

**Semester End Examination, Oct-Nov. 2019**

Programme: B.COM

Subject: STATISTICS

Course Code: GE 3

Course Title: BUSSINESS STATISTICS – I

Category: GENERIC ELECTIVE

Semester: III

Paper No: 01

Time: 2 Hrs

Max. Marks: 80

*Instructions:*

1. The question paper contains 5 main questions spread across 4 pages.
2. All the questions are compulsory however internal choice is available.
3. Use of calculator is allowed.
4. Figures to the right indicate marks allotted.
5. You may answer randomly but every main question attempted should be answered serially.

**Q1. a) What are the functions of statistics? (3)**

b) The following data gives the weight of 39 students in a class. Prepare a frequency distribution table taking class intervals 45 – 50, 50 – 55, 55 – 60, etc. Also find the relative frequency and percentage frequency. (6)

53.6, 62.7, 45.6, 55.9, 48.0, 57.8, 64.8, 69.8, 49.7, 62.8, 52.0, 49.0, 57.6,  
59.5, 68.8, 62.1, 64.5, 59.5, 55.5, 64.1, 68.0, 62.2, 58.5, 47.9, 58.2, 60.0,  
65.0, 50.0, 63.5, 58.3, 57.4, 67.3, 58.0, 54.2, 67.8, 57.4, 66.6, 64.1, 58.4

c) Represent the following data using sub-divided bar diagram. (7)

Items	Family A (income in ₹)	Family B (income in ₹)
Food	1500	1200
Clothing	750	800
Saving	1000	1200
Education	550	500
Miscellaneous	800	600

**OR**

**Q1. x) State the limitations of statistics. (3)**

y) For the data of 18 students given below prepare a bivariate frequency distribution. Obtain the conditional frequency of marks in Buss. Law when the marks in Buss. Stats. are less than 20. (Take the class interval as 10-15, 15-20, .... for both the variables,

where  $x$  represents marks in Buss. Law and  $y$  represents marks in Buss. Stats.) (6)

(17, 20)	(16, 13)	(18, 14)	(26, 25)	(22, 18)	(27, 29)
(21, 27)	(18, 15)	(17, 19)	(19, 14)	(22, 25)	(25, 21)
(27, 19)	(15, 18)	(14, 18)	(17, 12)	(17, 20)	(21, 22)

z) Draw a frequency curve for the data given below. (7)

Class Interval	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	5	8	4	9	11	15

Q2. a) State different methods of collecting the data. And hence explain any one. (3)

b) Find the Arithmetic mean for the following data. (6)

Age (in years)	20-25	25-30	30-35	35-40	40-45	45-50	50-55
No. of persons	5	7	10	15	18	12	7

c) Find the mode of the following data representing the cumulative frequencies of people wearing glasses. (7)

Age(in years)	Below 20	Below 30	Below 40	Below 50	Below 60
No. of persons wearing glasses	5	12	32	42	50

OR

QII. x) List out different types of bar diagrams. (3)

y) Calculate median from the following series. (6)

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	4	12	20	21	15	18	6

z) Find 27<sup>th</sup> percentile for the following data. (7)

Wages (in ₹)	200-250	250-300	300-350	350-400	400-450	450-500
No. of workers	10	15	22	24	17	13

Q3. a) Write the merits of Median. (3)

b) Find the modal value for the following data. (6)

Class Interval	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	4	6	8	12	5	8

c) Find the standard deviation for the following data. (7)

Height (in cms)	150-155	155-160	160-165	165-170	170-175
No. of Students	6	9	11	14	6

OR

QIII. x) Out of 54 dolphins in the Arabians Sea, 25 of them have average jumping height of 160 cms, whereas average jumping height of all of them is 174 cms. Find the average jumping height of remaining no. of dolphins. (3)

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

Monthly salary (in '000 ₹)	20	25	27	32	38
No. of persons	12	16	22	11	8

z) Calculate Karl Pearson's measure of skewness for the below data. (7)

Class Interval	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140
Frequency	6	11	32	17	8	10

Q4. a) Find the harmonic mean of 20, 25, 28, 24. (3)

b) Construct the chain base index number for the following data. (6)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sales	32	36	33	39	45	40	42	47	52

c) Calculate Paasche's price base index number for the following data. (7)

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	120	20	145	25
B	30	5	45	6
C	45	9	50	12
D	100	25	90	24

OR

QIV. x) The mean of a certain distribution is 50, its standard deviation is 15 and coefficient of skewness is 0.231. Find the median. (3)

y) Construct cost of living index number for the data given below. (6)

Commodity	A	B	C	D	E
Weight	15	18	20	22	25
Index Number	140	270	320	160	210

z) Construct  $F_p$  for the data given below. (7)

Commodity	Price		Quantity	
	Base Year	Current Year	Base Year	Current Year
A	70	90	1	10
B	30	45	5	12
C	20	25	3	15
D	50	60	2	9

Q5. a) State different components of time series. (3)

b) Draw a free hand curve showing the trend for the following data. (6)

Year	2010	2011	2012	2013	2014	2015	2016
Production (in lakhs)	30	28	35	38	44	46	52

c) The fund manager of a mutual fund found the following yield (%) for 8 years, i.e. from 2011 to 2018. Fit a straight line by the method of least squares to this data and hence estimate the yield (%) for the year 2019. (7)

Year	2011	2012	2013	2014	2015	2016	2017	2018
Yield (%)	6.7	6.9	7.2	7.0	7.8	8.5	8.2	9.4

OR

QV. x) Explain the component "Irregular Variation" of time series. (3)

y) Apply the method of semi-averages for determining the trend of the following data and hence estimate the value for 2017. (6)

Year	2011	2012	2013	2014	2015	2016
Sales (thousands units)	34	38	36	42	45	44

z) Compute the trend values by using a 3-yearly moving average method. (7)

Year	2010	2011	2012	2013	2014	2015	2016
Index Number	100	80	104	110	120	112	116