

(8 pages)

Reg. No. :

Code No. : 12042 E Sub. Code : CMCO 41

B.Com. (CBCS) DEGREE EXAMINATION,
APRIL 2025.

Fourth Semester

Commerce — Core

QUANTITATIVE TECHNIQUES

(For those who joined in July 2021 & 2022 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Analytic geometry is used in the estimation of
 - (a) demand and supply
 - (b) cost-output
 - (c) break-even analysis
 - (d) all of the above

2. If the order of the matrix is $m \times n$, then how many elements will there be in the matrix
 - (a) mn
 - (b) $m^2 n^2$
 - (c) mn^2
 - (d) $2mn$
3. Consider the two matrices P and Q which are 10×20 and 20×30 matrices respectively. What is the number of multiplications required to multiply the two matrices?
 - (a) 10×20
 - (b) 20×30
 - (c) 10×30
 - (d) $10 \times 20 \times 30$
4. Magnitude of scores is included in which of the central tendency measures?
 - (a) Median
 - (b) Mode
 - (c) Mean
 - (d) None of these
5. A study in Statistics that helps to interpret the variability of data is known as _____.
 - (a) Standard Deviation
 - (b) The measurer of Central tendency
 - (c) The measurer of dispersion
 - (d) None of the above

6. Which of the following diagrams is used to find the value of mode graphically?
- (a) Pie chart (b) Bar graph
(c) Histogram (d) None of the above
7. Choose the correct example for positive correlation.
- (a) Weight and income
(b) Price and demand
(c) The repayment period and EMI
(d) Income and expenditure
8. In a regression analysis, what will be the unit of the dependent variable if the independent variable is measured in kilogrammes?
- (a) It must be in some unit of weight
(b) It must be in kilogrammes
(c) It can be any unit
(d) It can't be in kilogrammes
9. Depression in a business is?
- (a) Irregular (b) Seasonal
(c) Cyclical (d) None of the above

10. Level is the mean value around which the series varies.
- (a) True (b) False
(c) Both (a) and (b) (d) Can not say

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Calculate the midpoint between the pairs
- (i) (4, 3) and (-4, 2)
(ii) (2, -3) and (4, -1)
(iii) (4, -3) and (-3, -5)
(iv) (6, 4) and (-8, -4)
(v) (-3, 3) and (4, -6)
- Or
- (b) Find the coordinates of the centroid of the triangle whose vertices are
- (i) (4, -10), (-6, -4) and (8, -2)
(ii) (3, 4), (-1, -3) and (-2, 1)
(iii) (4, 8), (-2, 6) and (-4, -2)
(iv) (6, -2), (-4, 8) and (2, 3)
(v) (-4, -6), (-6, -4) and (-1, 22)

12. (a) Write a short note on Matrix.

Or

- (b) Find

(i) $A + B$

(ii) $A - B$

If $A = \begin{vmatrix} 1 & -3 \\ -3 & 2 \\ 8 & 4 \end{vmatrix}$ and $B = \begin{vmatrix} 2 & 4 \\ -2 & 0 \\ 3 & 1 \end{vmatrix}$.

13. (a) What are the characteristic of average?

Or

- (b) Calculate the median for the following variables 6, 10, 18, 12, 24, 36, 32, 38, 40, 44.

14. (a) Write a short note on Scatter diagram.

Or

- (b) The following are the ranks obtained by 10 players in chess and snooker Find the correlation between the two

Chess: 3 2 1 4 5 6 7 9 10 8

Snooker: 10 2 5 4 3 6 8 7 1 9

15. (a) What are the important types of index numbers? Explain them briefly.

Or

- (b) From the data given below, Construct the index number (by aggregative) on the basis of the price of 2020.

Items	A	B	C	D	E	F
Price (2020)	200	10	8	180	120	80
Price (2024)	250	20	16	220	160	100

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Prove that the points $(-8, -2)$, $(-4, -8)$, $(8, 0)$ and $(4, 6)$ are the vertices of a rectangle.

Or

- (b) The cost of producing 100 chairs is 5000 and the cost of producing 200 chairs is 7500. Find the linear relation between the cost y of producing x chairs. Deduce the cost of producing 250 chairs.

17. (a) Illustrate the types of Matrices with Examples in detail.

Or

- (b) Find the inverse of the matrix $A = \begin{vmatrix} 4 & 6 & 8 \\ 8 & 6 & 2 \\ 2 & 4 & 8 \end{vmatrix}$.

18. (a) Explain different methods of measures of dispersion in detail.

Or

- (b) Find mean, median and mode for the following data

Weekly earnings: 50-53 53-56 56-59 59-62 62-65

No of persons: 3 8 14 30 36

Weekly earnings: 65-68 68-71 71-74 74-75

No of persons: 28 16 10 5

19. (a) What is correlation? Describe the various types of correlation in detail with examples.

Or

- (b) From the following data find out two regression equations.

X: 2 3 4 5 6

Y: 4 5 6 8 9

20. (a) Explain in detail

- (i) The importance of Time series
(ii) Component of the Time series.

Or

- (b) The following data relate to the price and quantities of 4 commodities in the years 2015-2016 and 2023-2024. Construct index number of price for the year 2023-2024 by using 2015-2016 as the base year by the following methods

- (i) Laspeyre's method
(ii) Paasche's method
(iii) Fisher's ideal method

Commodity	2015-2016		2023-2024	
	Price (Rs.)	Quantity	Price (Rs.)	Quantity
A	5	100	6	150
B	4	80	5	100
C	2.5	60	5	72
D	12	30	9	33