conclusions is called:	Descriptive statistics	Inferential statistics	Theoretical statistics	Bio Statistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii.	Census reports published are	Primary data	Secondary data	Confidential data	Fictitious data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii.	A graph of a cumulative frequency distribution is called	Histogram	Frequency polygon	Ogive	Frequency curve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv.	The bases of classification are :	Two	Three	four	five	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v.	Find the arithmetic mean of X if following deviations are given. $\sum(X-11)=6$, $\sum(X-30)=19$ and $\sum(X-17)=0$.	11	17	30	19	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vi.	Geometric mean of numbers 2, 4 , 8 and 64 is	4	8	16	64	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vii.	The model letter(s) of the word “STATISTICS”	S	S & I	S and T	T	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viii.	The Harmonic Mean (H.M.) of the series 1, 2, 4 is	5	7	7/5	17/7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ix.	The Sum of squared deviations of the values is least when deviations are taken from	Athemati c Mean	Median	Mode	Geometric mean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
x.	Variance is zero only if all observations are :	square	Square root	Different	Same	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

xi.	The price relative is the percentage ratio of current year price and _____	Current year price	Base year price	Current year quantity	Current year quantity	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xii.	Which of the following indices has an upward bias?	Laspeyres Index number	Paasche index number	Fisher index number	Value index number	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xiii.	When regression line passes through origin then intercept 'a' is :	One	zero	negative	postive	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xiv.	The Independent variable is also called :	Explanatory variable	regressor	predictor	All of these.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xv.	When two variables move in same direction, the correlation will be :	zero	positive	negative	neutral	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xvi.	In summers, the sale of ice-cream increases is an example of :	Secular variation	Cyclical variations	Seasonal variations	Random variation	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
xvii.	The main components of time series are :	two	three	four	five	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Federal Board HSSC-I Examination Model Question
Paper STATISTICS

Time allowed: 2.35 hours Total Marks: 63

Note: Answer all parts from Section ‘B’ and all questions from Section ‘C’ on the **E-sheet**.
Write your answers on the allotted/given spaces.

SECTION – B (13 × 3 = 39 Marks)

Note: Attempt all parts.

