

Goa Vidyaprasarak Mandal's  
**GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS**  
**PONDA - GOA**  
**B.Com. (SEMESTER - III) REPEAT EXAMINATION, NOVEMBER 2018**

**STATISTICAL TECHNIQUES (OLD COURSE)**

Duration: 2 hours

Marks: 80

- INSTRUCTIONS:** i) Attempt all questions  
 ii) Figures to the right indicate full marks.  
 iii) Graph papers and logarithm tables will be supplied on request.  
 iv) Use of non-programmable calculator is allowed.

Q 1 A. Define Attribute and Variate. Give two examples of each. (3)

Q 1 B. The mean of 20 observations is found to be 16.5. It was later discovered that one observation was wrongly taken as 12 instead of 21. Find the correct mean. (6)

Q 1 C. The heights of 30 children are given below

121	133	137	127	132	134	131	126	124	135
139	127	137	130	133	144	131	132	127	140
126	134	128	143	123	125	136	129	141	137

Prepare a frequency distribution taking class intervals as 120 – 125, 125 – 130, ...  
 Also find the percentage and relative frequencies. (7)

**OR**

Q 1 X. Define discrete variable and continuous variable. Give an example of each. (3)

Q 1 Y. Find the missing frequency of the following distribution given that the median is 127.

Class interval	100 – 110	110 – 120	120 – 130	130 – 140	140 – 150
Frequency	5	8	?	10	7

(6)

Q 1 Z. Draw less than and greater than cumulative frequency curves for the following data

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	3	9	15	30	18	5

(7)

Q 2 A. Give two differences between diagrams and graphs. (3)

Q 2 B. The following distribution gives the marks obtained by the group of students. Draw a frequency polygon

Marks	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Number of students	15	12	10	13	8

(6)

Q 2 C. Calculate  $D_6$  and  $P_{20}$  for the following frequency distribution

Class interval	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Frequency	3	7	10	15	11	8	6	2

(7)

OR

Q 2 X. Give three limitations of Statistics. (3)

Q 2 Y. For the following data, calculate the mean deviation from  $a = 150$ .

Class interval	100 - 120	120 - 140	140 - 160	160 - 180	180 - 200
Frequency	10	42	55	38	10

(6)

Q 2 Z. Draw a pie diagram to represent the population of a town

Men	Women	Boys	Girls	Total
2000	1800	2000	4200	10000

(7)

Q 3 A. What is the relation between mean, median and mode? If the mean is 50 units and the median is 51 units, find the mode. (3)

Q 3 B. Calculate standard deviation and variance from the following data

x	5	6	7	8	9	10
f	8	10	15	10	5	2

(6)

Q 3 C. Calculate the 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. For a set of 50 observations, the sum of their squares is 3050, the standard deviation is 5. What is their mean? (3)

Q 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)

Q 3 Z. The following data represents the age distribution of the employees of a company

Age (in years)	20 - 28	28 - 36	36 - 44	44 - 52	52 - 60
Number of employees	18	25	10	5	2

Calculate Karl Pearson's coefficient of skewness. (7)

Q 4 A. Write a short note on components of time series. (3)

Q 4 B. Fit a trend line to the following data by method of semi - averages.

Year	2002	2003	2004	2005	2006	2007	2008	2009
Sales	51	53	56	55	58	62	61	65

(₹ in '000) (6)

Q 4 C. From the following data, compute price index number by weighted average of price relatives using geometric mean

Commodity	Price		Weight
	Base Year	Current Year	
A	18	20	20
B	12	14	40
C	15	16	10

(7)

**OR**

Q 4 X. Explain positive and negative skewness with the help of sketches. (3)

Q 4 Y. Calculate four yearly moving averages for the following data

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Production	98	105	103	100	107	106	103	102	112

(6)

Q 4 Z. Construct a cost of living index number with the help of the data given below

Commodity	Weight	Base Year Price	Current Year Price
A	2	12	34
B	5	16	25
C	3	25	35
D	5	20	29

(7)

Q 5 A. Write a note on Cost of Living Index number. (3)

Q 5 B. Splice the following Index Number Series

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

(6)

Q 5 C. The following data relates to the sales of Spark Ltd

Year	1998	1999	2000	2001	2002	2003	2004
Sales (₹ in lakh)	70	80	90	95	102	110	115

Fit a straight line trend by the method of least squares and estimate the sales in 2007. (7)

**OR**

Q 5 X. Explain Kurtosis with diagrams. (3)

Q 5 Y. Calculate Bowley's coefficient of skewness for the following data

Class interval	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	
Frequency	6	8	17	21	15	11	2	(6)

Q 5 Z. Calculate Laspeyre's price index number and Paasche's quantity index number from the following data

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	2	7	4	8
B	5	4	6	10
C	4	10	5	14
D	2	13	2	19

(7)

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