

# TRIBHUVAN UNIVERSITY

2080 (Partial)

B.B.S. 4 Yrs. Programme / I Year / MGMT

Full Marks: 100

MGT 202 : (Business Statistics)

Time: 3 hrs.

(New Course)

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

## Group "A"

Brief Answer Questions  
Attempt ALL questions.

[10×2=20]

- Calculate the coefficient of kurtosis, when quartile deviation = 25, 10<sup>th</sup> percentile = 15 and 90<sup>th</sup> percentile = 95.
  - If mean and median of a moderately asymmetric distribution are 16 and 20 respectively. Compute the value of mode.
  - If the values of lower and upper quartiles are 40 and 90 respectively. The median value is 60, then calculate the quartile coefficient of skewness.
  - Calculate combined mean from the following information:
- |                       | Group A | Group B |
|-----------------------|---------|---------|
| Mean                  | 125     | 140     |
| Number of observation | 200     | 150     |
- Find the coefficient of correlation between two variates X and Y. Given that their covariance is 20. The variance of X and Y are 16 and 36 respectively.
  - Find  $P(A \cup B)$ , if  $P(A) = 0.7$  and  $P(B) = 0.6$  and  $P(A \cap B) = 0.5$ , where A and B are not mutually exclusive events.

(1)

- The following data shows the profit (million Rs) of a company from the year 2018 to 2024 :

Year	Profit (million Rs)
2018	19
2019	22
2020	21
2021	25
2022	28
2023	30
2024	32

Fit a straight line trend to these data. Calculate the trend values and short term fluctuations.

- The following table gives the price and quantity of the years 2023 and 2024.

Commodity	2023		2024	
	Price	Quantity	Price	Quantity
A	1500	20	2600	23
B	1700	35	3500	28
C	1600	55	2900	60
D	1400	50	1900	55

Calculate price index number according to

- Laspeyre's formula
- Paasche's formula
- Fisher's formula

- (a) Solve the following Linear Programming problem graphically:

Maximize  $Z = 5x + 2y$

Subject to constraints:  $2x + y \leq 10$

$3x + 2y \leq 12$

and  $x \geq 0, y \geq 0$

- Find the simple aggregative price index number for the year 2024 from the following information:

Commodities	A	B	C	D	E
Price in 2023	555	565	673	485	397
Price in 2024	558	567	675	488	400

- Find the value of following determinant:

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 8 \\ 3 & 1 & 4 \end{vmatrix}$$

- Find  $5(A-B)$  where  $A = \begin{bmatrix} 9 & 3 \\ 2 & 8 \\ 3 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} 4 & 5 \\ 2 & 3 \\ 3 & 2 \end{bmatrix}$

- Define geographical classification with a suitable example.

## Group "B"

Descriptive Answer Questions

[5×10=50]

Attempt any FIVE questions.

- The following table shows the marks of students of terminal examination of a campus. Find the lowest marks of highest 20% of students.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Students	10	13	30	35	40	25	15	10	3

- Find missing frequencies when mean value is Rs 45 and total number of workers is 30.

Wage(Rs)	20-30	30-40	40-50	50-60	60-70
Workers	3	-	10	7	-

- Solve the following system of linear equations by using determinant or matrix method:

$$2x - y + z = -2$$

$$x + y - 2z = -9$$

$$x + 2y + z = 9$$

(2)

- From the given Pay-off table, give the decision according to (i) Maximax approach (ii) Maximin approach (iii) Minimax regret approach.

State of nature	Strategies		
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
N <sub>1</sub>	70	50	120
N <sub>2</sub>	90	100	60
N <sub>3</sub>	40	60	50

## Group "C"

Analytical Answer Questions  
Attempt any TWO questions.

[2×15=30]

- The following data shows the monthly wage distribution of workers of a locality:

Wage (in 000 Rs.)	Number of workers
10-15	5
15-20	15
20-25	25
25-30	35
30-35	27
35-40	15
40-45	8
45-50	5



Calculate (a) coefficient skewness (b) coefficient of kurtosis.  
Also, comment on the nature of distribution.

18. The following table provides the height (in cms) and weight (in kgs) of 10 persons:

Height (cms)	Weight (kgs)
172	63
165	59
170	66
168	60
175	75
168	68
174	69
166	60
159	54
163	56

Security A	Security B
58	84
59	56
60	92
54	65
65	86
66	78
52	44
75	54
69	78

- (a) Which of the securities has more uniformity of prices? Give a reason for your answer.  
(b) Calculate combined standard deviation.

□

(6)

- (a) Develop the regression line of weight on height.  
(b) Estimate the weight of a person whose height is 167 cms.  
(c) Develop the regression line of height on weight.  
(d) Calculate the correlation coefficient between height and weight and interpret the result.

19. The following table gives the prices (00 Rs) of two securities at yearly intervals:

(5)