

**Subject Code :**  
**BMCA/BC-503 (Sup)**

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**To be filled in by the Candidate**

BA / BSc / BCom / BBA / BCA  
5th Semester End Term  
Examination, **2020**

Subject .....

Paper .....

**INSTRUCTIONS TO CANDIDATES**

- 1. The Booklet No. of this script should be quoted in the answer script meant for descriptive type questions and vice versa.**
- 2. This paper should be ANSWERED FIRST and submitted within 1 (one) Hour of the commencement of the Examination.**
- 3. While answering the questions of this booklet, any cutting, erasing, overwriting or furnishing more than one answer is prohibited. Any rough work, if required, should be done only on the main Answer Book. Instructions given in each question should be followed for answering that question only.**

*Signature of  
Scrutiniser(s)*

*Signature of  
Examiner(s)*

**Booklet No. A**

Date Stamp .....

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Roll No. ....

Regn. No. ....

Subject .....

Paper .....

DESCRIPTIVE TYPE

Booklet No. B .....

*Signature of  
Invigilator(s)*

**BMCA/BC-503 (Sup)**

**2 0 2 0**

( 5th Semester )

**COMMERCE**

Paper No. : BC-503

**( Business Mathematics and Computer Application )**

( PART : A—OBJECTIVE )

( Marks : 25 )

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

1. Indicate whether the following statements are True (T) or False (F) by putting a Tick (✓) mark :

1×5=5

- (a) A determinant can be expanded by any row or by any column and the result is the same.

( T / F )

- (b) A square matrix A is called orthogonal, if  $A^3 = I$ .

( T / F )

( 2 )

(c) The unit of memory is measured in bits.

( T / F )

(d) The process or method of obtaining the derivative of a composite function is known as differentiation.

( T / F )

(e) Modem is a device used to connect digital signal to analog signal.

( T / F )

2. Choose the correct answer by putting a Tick (✓) mark in the brackets provided : 1×10=10

(a) If any two rows or two columns of a determinant are interchanged, the value of the determinant

(i) is multiplied by  $-1$  ( )

(ii) is zero ( )

(iii) does not change ( )

(iv) None of the above ( )

( 3 )

(b) If  $A = \begin{bmatrix} 1 & 2 \\ 4 & 5 \end{bmatrix}$  and  $B = \begin{bmatrix} -1 & 2 \\ 3 & -5 \end{bmatrix}$ , then  $A - B$  is

(i)  $\begin{bmatrix} 2 & -8 \\ 11 & -13 \end{bmatrix}$  ( )

(ii)  $\begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}$  ( )

(iii)  $\begin{bmatrix} 2 & 0 \\ 1 & 10 \end{bmatrix}$  ( )

(iv)  $\begin{bmatrix} -4 & 12 \\ -19 & 33 \end{bmatrix}$  ( )

(c) The derivative of  $-5 \log a$  with respect to  $a$  is

(i)  $-\frac{5}{a}$  ( )

(ii) 0 ( )

(iii)  $-\frac{5}{a^2}$  ( )

(iv) 1 ( )

( 4 )

(d) Program written in high-level language is called

(i) source program ( )

(ii) language program ( )

(iii) compiler program ( )

(iv) basic program ( )

(e) \_\_\_\_\_ refers to the exchange of business information, including purchase order and services between trading partners.

(i) Electronic data process ( )

(ii) Electronic payment system ( )

(iii) Electronic funds transfer ( )

(iv) Electronic data interchange ( )

(f) A matrix  $A$  is called \_\_\_\_\_ if  $A^2 = I$ .

(i) idempotent matrix ( )

(ii) involuntary matrix ( )

(iii) nilpotent matrix ( )

(iv) square matrix ( )

( 5 )

(g) Cramer's rule is not applicable if  $\Delta$  is equal to

(i) 0 ( )

(ii) 1 ( )

(iii) 2 ( )

(iv) -2 ( )

(h) The maximum and minimum values of a function occur

(i) equal ( )

(ii) zero ( )

(iii) alternatively ( )

(iv) None of the above ( )

(i) If  $f(x) = x^2 - 3x + 2$ , the value of  $f(1)$  will be

(i) 0 ( )

(ii) 1 ( )

(iii) -10 ( )

(iv) 8 ( )

(j) What is COBOL?

- (i) Common Business Oriented Lan-  
guage ( )
- (ii) Common Business Output Lan-  
guage ( )
- (iii) Command Business Output Lan-  
guage ( )
- (iv) Command Business Oriented Lan-  
guage ( )

( 7 )

3. Answer/Write on the following (any *five*) :  $2 \times 5 = 10$

(a) Find the value of  $\begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$ .



( 8 )

(b) Skew-symmetric matrix

( 9 )

(c) Limit

( 10 )

(d) Internet

( 11 )

(e) Computer

( 12 )

*(f)* Multiprogramming

( 13 )

(g) Chain rule

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2 0 2 0

( 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) Find the value of

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

5

(ii) Solve the following by Sarrus method :

4

$$\begin{vmatrix} 2 & 4 & 6 \\ 5 & 3 & 1 \\ 3 & -1 & 5 \end{vmatrix}$$

Or

(b) (i) Distinguish between determinants and matrices. 4

(ii) Write the co-factor of elements of 2nd row of the determinant

$$\begin{vmatrix} 5 & 6 & 7 \\ 3 & 4 & 1 \\ -1 & -16 & 7 \end{vmatrix}$$

5

2. (a) If

$$A = \begin{bmatrix} 1 & 1 & -1 \\ 2 & 0 & 3 \\ 3 & -1 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 \\ 0 & 2 \\ -1 & 4 \end{bmatrix}, C = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 0 & -2 & 1 \end{bmatrix}$$

find  $A(BC) = (AB)C$ .

9

Or

(b) If

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

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

( 3 )

3. (a) Find the maximum and minimum values, where the value of

$$y = 2x^3 + 3x^2 - 36x + 10 \quad 9$$

Or

- (b) (i) If

$$f(x) = b \frac{x-a}{b-a} + a \frac{x-b}{a-b}$$

then prove that

$$f(a) + f(b) = f(a+b) \quad 6$$

- (ii) Find the derivative of

$$\frac{3x^4 - \sqrt{x}}{x} \quad 3$$

4. (a) Explain in brief the areas of computer applications. 9

Or

- (b) Discuss the different operating systems of a computer.

( 4 )

5. (a) Discuss the various network topologies. 9

Or

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

(i) Application of Internet in business

(ii) Protocols used in Internet

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