

**CARMEL COLLEGE OF ARTS, SCIENCE AND COMMERCE FOR WOMEN,
NUVEM-GOA
SEMESTER END EXAMINATION, JANUARY, 2022**

Semester: III OF B.COM Course name & code: BUSINESS STATISTICS-I CAG101
Total marks: 80 Date: Duration: 2 hours Total No of pages: 4

Instructions: 1. All questions are compulsory.

2. Figures to the right indicate maximum marks to the questions.

3. Use of non-programmable calculators is allowed.

Q.1. Answer any FOUR of the following: (4×4 = 16 marks)

- Define the term "Statistics" and write the importance of Statistics in Business.
- What are the essentials of a good questionnaire?
- Find out Harmonic Mean from the following.

Variable	31	32	34	39	40
frequency	2	4	9	6	4

- The following data gives the weight of 33 students in class. Prepare a frequency distribution by taking exclusive class intervals of size 5.

52 54.3 50.2 65.4 69.8 65.4 55 56.8 57.6 63.8 65 52.3
45.6 56.5 65.4 60 65 64.5 48.5 56.8 48 56 64.3 52.4
57.8 56 46 63 64.5 68 47.5 53.8 55.6

- Represent the following data by a multiple bar diagram.

Year	1989	1990	1991	1992	1993	1994
Sale Price('00₹)	22.0	27.3	28.2	30.3	32.7	33.3
Cost Price ('00₹)	19.5	21.7	30.0	25.6	26.1	34.2

- Find the mode for the following distribution.

Height(cms)	140-150	150-160	160-170	170-180	180-190	Total
Frequency	5	16	56	19	4	100

Q.2. Answer any FOUR of the following: (6×2 = 12 marks)

- What do you mean by short-term fluctuations in time series analysis? Discuss the various types of short term fluctuations.
- Determine trend from the following data by calculating 3 yearly moving averages.

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988
Profit ('000 Rs.)	41	61	55	48	53	67	62	60	67

- Fit a trend line from the following data by using Semi-averages method

Year	1971	1972	1973	1974	1975	1976	1978	1979
Sales	101	122	130	153	140	165	200	210

- d) From the following data on the prices of sugar per 100 kg. construct chain base Index Numbers

Year	1980	1981	1982	1983	1984	1985	1986
Price of Sugar	510	525	536	550	590	610	650

- e) The following table gives the average monthly wages of workers along with the respective consumer price index numbers for ten year. Compute his real average monthly wages in various years.

Years	1980	1981	1982	1983	1984	1985	1986
Average monthly wages (₹)	5000	5250	5600	6000	6300	6350	7000
Consumer Price Index	100	110	120	125	135	160	185

- f) Construct the weighted cost of living index numbers from the following indices with given weights.

Group	Food	Fuel and Lighting	Clothing	Rent	miscellaneous
Weights	47	7	8	13	14
Indices	247	293	289	100	236

Q.3. Answer any ONE the following:

(6 × 2 = 12 marks)

- A. i. Draw ogive curve for the data given below.

Wages ('000)₹	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	2	22	10	14	3	4	6	2

- ii. Find the Mode for the following data.

Wages(₹)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of workers	20	45	85	160	70	55	35	30

OR

- B. i. Given below is the distribution of height (in cms) of girls in a class. Calculate the median height.

Height (in cms)	150-155	155-160	160-165	165-170
No. of students	13	14	15	18

- ii. Draw a histogram from the following distribution.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	3	8	12	18	10	4

Q.4. Answer any ONE of the following:

(6 × 2 = 12 marks)

- A. i. Compute the coefficient of Quartile deviation from the following data:

Size	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
Frequency	6	10	18	30	15	12	10	6	2

- ii. From the following data find the Karl Pearson's coefficient of skewness.

Measurement	10	11	12	13	14	15
frequency	2	4	10	8	5	1

OR

- B. i. Given below is the frequency distribution of the marks obtained by 90 students. Compute Standard deviation.

Marks	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No. of Students	5	12	15	20	18	10	6	4

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

Price (₹)	180-190	190-200	200-210	210-220	220-230
No. of persons buying the product	11	29	18	27	15

Q.5. Answer any ONE of the following:

(6 × 2 = 12 marks)

- A. i. Compute the mean deviation from the median for the following distribution of the scores of 50 college students.

Final Score	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	4	6	12	16	9	3

- ii. The number of employees, wages per employee and the variance of the wage per employee for the two factories are given below:

In which factory is there greater variation in the distribution of wages per employee?

	Factory A	Factory B
No. of employees	50	100
Average wages per employee	120	85
Variance of wages per employee	9	16

OR

- B. i. Following is the distribution of marks in law obtained by 50 students:

Marks (more than)	0	10	20	30	40	50
No. of students	50	46	40	20	10	3

Calculate the three quartiles Q_1 , Q_2 and Q_3 .

- ii. The mean and the standard deviation of a sample size 10 were found to be 9.5 and 2.5 respectively. Later on, an additional observation became available. this was 15 and was included in the original sample. Find the mean and the standard deviation of the 11 samples.

Q.6. Answer any ONE of the following:

(6 × 2 = 12 marks)

- A. i. Obtain an equation of trend by method of least squares for the following data and hence estimate production in 1989.

Year	1982	1983	1984	1985	1986	1987	1988	1989
Production	21	24	32	40	38	49	57	60

- ii. Construct an index number for 1985 taking 1980 a base for the following data, by using weighted aggregative method.

Commodities	Prices in 1980	Prices in 1985	Weights
A	100	80	30
B	20	20	20
C	60	50	24
D	120	100	30
E	80	120	10

OR

- B. i. Compute Laspeyre's index numbers from the following data taking 1955 as the base year.

Commodity	1955		1975	
	Quantity	Price	Quantity	Price
A	2	8	3	9
B	4	5	2	8
C	5	9	7	5

- ii. Below are given the profits of a firm (in Rs'000) for the years 1980 to 1986:

Year	1980	1981	1982	1983	1984	1985	1986
Profits	23	25	26	24	25	29	30

Fit a Straight line trend by method of least squares and compute the trend values for 1988 and 1989.