Q.2	Question	M	Question	M																
i.	Following are the number of mistakes made by 25 typists in a typing test: 4, 8, 0, 5, 8, 4, 3, 5, 7, 7, 8, 8, 3, 2, 7, 1, 1, 0, 2, 4,6 ,4,6,3,5 . Make a discrete frequency distribution .	3	<div><div>O</div><div>R</div>Distinguish between histogram and historigram .</div>	3																
ii.	Make class boundaries ,class mark and cumulative frequency for the following frequency distribution . <table><tr><td>classes</td><td>frequency</td><td>classes</td><td>freque ncy</td></tr><tr><td>3-3.9</td><td>5</td><td>6-6.9</td><td>10</td></tr><tr><td>4-4.9</td><td>7</td><td>7-7.9</td><td>5</td></tr><tr><td>5-5.9</td><td>8</td><td>8-8.9</td><td>3</td></tr></table>	classes	frequency	classes	freque ncy	3-3.9	5	6-6.9	10	4-4.9	7	7-7.9	5	5-5.9	8	8-8.9	3	3	<div><div>O</div><div>R</div>If $\sum X=10$,$\sum Y=40$, $\sum XY=100$. Compute the values of $\sum_{i=1}^4(2X + 5)(Y - 4)$</div>	3
classes	frequency	classes	freque ncy																	
3-3.9	5	6-6.9	10																	
4-4.9	7	7-7.9	5																	
5-5.9	8	8-8.9	3																	
iii.	Define discrete and continuous variable with examples.	3	<div><div>O</div><div>R</div>The reciprocal of the values of the variable ‘X’ are given below. Compute the value arithmetic mean of X. $\frac{1}{x}=0.0833$, 0.0526 , 0.0667 ,0.0588 ,0.05 ,0.0370 , 0.0455.</div>	3																
iv.	The average marks obtained by three sections of 1 st year class are given below . Find the combined mean of 1 st year class . <table><tr><td>Sections</td><td>No. of students</td><td>Means</td></tr><tr><td>A</td><td>35</td><td>60</td></tr><tr><td>B</td><td>30</td><td>50</td></tr><tr><td>C</td><td>20</td><td>70</td></tr></table>	Sections	No. of students	Means	A	35	60	B	30	50	C	20	70	3	<div><div>O</div><div>R</div>. Write down any three qualities of a good average</div>	3				
Sections	No. of students	Means																		
A	35	60																		
B	30	50																		
C	20	70																		
v.	The following values have been obtained from a frequency distribution of a variable x . $X=62+5U$, $\sum f=120$, $\sum fU = 140$, $\sum fU^2=598$. Calculate arithmetic mean ,variance and standard deviation	3	<div><div>O</div><div>R</div><table><tr><td></td><td>Batsman A</td><td>Batsman B</td></tr><tr><td>Average inning Score</td><td>75</td><td>60</td></tr><tr><td>Variance of score</td><td>64</td><td>25</td></tr></table> (a)Which batsman is better run getter (b) who is more consistent player</div>		Batsman A	Batsman B	Average inning Score	75	60	Variance of score	64	25	3							
	Batsman A	Batsman B																		
Average inning Score	75	60																		
Variance of score	64	25																		
vi.	In moderately skewed distribution , mean is 25 and mode is 28. Find the approximate value of median	3	<div><div>O</div><div>R</div>Compute Mean deviation from median and Mean coefficient of dispersion from the following . 8 ,4 ,6 , 5 , 9 ,10 , 2 , 13 ,15</div>	3																
vii.	Calculate Index number by taking average of first 03 years as base. <table><tr><td>YEAR</td><td>2010</td><td>2011</td><td>2012</td><td>2013</td><td>2014</td><td>2015</td><td>2016</td></tr><tr><td>PRICE</td><td>20</td><td>18</td><td>25</td><td>28</td><td>30</td><td>35</td><td>42</td></tr></table>	YEAR	2010	2011	2012	2013	2014	2015	2016	PRICE	20	18	25	28	30	35	42	3	<div><div>O</div><div>R</div>For a frequency distribution of ‘X’ , it is given that $Q_1=20$, $Q_2= 40$ and $Q_3=50$. Find the Bowley’s coefficient of skewness</div>	3
YEAR	2010	2011	2012	2013	2014	2015	2016													
PRICE	20	18	25	28	30	35	42													

