

2015

(5th Semester)

COMMERCE

Paper No. : BC-503

(**Business Mathematics and
Computer Application**)

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(**PART : B—DESCRIPTIVE**)

(*Marks : 45*)

*The figures in the margin indicate full marks
for the questions*

1. (a) (i) If

$$A = \begin{pmatrix} 1 & 2 & 1 \\ 0 & 1 & -1 \\ 3 & -1 & 1 \end{pmatrix}$$

show that $A^3 - 3A^2 - A + 9I = 0$. 6

(2)

(ii) Find BA , if

$$A = \begin{bmatrix} 2 \\ 4 \\ 6 \end{bmatrix} \text{ and } B = [5 \ 3 \ 1]$$

3

Or

(b) (i) If

$$A = \begin{bmatrix} 2 & 3 & -5 \\ 4 & 1 & 7 \\ 6 & 2 & 0 \end{bmatrix}$$

find $\text{adj } A$.

6

(ii) Solve the following using determinants :

3

$$2x - y = 5$$

$$3x + 2y = -3$$

2. (a) (i) Find the inverse of the matrix

$$\begin{bmatrix} 3 & 10 \\ 2 & 7 \end{bmatrix}$$

4

(ii) Evaluate (without expanding) the following :

5

$$\begin{vmatrix} 12 & 16 & 20 \\ 5 & -6 & 3 \\ 3 & 4 & 5 \end{vmatrix}$$

(3)

Or

- (b) Three fruit sellers X, Y and Z went to a wholesale market to buy the following articles :

X buys 8 dozens of mangoes, 10 dozens of apples and 5 dozens of bananas; Y buys 9 dozens of mangoes, 9 dozens of apples and 7 dozens of bananas; and Z buys 12 dozens of mangoes, 5 dozens of apples and 5 dozens of bananas. A mango costs ₹ 5, an apple costs ₹ 6 and a dozen of banana costs ₹ 50.

Calculate each individual's bill by using matrix applications.

9

3. (a) (i) Evaluate the following :

3

$$\lim_{x \rightarrow 2} \frac{x^2 - 3x + 2}{x^2 - x - 2}$$

- (ii) Find the maximum and minimum values of the function

$$\frac{2}{3}x^3 + \frac{1}{2}x^2 - 6x + 8$$

6

Or

- (b) (i) Find $\frac{dy}{dx}$ of $y = \sqrt{3x^2 - 7}$

3

- (ii) Calculate the first-order partial derivatives of $3x^3 + 5xy + 2y^2$.

6

(4)

4. (a) Explain various generations of computer. 9

Or

(b) Discuss various kinds of computer language.

5. (a) Discuss various types of computer networking. 9

Or

(b) Write short notes on the following :
 $4\frac{1}{2} + 4\frac{1}{2} = 9$

(i) Application of Internet in business

(ii) Shortcomings of online shopping
