Instructions: *(i) Attempt All Questions.*
(ii) Figures to the right indicate full marks.

Duration: 02 Hours   **Max. Marks: 80**

Q.I) Answer the following: **(16)**

a) The following data represent weights (in kg) of 13 items manufactured in a particular factory: **(3)**

8, 19, 20, 8, 17, 25, 7, 14, 26, 11, 13, 8, 23

Taking class intervals as $0 − 9, 9 − 18, 18 − 27$ prepare a frequency distribution table.

b) Construct a Frequency Curve for the following data: **(6)**

Class Interval	20-40	40-60	60-80	80-100
Frequency	20	90	100	25

c) Calculate Arithmetic Mean for the following data: **(7)**

Class Interval	0-8	8-16	16-24	24-32
Frequency	16	18	20	22

OR

Q. I) Answer the following: **(16)**

x) i) Define Primary data.   **(3)**
   ii) Write any 3 sources of Secondary data.

y) Construct More than type Ogive for the following data: **(6)**

Class Interval	0-5	5-10	10-15	15-20
Frequency	20	30	25	34

z) For the following data, calculate: **(7)**
   i) Mode
   ii) Mean deviation from Mode

Class Interval	100-200	200-300	300-400
Frequency	7	16	8

Q.II) Answer the following: **(16)**

a) i) Write any 3 functions of Statistics.   **(3)**
   ii) Temperature of a city is an example of Variable or Attribute? Justify.

b) Calculate D_8 and P_{32} for the following data: **(6)**

Class Interval	50-100	100-150	150-200	200-250
Frequency	34	134	120	120

c) Calculate Fixed Base Index numbers for the following data taking 2016 as base year: **(7)**

Year	2016	2017	2018	2019	2020
Price	13	17	20	24	29

OR

Q.II) Answer the following: **(16)**

x) i) Explain Direct personal investigation used for primary data collection. **(3)**
   ii) What type of class interval is suitable for representing length of a road, inclusive or
       exclusive class interval?

y) Calculate the Karl Pearson's Coefficient of Skewness for the following data: **(6)**

Class Interval	4-8	8-12	12-16
Frequency	8	10	9

z) Calculate Laspeyre's Price Index Number for the following data taking 2016 as base year: **(7)**

Commodity	2016		2017	
	Price	Quantity	Price	Quantity
P	10	5	13	6
Q	12	3	15	4
R	30	8	32	8
S	20	2	20	1

Q.III) Answer the following: **(16)**

a) Draw a Simple Bar Diagram to represent the following data: **(3)**

Month	No. of viewers of Web Series
April	30
May	55
June	20

b) Fit a trend line by the method of Semi Averages for the following data: **(6)**

Year	2013	2014	2015	2016	2017	2018
Sales	21	25	23	25	29	30

c) Calculate Q_3, Q_1 and Coefficient of Quartile deviation for the following data: **(7)**

Class Interval	0-20	20-40	40-60	60-80
Frequency	2	8	8	2

OR

Q.III) Answer the following: **(16)**

x) Draw a Multiple Bar Diagram to represent the following data: **(3)**

Year	No. of tourists from country	
	A	B
2016	30	20
2020	32	10

y) Calculate 3 yearly moving averages for the following data and represent the trend values on the graph: **(6)**

Year	2005	2006	2007	2008	2009	2010
Production	91	93	92	97	98	99

z) Calculate Harmonic Mean and Standard Deviation for the following data: **(7)**

x	3	6	9	18

Q.IV) Answer the following: **(16)**

a) 1) Define Sample. **(1)**

2) Write the formula used to calculate Weighted Aggregative Price Index number. **(1)**

3) Write the names of all the components of Time Series. **(1)**

b) The mean marks in Statistics of 50 students from Section A is 54 and the mean marks in Statistics of 80 students from section B is 50. Find the combined mean marks in Statistics of all the 130 students from section A and B taken together. **(6)**

c) Fit a trend line by the method of Least Squares for the following data: **(7)**

Year	2009	2010	2011	2012	2013
Production	20	22	24	27	30

OR

Q. IV) Answer the following: **(16)**

x) 1) Write any 1 objective of classification. **(1)**

2) Define Splicing. **(1)**

3) Write the Multiplicative Model of Time Series. **(1)**

y) Calculate Median for the following data: **(6)**

Class Interval	2-6	6-10	10-14	14-18	18-22
Frequency	18	10	14	12	10

z) Fit a Second Degree Trend Curve for the following data: **(7)**

Year	2011	2012	2013	2014	2015
Export	7	8	9	13	18

Q.V) Answer the following: **(16)**

a) i) Write any 1 point of distinction between Frequency Curve and Frequency Polygon. **(3)**

ii) Write any 2 examples of Discrete variable.

b) i) If mean $= 30$ and median $= 30,$ then calculate mode. **(6)**

    ii) Find Range and Coefficient of Range for the following data:

      10, 20, 30, 40, 50, 80

c) i) Reconstruct the Index numbers by Shifting the Base to 2018 for the following data: **(7)**

Year	2016	2017	2018
Index numbers with base 2016	100	110	115

    ii) Calculate Real Income for the following data:

Year	2009	2010	2011
Income (In Rs.)	8000	8508	8800
Index Number with base 2009	100	115	125

OR

Q.V) Answer the following: **(16)**

x) i) Write any 3 requisites of a good questionnaire. **(3)**
   ii) Define Parameter.

y) Calculate Bowley's Coefficient of Skewness for the following data: **(6)**

Class Interval	0-50	50-100	100-150	150-200
Frequency	15	25	35	45

z) For the following data calculate Simple Average of Price Relatives taking 2008 as base **(7)**
year:

Commodity	Price in	
	2008	2009
P	55	58
Q	84	94
R	16	20
S	22	28

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