TDC (CBCS) Even Semester Exam., 2019

COMMERCE

(2nd Semester)

Course No. : BCPDSC–202T

(Business Math and Statistics)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *two* of the following questions : 2×2=4

(a) Define matrix.

(b) What do you mean by inverse of a matrix?

(c) Name different types of matrix.

2. *(a)* Given $A \begin{matrix} 1 & 2 & 4 \\ 0 & 2 & 1 \\ 4 & 5 & 3 \end{matrix}$

Compute Adj A. 4

(b) If

$$A \quad \begin{matrix} 1 & 0 & 0 \\ 4 & 2 & 3 \\ 2 & 0 & 1 \end{matrix}$$

Find $A^2 \quad A \quad I$. 6

OR

3. *(a)* Using matrices, solve the following equation : 6

$$\begin{matrix} x & y & z & 6 \\ x & y & z & 2 \\ 2x & y & z & 1 \end{matrix}$$

(b) What is a square matrix? 2

(c) Define diagonal matrix and column matrix. 2

UNIT—II

4. Answer any *two* of the following questions : 2×2=4

(a) State the distinction between $\lim_{x \quad a} f(x)$ and $f(a)$.

(b) Write the necessary and sufficient conditions for a function to be maximum.

(c) If $f(x)$ and $g(x)$ are two functions of x, then find

$$\frac{d}{dx}[f(x) \quad g(x)]$$

5. *(a)* Discuss the continuity of the following function :

$$f(x) \quad x, \qquad x \quad 0$$
$$x, \qquad 0 \quad x \quad 1$$
$$2 \quad x, \qquad x \quad 1$$

at 0 and 1. 4

(b) Show that the function $x \quad \frac{1}{x}$ has a maximum and minimum, but the maximum is less than the minimum. 4

(c) Evaluate : 2

$$\underset{x \quad 2}{\mathrm{Lt}} \frac{x^2 \quad 5x \quad 6}{x^2 \quad x \quad 6}$$

OR

6. *(a)* Evaluate : 2×2=4

(i) $\underset{x}{\mathrm{Lt}} \frac{3x^2 \quad x \quad 2}{x^2 \quad 8x \quad 1}$

(ii) $\underset{x \quad 0}{\mathrm{Lt}} \frac{\sqrt{1 \quad 2x} \quad \sqrt{1 \quad 2x}}{x}$

(b) If $y \quad \frac{x^2 \quad 1}{x^2 \quad 1}$, then find $\frac{dy}{dx}$. 3

(c) Find $\frac{dy}{dx}$, if $3x^4 \quad x^2y \quad 2y^3 \quad 0$. 3

UNIT—III

7. Answer any *two* of the following questions : 2×2=4

(a) Write down the relation among mean, median and mode.

(b) What is measure of variation?

(c) Give any two examples of open-end classes.

8. Calculate mean, median, mode and standard deviation from the following data : 10

Marks :	0–10	10–20	20–30	30–40	40–50
No. of Students :	3	5	10	17	20

Marks :	50–60	60–70	70–80	80–90	90–100
No. of Students :	30	7	5	2	1

OR

9. From the data given in Q. No. **8**, find the quartile deviation. 10

UNIT—IV

10. Answer any *two* of the following questions : 2×2=4

(a) Interpret, $r \quad 0$ and $r \quad 1$.

(b) Write down the regression equation of X on Y and Y on X.

(c) Distinguish between correlation and regression (any *two* differences).

11. Calculate the correlation coefficient between the marks of Maths and marks of Statistics :

Marks of Maths (X) :	25	35	40	55	45	85	95	90	80	75
Marks of Stat (Y) :	35	45	30	45	55	75	85	70	90	85

Also find r^2. 8+2=10

OR

12. *(a)* Write a note on Spearman rank correlation. 5

(b) From the data given in Q. No. **11**, calculate the regression coefficient of Y on X. 5

UNIT—V

13. Answer any *two* of the following questions : 2×2=4

(a) Name two tests for ideal index number.

(b) Give two examples of seasonal variation.

(c) Give two examples of irregular variation.

14. *(a)* Fit a linear trend by the method of least squares : 6

Year :	2000	2001	2002	2003	2004	2005
Production (in ₹ crore) :	7	10	12	14	17	24

(b) Write two drawbacks of the method of moving averages. 4

OR

15. *(a)* Write down the different steps for the construction of index number. 6

(b) Calculate Fisher's ideal index number from the data given below : 4

Commodities	*Base Year*		*Current Year*	
	Price (in ₹)	*Quantity* (in kg)	*Price* (in ₹)	*Quantity* (in kg)
A	10	15	20	14
B	20	20	30	18
C	30	25	25	25
D	40	15	50	12

★★★