Goa Vidyaprasarak Mandal's
Gopal Govind Poy Raiturcar College of Commerce and Economics
Ponda - Goa
B.Com. (SEMESTER - III) Supplementary Examination, May/ June 2018

STATISTICAL TECHNIQUES

Duration: 2 hours   **Marks:80**

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Instructions :   i) Attempt All Questions.
              ii) Figure to the right indicate full marks.
              iii) Graph papers and log tables will be supplied on request.
              iv) Use of non- programmable calculator is allowed.

Q 1. A. Define Statistics. Give two drawbacks of Statistics.   (3)

B. The marks obtained by 40 students in an examination are given below

16	17	18	3	7	23	18	13	10	21
7	1	13	21	13	15	19	24	16	2
23	5	12	18	8	12	6	8	16	5
3	5	0	7	9	12	20	10	2	23

Prepare a frequency distribution table with intervals of 5.
Also find the percentage and relative frequencies   (6)

C. The mean of 200 observations was found to be 50. Later it was discovered that two
observations were misread as 92 and 8 instead of 192 and 88. Find the correct mean.   (7)

OR

Q 1. X Distinguish between Parameter and Statistic with an example.   (3)

Y. The following are the profits earned by 150 companies during 2010 – 2011

Profit (₹ lakh)	Number of companies
100-200	10
200-300	18
300-400	20
400-500	26
500-600	30
600-700	28
700-800	18

Calculate the mean profit (use short cut method).   (6)

Z. The following is the distribution of the ages of 45 workers in a factory.

Age(in years)	20 – 30	30 – 40	40 – 50	50 – 60
Number of employees	5	9	13	18

Find the cumulative frequency of less than and greater than type and hence answer the following questions:
  i) How many employees are less than 50 years?
  ii) How many employees are more than 30 years ?
  iii) How many employees are in the age group of 30 – 60? (7)

Q 2. A. Explain 'Questionnaire Method' of data collection. (3)

B. Calculate D_4 and P_{52} for the following frequency distribution

Class interval	5 – 10	10 – 15	15 – 20	20 – 25
Frequency	16	14	13	17

(6)

C. The following data gives the consumption of electricity. Represent it by a histogram and a frequency polygon.

Number of units	0 – 200	200 – 400	400 – 600	600 – 800	800 – 1000	1000 – 1200
Number of consumers	9	18	30	45	23	15

(7)

OR

Q 2. X. Distinguish between Discrete variable and Continuous variable with suitable examples (3)

Y. For the following data, calculate the mean deviation from a = 45.

Class interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
Frequency	8	12	20	40	10	8	2

(6)

Z. The favourite flavours of ice-cream for the children in a locality are given below. Draw the pie chart to represent the given information

Flavours	Vanilla	Strawberry	Chocolate	Pista	Mango
Number of students	25	15	10	30	20

(7)

Q 3. A. Give two differences between diagrams and graphs. (3)

B. Calculate standard deviation and variance from the following data

x	5	6	7	8	10
Frequency	3	7	4	2	4

(6)

C. Calculate i) Interquartile Range ii) Coefficient of Quartile Deviation for the following data

Class interval	15 – 25	25 – 35	35 – 45	45 – 55	55 – 65
Frequency	20	18	32	18	12

(7)

OR

Q 3. X. Write the formulas for Range and Coefficient of Range. (3)

Y. Find the combined standard deviation for the following data

Company	No. of workers	Mean monthly wages	Standard deviation of wages
A	400	450	10
B	600	500	12

(6)

Z. Calculate Karl Pearson's coefficient of skewness for the following data

x	$10-20$	$20-30$	$30-40$	$40-50$	$50-60$
f	10	12	15	17	14

(7)

Q 4. A. Explain the meaning of seasonal variation with an example. (3)

B. Draw a trend line to the following data by method of semi averages.

Year	2008	2009	2010	2011	2012	2013
Sales (₹ in '000)	16	18	25	28	35	30

(6)

C. Calculate real income for the following data

Year	1971	1972	1973	1974	1975
Income	700	840	980	1050	1180
Index No.	140	175	200	210	250

(7)

OR

Q 4. X. Calculate Bowley's coefficient of skewness when $Q_1 = 5$, $Q_3 = 13$, mean = 6 and mode = 12. (3)

Y. Find the five yearly moving averages for following data

Year	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Production	100	80	104	110	120	112	116	94	96	98

(6)

Z. Calculate Laspeyre's quantity index number and Paasche's price index number from the following data

Commodity	Base Year Price	Base Year Quantity	Current Year Price	Current Year Quantity
P	5	6	8	7
Q	2	7	4	8
R	7	10	7	10
S	12	2	15	3

(7)

Q 5. A. Explain mesokurtic, platykurtic and leptokurtic curves (3)

B. Splice the following Index Number Series

Year	2010	2011	2012	2013	2014
Series X	120	150	155	--	--
Series Y	--	--	130	160	180

(6)

C. Fit a straight line trend by method of least squares and estimate sales for years 1975 and 1976.

Year	1970	1971	1972	1973	1974
Sales in (₹ in '000)	6	8	5	9	2

(7)

OR

Q 5. X. Distinguish between Fixed Base Index Number and Chain Base Index Number. (3)

Y. Calculate Bowley's coefficient of skewness for the following data

Class Interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	8	16	14	12	10

(6)

Z. Construct the cost of living index number by family budget method

Commodity	Weight	Price in base year	Price in current year
A	2	12	34
B	5	16	25
C	3	25	35
D	5	20	29

(7)

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