viii.	If $V(X)=4$ and $V(Y)=5$, then find the (a) $\text{Var}(2X-3Y)$ (b) $\text{Var}\left(\frac{X}{2} + 5Y\right)$	3	<div>O R</div> If fisher price index number = 156 and laspeyre's price index number =160 then find the value of Paasche's price index number.	3																		
ix.	Compute consumer price index number from the following . <table><tr><td>Commodity</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td></tr><tr><td>Weight(W)</td><td>6</td><td>5</td><td>4</td><td>1</td><td>2</td></tr><tr><td>Price relative(I)</td><td>61.54</td><td>146.67</td><td>74.3</td><td>76.22</td><td>90.14</td></tr></table>	Commodity	A	B	C	D	E	Weight(W)	6	5	4	1	2	Price relative(I)	61.54	146.67	74.3	76.22	90.14	3	<div>O R</div> Differentiate between simple and composite index numbers	3
Commodity	A	B	C	D	E																	
Weight(W)	6	5	4	1	2																	
Price relative(I)	61.54	146.67	74.3	76.22	90.14																	
x.	If the regression lines Y on X and X on Y are $2X-3Y=0$ and $4y-5X=0$ then find b_{yx} and b_{xy} .	3	<div>O R</div> Describe the properties of correlation coefficient(r).	3																		
xi.	If $b_{yx} = -0.95$ and $b_{xy} = -0.8$. Find the value of correlation coefficient(r).	3	<div>O R</div> If $\sum Dx= -87$, $\sum Dy= 43$, $\sum D^2x= 949$, $\sum Dy^2=543$, $\sum Dx Dy=385$.Find Coefficient of correlation (r)	3																		
xii.	Calculate 3-years simple moving average from the following . <table><tr><td>Years</td><td>2000</td><td>2001</td><td>2002</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td></tr><tr><td>Value s</td><td>20</td><td>22</td><td>26</td><td>25</td><td>28</td><td>24</td><td>30</td><td>34</td></tr></table>	Years	2000	2001	2002	2003	2004	2005	2006	2007	Value s	20	22	26	25	28	24	30	34	3	<div>O R</div> Given $\bar{X} = 50$ and $\bar{Y} = 60$, $S_{yx}=36$, $S_x=4$ and $S_y=9$. Find regression line X on Y.	3
Years	2000	2001	2002	2003	2004	2005	2006	2007														
Value s	20	22	26	25	28	24	30	34														
xiii	Compute the trend values by method of semi average. <table><tr><td>Year</td><td>Semi average</td></tr><tr><td>1981</td><td></td></tr><tr><td>1982</td><td>40</td></tr><tr><td>1983</td><td></td></tr><tr><td>1984</td><td></td></tr><tr><td>1985</td><td>70</td></tr><tr><td>1986</td><td></td></tr></table>	Year	Semi average	1981		1982	40	1983		1984		1985	70	1986		3	<div>O R</div> Differentiate between 'signal' and 'noise'	3				
Year	Semi average																					
1981																						
1982	40																					
1983																						
1984																						
1985	70																					
1986																						

SECTION –C (4x6=24 Marks)

Note: Attempt all questions.

