

- Note: 1. All questions are compulsory
 2. All questions carry equal marks
 3. Draw neat, labelled diagrams wherever necessary
 4. Scientific Calculator is allowed.

Q.1) Attempt the following (Any Three)

(15M)

- a) Draw a Histogram and hence locate mode.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
f	5	12	25	18	10	6

- b) Write a short note on statistical organization in India and their function.

- c) Write a short note on scope of statistics.

- d) Write a short note on scales of measurement.

- e) Draw a less than type frequency curve and locate medium and two quartiles.

C.I	40-45	45-50	50-55	55-60	60-65	65-70	70-75
f	5	9	15	13	11	12	5

- f) Draw a frequency polygon for the following data.

C.I	150-154	154-158	158-162	162-166	166-170
f	10	12	20	10	8

Q.2) Attempt the following (Any Three)

(15M)

- a) Calculate lower quartile and upper quartile for the following data.

X	14	16	18	20	22	24	26
f	2	4	5	3	2	1	4

- b) Find first four raw moments for the set of observation -3, -2, 1, 3, 4.

- c) Calculate Median for the following data

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	12	18	30	20	15	5

- d) The daily wages (in Rs.) of 15 persons are as follows

230, 400, 350, 200, 250, 380, 210, 225, 375, 180, 375, 450, 300, 350, 250

Calculate D_9 and P_{80} .

- e) Calculate Karl-Pearson's coefficient of skewness for the following set of observation
 15, 16, 21, 15, 20, 16, 19, 16, 13, 14, 16

- f) Write a short note on Kurtosis with all its types.

Q.3) Attempt the following (Any Three)

(15M)

- a) Give Merits and Demerits of i) Range ii) Quartile Deviation

- b) If $n_1=50$, $\bar{x}_1=54.4$, $\sigma_1=8$

$n_2=100$, $\bar{x}_2=50.3$, $\sigma_2=7$

Find combined mean and combined standard deviation.

- c) The sum of largest and smallest items is 80 and coefficient of range is 0.25. find lowest and smallest value of the data.

- d) Find Quartile Deviation for the following data

Marks	0-10	10-20	20-30	30-40	40-50
No.of students	12	18	26	15	09

- e) The following data given the distribution of weights of boys and girls in the class find combined mean and decide which group is more consistent

	Boys	Girls
Number	55	65
Mean	58	44
S.D	3	2

- f) Calculate the S.D. of the data giving the no. of defects in 50 units

NO. of defects(x)	5	6	7	8	9	10
No. of units(f)	8	10	15	10	5	2

Q.4) Attempt the following (Any Three)

(15M)

- a) Find the Karl-Pearson's coefficient of correlation for the following data
 $n=10$, $\sum x=25$, $\sum y=47$, $\sum xy=93$, $\sum x^2=85$, $\sum y^2=251$.
- b) Find the spearman's coefficient of correlation for the following data

R1	6	4	1	3	4	2
R2	4	1	6	5	1	3

- c) Calculate the production moment coefficient of correlation for the following data

x	1	2	3	5	4	3
Y	2	4	5	5	3	1

- d) For the following bivariate data Find i) Regression coefficients
 ii) Regression equation

X	2	1	3
y	5	7	3

- e) Given the following information about the production and demand of a commodity, obtain two regression lines if the correlation coefficient between the lines is 0.65

	Production	Demand
	x	Y
Means	85	90
S.D	5	6

Also Estimate the production when the demand is 100

- f) The equation of the line of regression are $10x+3y+15=0$ and $6x+5y-8=0$ then identify the regression lines.

Q.5) Attempt the following (Any Three)**(15M)**

- a) Define time series. Explain all its component.
 b) Find the seasonal variation by ratio to trend method for the following table.

Year	Production			
	Q1	Q2	Q3	Q4
1985	45	48	60	55
1986	55	50	45	62
1987	47	53	58	42
1988	55	60	55	50
1989	52	58	61	61

- c) Estimate the trend values using the data given below by taking 5 yearly moving average.

Years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Values	37	33	39	32	35	38	37	40	41	42

- d) Calculate trend values by the method of least square method for the following data. Also estimate trend values for 2010.

Years	2000	2001	2002	2003	2004	2005	2006	2007
Values	265	270	280	290	300	320	310	315

- e) Construct the seasonal indices for each quarter for the following data.

Years	I	II	III	IV
2001	90	75	87	70
2002	75	80	78	75
2003	80	75	75	72
2004	85	82	80	81

- f) Determine the trend values by semi average method from the data given below. Also estimate the trend values for 1991.

Years	1981	1982	1983	1984	1985	1986	1987	1988	1989
Values	10	14	16	20	22	24	25	30	33
