

QP CODE

Enrollment Number:

T6042

Name:

B.COM DEGREE EXAMINATIONS, MAY 2024

First Semester

B.Com

B21CM02DC – Business Mathematics and Statistics

(2023 July Admissions)

Time: 3 Hours

Max Marks: 70

Section A

Answer any ten of the following questions in a word or sentence each. Each question carries 1 mark.

1. Find simple interest on ₹10000 @ 12% for 9 months
2. Which method is used to reduce the book value of an intangible asset over time?
3. If mean of proportion are equal, like 4:5::5:9, then what should such proportion be called?
4. If A is a matrix of order 10, what are the possible orders of A?
5. Write the transpose of a matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 6 & 0 & 1 \\ 7 & 2 & 8 \end{bmatrix}$
6. Find Mode from the series 23,35,28,42,62,53,35,28,42,35,23,42,35
7. Which measure of central tendency is used for calculating the average speed of a vehicle?
8. Give an example for positional average
9. What is Range?
10. What does dispersion measure in a dataset?
11. Who introduced standard deviation?
12. If the coefficient of correlation between price and demand is 0.47, what degree of correlation exist?
13. Which method is used in regression analysis to estimate the model parameter?
14. Which is the most commonly used index number?
15. Give the Laspeyres's formula for price index.

(1X10=10)

Section B

Answer any five of the following questions in two or three sentences each. Each question carries 2 marks.

16. Find the future value of 'n' annuity of ₹ 500 made annually for 7 years at 14% interest compounded annually.
17. In how many years will ₹12000 amounts to ₹15240 at 9% p.a of simple interest.
18. What is a triangular matrix?

19. Given the matrix $A = \begin{bmatrix} 5 & 4 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 4 & -9 \end{bmatrix}$ find $A-B$
20. Calculate Median from the following series
35,23,45,50,80,61,92,40,52,61
21. State any two demerits of geometric mean.
22. What is Variance?
23. From the following series find the inter quartile range
20,28,40,12,30,15,50
24. What is Perfect Correlation?
25. What are the features of Fisher's Ideal Index number

(2X5=10)

Section C

Answer any four of the following questions. Each question carries 5 marks.

26. What amount should be deposited annually so that after 10 years a person receives 10,00,000 if the interest rate is 10%
27. A man wants to invest ₹ 5000 for 4 years. He may invest the amount at 10% per annum compound interest and the interest is occurring at the end of each quarter of the year or he may invest at 10.5% per annum and the interest is occurring at the end of each year. Which investment gives him better return?
28. Reetu and Geetu have invested in the ratio 7: 4. Together they invested a total amount of ₹ 75000, then find each one's individual investment.
29. Calculate mean deviation from mean

x	10	20	30	40	50
f	4	6	10	14	6

30. Calculate the coefficient of correlation between x and y series from the following data.

	X series	Y series
No. of pairs of Observation	15	15
Standard Deviation	3.01	3.03

Covariance between x and y = 8.13

31. Give any five properties of regression coefficient.
32. The ranking of 10 individuals at the start and at the finish of a course of a training are as follows

Individuals	A	B	C	D	E	F	G	H	I	J
Rank before	1	6	3	9	5	2	7	10	8	4
Rank after	6	8	3	2	7	10	5	9	4	1

Calculate Spearman's Rank correlation coefficient

33. From the following data calculate Index number by simple aggregate method.

Commodities	A	B	C	D	E
Price in 2008	5	8	12	25	3
Price in 2010	7	9	15	24	4

(5X4=20)

Section D

Answer any two of the following questions. Each question carries 15 marks.

34. Find the matrix X satisfying the equation $3A + X = 5B$

$$A = \begin{bmatrix} 4 & 0 & 1 \\ 2 & -1 & 0 \\ 0 & 1 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 0 & 2 & -1 \\ 4 & 1 & 8 \\ 2 & 1 & 5 \end{bmatrix}$$

(Hint: $X = 5B - 3A$)

35. Compute median

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	12	20	23	18	7	2

36. Following table shows the turnover of a group of 240 retail shops in a month. Calculate Coefficient of Variation

Turn over (₹'000)	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of shops	10	14	40	60	50	46	20

37. From the following data compute **Quality Index Number** using appropriate formula

Commodities	2001		2008	
	Price	Total value	Price	Total value
A	8	80	10	110
B	10	90	12	108
C	16	256	20	340

Hint: Quantity = $\frac{\text{Total value}}{\text{Price}}$

(15X2=30)