	Question	M	Question	M																																											
Q-3	Calculate Arithmetic Mean, Median and Mode of the following frequency distribution. <table><tr><td>Classes</td><td>f</td><td>Classes</td><td>f</td></tr><tr><td>9.3-9.7</td><td>2</td><td>11.3-11.7</td><td>14</td></tr><tr><td>9.8-10.2</td><td>5</td><td>11.8-12.2</td><td>6</td></tr><tr><td>10.3-10.7</td><td>12</td><td>12.3-12.7</td><td>3</td></tr><tr><td>10.8-11.2</td><td>17</td><td>12.8-13.2</td><td>1</td></tr></table>	Classes	f	Classes	f	9.3-9.7	2	11.3-11.7	14	9.8-10.2	5	11.8-12.2	6	10.3-10.7	12	12.3-12.7	3	10.8-11.2	17	12.8-13.2	1	6	<div><div>Find variance , standard deviation and coefficient of variation of the following .</div><table><tr><td>Classes</td><td>f</td></tr><tr><td>0 - 10</td><td>6</td></tr><tr><td>10- 20</td><td>8</td></tr><tr><td>20-30</td><td>10</td></tr><tr><td>30-40</td><td>7</td></tr><tr><td>40-50</td><td>5</td></tr><tr><td>50-60</td><td>4</td></tr></table></div>	Classes	f	0 - 10	6	10- 20	8	20-30	10	30-40	7	40-50	5	50-60	4	6									
		Classes	f	Classes	f																																										
9.3-9.7	2	11.3-11.7	14																																												
9.8-10.2	5	11.8-12.2	6																																												
10.3-10.7	12	12.3-12.7	3																																												
10.8-11.2	17	12.8-13.2	1																																												
Classes	f																																														
0 - 10	6																																														
10- 20	8																																														
20-30	10																																														
30-40	7																																														
40-50	5																																														
50-60	4																																														
	<div><div>O</div><div>R</div></div>																																														
Q-4	Compute Laspeyres ‘s, Paasche’s and Fisher’s index numbers for 2003 taking 2000 as base . <table><tr><td rowspan="2">Commodity</td><td colspan="2">2000</td><td colspan="2">2003</td></tr><tr><td>Price</td><td>Quantity</td><td>Price</td><td>Quantity</td></tr><tr><td>A</td><td>40</td><td>10</td><td>50</td><td>12</td></tr><tr><td>B</td><td>37</td><td>15</td><td>40</td><td>18</td></tr><tr><td>C</td><td>27</td><td>20</td><td>30</td><td>25</td></tr><tr><td>D</td><td>30</td><td>12</td><td>34</td><td>16</td></tr></table>	Commodity	2000		2003		Price	Quantity	Price	Quantity	A	40	10	50	12	B	37	15	40	18	C	27	20	30	25	D	30	12	34	16	6	<div><div>Compute A.M, G.M and H.M for the following data:</div><table><tr><td>Class es</td><td>0-9</td><td>10-19</td><td>20-29</td><td>30-39</td><td>40-49</td><td>50-59</td></tr><tr><td>f</td><td>5</td><td>9</td><td>15</td><td>7</td><td>3</td><td>1</td></tr></table><div>Also Verify that A.M ≥ G.M≥ H.M</div></div>	Class es	0-9	10-19	20-29	30-39	40-49	50-59	f	5	9	15	7	3	1	6
			Commodity	2000		2003																																									
Price	Quantity	Price		Quantity																																											
A	40	10	50	12																																											
B	37	15	40	18																																											
C	27	20	30	25																																											
D	30	12	34	16																																											
Class es	0-9	10-19	20-29	30-39	40-49	50-59																																									
f	5	9	15	7	3	1																																									
	<div><div>O</div><div>R</div></div>																																														
Q-5	Find regression line Y on X and estimate Y when X=10. <table><tr><td>X</td><td>17</td><td>13</td><td>15</td><td>16</td><td>6</td><td>11</td><td>14</td><td>9</td><td>7</td></tr><tr><td>Y</td><td>36</td><td>46</td><td>35</td><td>24</td><td>12</td><td>18</td><td>27</td><td>22</td><td>8</td></tr></table>	X	17	13	15	16	6	11	14	9	7	Y	36	46	35	24	12	18	27	22	8	6	<div><div>Find the trend values by fitting of straight line from the following data. .</div><table><tr><td>Year</td><td>1990</td><td>1991</td><td>1992</td><td>1993</td><td>1994</td><td>1995</td><td>1996</td></tr><tr><td>values</td><td>60</td><td>65</td><td>80</td><td>73</td><td>97</td><td>95</td><td>99</td></tr></table></div>	Year	1990	1991	1992	1993	1994	1995	1996	values	60	65	80	73	97	95	99	6							
		X	17	13	15	16	6	11	14	9	7																																				
Y	36	46	35	24	12	18	27	22	8																																						
Year	1990	1991	1992	1993	1994	1995	1996																																								
values	60	65	80	73	97	95	99																																								
	<div><div>O</div><div>R</div></div>																																														
Q-6	Compute 2- year centered moving average form the following . <table><tr><td>Year</td><td>1970</td><td>1971</td><td>1972</td><td>1973</td><td>1974</td><td>1975</td><td>1976</td></tr><tr><td>Valu es</td><td>80</td><td>90</td><td>92</td><td>85</td><td>94</td><td>99</td><td>92</td></tr></table>	Year	1970	1971	1972	1973	1974	1975	1976	Valu es	80	90	92	85	94	99	92	6	<div><div>Compute Correlation coefficient from the following and interpret the result.</div><table><tr><td>X</td><td>9</td><td>8</td><td>10</td><td>11</td><td>12</td><td>13</td><td>7</td><td>15</td><td>18</td></tr><tr><td>Y</td><td>8</td><td>6</td><td>9</td><td>11</td><td>14</td><td>12</td><td>3</td><td>13</td><td>15</td></tr></table></div>	X	9	8	10	11	12	13	7	15	18	Y	8	6	9	11	14	12	3	13	15	6							
		Year	1970	1971	1972	1973	1974	1975	1976																																						
Valu es	80	90	92	85	94	99	92																																								
X	9	8	10	11	12	13	7	15	18																																						
Y	8	6	9	11	14	12	3	13	15																																						
	<div><div>O</div><div>R</div></div>																																														