VPCCECM

SYBCOM Semester End Assessment (~~Regular~~/Repeat)

June 2023

Course Title: BUSINESS STATISTICS - I

Course Code: UCAG101 **Category: GE** **Semester: I**

Duration: 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. State different types of graphs. **(3)**

b. Draw a percentage bar diagram to represent the following data: **(6)**

Commodity	Expenditure	
	Family A	Family B
A	400	480
B	150	400
C	180	200
D	60	120
E	210	400

c. Prepare a cumulative frequency table for the following data, and answer the questions given below: **(7)**

Monthly Salary (in lakhs Rs.)	Number of employees
5 – 10	12
10 – 15	16
15 – 20	27
20 – 25	15
25 – 30	10

I. How many employees have earned less than 20 lakhs?

II. How many employees have earned greater than or equal to 15 lakhs?

III. Find the percentage of employees whose salary belongs to group 15 – 25 lakhs.

IV. How many employees have earned between 10 lakhs and 25 lakhs?

OR

QI) p. State different types of bar diagrams. **(3)**

q. From the following data construct a frequency polygon: **(6)**

Wages (in Rs.)	100-120	120-140	140-160	160-180	180-200
No. of workers	14	15	18	6	17

r. Following are the marks scored by 26 students in Cost Accounting (x) and Economics (y). Taking class intervals as 10-15, 15-20, and so on for both x and y, construct a bivariate frequency distribution table. Also find the conditional frequency distribution for x when $y < 20$. (7)

(15, 13) (10, 11) (21, 12) (23, 17) (26, 18) (22, 19) (18, 12) (15, 19) (14, 27) (17, 26) (16, 16) (20, 20) (19, 18) (14, 11) (19, 13) (15, 18) (13, 15) (10, 10) (11, 13) (14, 11) (11, 17) (22, 28) (28, 24) (19, 25) (17, 23) (26, 28)

Q2) a. State any three merits of arithmetic mean. (3)

b. Calculate modal value for the data that shows the daily wages of a random sample of construction workers: (6)

Class interval	400 – 450	450 – 500	500 – 550	550 – 600	600 – 650
Frequency	5	15	25	18	7

c. Find the arithmetic mean for the data given below: (7)

Variable (x)	21	22	23	24	25	26	27
Frequency	11	22	44	77	55	33	11

OR

QII) p. Calculate Geometric mean and harmonic mean for the data: 1, 2, 4. (3)

q. Calculate D_7 for the data given below: (6)

Class interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	6	14	16	27	12

r. Find the missing frequency from the following data if median is 126. (7)

Class interval	100 – 110	110 – 120	120 – 130	130 – 140	140 – 150
Frequency	5	F	20	10	7

Q3) a. The mean weight of 10 students in a class is 45 kg. If one student weighing 50 kg is added, find the new mean weight of all the students. (3)

b. Find mean deviation from median and its coefficient for the following data: (6)

Frequency	10	20	30	40	50
No. of students	8	12	20	10	7

c. Calculate quartile deviation for wages: (7)

Wages (in '000 ₹)	30 – 32	32 – 34	34 – 36	36 – 38	38 – 40
No. of Labourers	12	18	16	14	12

OR

QIII) p. IF $Q_1 = 25$, $Q_2 = 34$, $Q_3 = 46$, find quartile deviation and coefficient of quartile deviation. (3)

q. Find Bowley's coefficient of skewness for the data: **(6)**

Age	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
No. of people	16	30	45	62	32

r. Calculate Karl Pearson's measure of skewness for the following data: **(7)**

Class interval	20 – 28	28 – 36	36 – 44	44 – 52	52 – 60
Frequency	18	25	10	5	2

Q4) a. State limitations of index number. **(3)**

b. From the following data, calculate weighted aggregative price index number: **(6)**

Commodity	Price		Weight
	Base Year	Current Year	
A	10	25	5
B	12	32	7
C	14	39	6
D	18	55	10

c. For the data given below, calculate L_p, P_p and F_p: **(7)**

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	10	2	120
C	4	60	6	60
D	10	30	12	24

OR

QIV) p. State uses of index number. **(3)**

q. Construct the cost of living index number for the data given below: **(6)**

Commodity	Price		Weight
	Base Year	Current Year	
A	25	35	25
B	13	21	15
C	50	70	10

r. Calculate cost of living index number using aggregative expenditure method: **(7)**

Commodity	Base Year		Current Year	
		Quantity	Price	Quantity
A	5	50	4	48
B	8	48	7	49
C	6	18	5	20

Q5) a. Discuss the techniques of constructing a pie diagram. **(3)**

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

Year	2015	2016	2017	2018	2019	2020	2021
Production (in lakhs)	77	88	94	85	91	98	90

c. Fit a trend line to the following data by the method of least squares and hence estimate the sales in 2022: **(7)**

Year	2015	2016	2017	2018	2019	2020
Sales (in '000 Rs.)	18	21	23	27	16	25

OR

QV) p. Explain marginal frequency distribution and conditional frequency distribution for a bivariate data. **(3)**

q. Apply the method of semi-averages for determining the trend of the following data and hence estimate the value for 2023. **(6)**

Year	2016	2017	2018	2019	2020	2021
Sales (thousands units)	34	38	36	42	45	44

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

Year	2014	2015	2016	2017	2018	2019	2020
Index Number	100	80	104	110	120	112	116

**********All The Best**********