



॥ विद्या सर्वस्य भूषणम् ॥

PRABODHAN EDUCATION SOCIETY'S

Vidya Prabodhini College of Commerce, Education, Computer & Management
Vidyanagar, Alto-Parvari, Goa

SEMESTER END EXAMINATION - OCTOBER/NOVEMBER 2017 (Regular/Repeat)

Sub: STATISTICAL TECHNIQUES - I

Semester: III

M. Marks: 80

M. Time: 2 hrs.

INSTRUCTIONS: 1. All questions are compulsory however internal choice is available.

2. Use of calculator is allowed.

3. Figures to the right indicate marks allotted.

4. There are 5 main questions each carrying 16 marks.

5. You may answer randomly but every main question attempted should be answered serially.

Q. 1 a) Explain the functions of statistics. (3)

b) For the following data, find the cumulative frequency of less than type and answer the following questions. (6)

Monthly salary (in '000 Rs)	No. of employees
5 - 10	12
10 - 15	16
15 - 20	27
20 - 25	15
25 - 30	10

i) How many employees earn less than Rs. 25000?

ii) How many employees earn more than or equal to Rs. 20000?

iii) How many employees earn between Rs. 15000 and Rs. 25000?

c) Draw the frequency curve for the following data. (7)

Class interval	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	7	13	15	22	18	12

OR

Q. I. x) Write a short note on limitations of statistics. (3)

y) Prepare a univariate frequency distribution table for the following data showing heights of 30 students taking class interval as 20 - 25, 25 - 30, 30 - 35, ... etc. (6)

21	33	37	27	32	34	31	26	25	35
39	27	37	30	33	44	31	32	27	40
26	34	28	43	23	25	36	29	41	37

z) Draw a more than ogive curve for the given data. (7)

Weight	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65
No. of students	8	13	14	15	12

Q. 2 a) Distinguish between bar diagram and histogram. (3)

b) The table below gives the frequency distribution of heights (in cms). Find the arithmetic mean value. (6)

Heights	150 - 154	154 - 158	158 - 162	162 - 166	166 - 170	170 - 174	174 - 178
Frequency	5	11	12	14	16	11	8

c) The mean monthly salary paid to 77 employees in a company was ₹ 78. The mean salary of 32 employees was ₹ 75 and that of 25 others was ₹ 82. Find the mean salary of the remaining employees. (7)

OR

Q. II x) Write a short note on types of diagrams. (3)

y) For the following data given below, find its modal value. (6)

Height (in cms)	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of students	4	12	14	11	8

z) The mean and median of 10 items are 5 and 6 respectively. The value of the largest item is 9. It was later found that it is actually 8. Hence find the correct mean and median. (7)

Q. 3 a) What are different types of averages. (3)

b) Calculate the quartile deviation for the following data. (6)

Production	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45
No. of units	12	15	16	14	8

c) Calculate the standard deviation from the following data. (7)

Age (in years)	10 - 12	12 - 14	14 - 16	16 - 18	18 - 20	20 - 22
No. of students	6	8	11	14	10	9

OR

Q. III x) Write the merits of arithmetic mean. (3)

y) Calculate the mean deviation from mode for the following data. (6)

Production	100 - 110	110 - 120	120 - 130	130 - 140	140 - 150
No. of units	10	35	45	28	8

z) Find Karl Pearson's coefficient of Skewness for the following data (7)

Class Interval	100 - 120	120 - 140	140 - 160	160 - 180	180 - 200
Frequency	8	12	18	10	7

Q. 4 a) Write a short note on Skewness. (3)

b) Obtain the chain base index numbers from the data given below. (6)

Year	2010	2011	2012	2013	2014	2015
Price (in '000 Rs.)	22	23	25	28	31	30

c) Calculate Fisher's index number for the following data. (7)

Commodity	Base Year		Current Year	
	Quantity	Price	Quantity	Price
Wheat	15	14	12	24
Rice	5	20	4	27
Gram	10	4	8	7

OR

Q. IV x) State the measures of variation. (3)

y) Reconstruct the index numbers by shifting the base year to 2010 (6)

Year	2010	2011	2012	2013	2014	2015	2016	2017
Index Number	110	105	108	116	120	110	118	120

z) Calculate Lespeyre's and Paasche's price index number from the following data. (7)

commodity	Base		Current	
	Price	Quantity	Price	Quantity
P	4	5	6	3
Q	8	8	10	2
R	8	5	7	4
S	6	3	9	5

Q. 5 a) Explain a seasonal component of time series. (3)

b) Compute trend line by using least square method for the following data. (6)

Year	2001	2002	2003	2004	2005
Production (in lakhs Rs.)	10	15	18	25	30

c) Obtain the trend values for the following data by taking the moving average of length four. (7)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
sales	53	79	76	66	94	69	87	79	97

OR

Q. V x) Write different components of time series. (3)

y) Compute three yearly moving averages trend from the following data. (6)

year	2001	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11
Production (lakhs Rs.)	12	15	13	16	20	18	21	23	22	26	25

z) Draw a trend by the method of semi averages for the following data. And hence estimate the sales for the year 2018. (7)

Year	2011	2012	2013	2014	2015	2016
Sales (in '000 Rs.)	18	23	26	29	27	30