Q.P. Code : 34134

First Semester B.Com.(Hon.) Degree Examination, November/December 2019

(Semester Scheme – CBCS – New)

Commerce

Paper 1.6 – MATHEMATICAL APPLICATIONS IN BUSINESS

Time : 3 Hours] *[Max. Marks : 70*

Instructions to Candidates : Answers should be written in English only.

PART – A

Answer any **FIVE** questions. Each question carries **2** marks : **(5 × 2 = 10)**

1. (a) What is matrices?

   (b) Give the formula to calculate compound interest.

   (c) What is null matrix? Give example of it.

   (d) What is Range?

   (e) State the formula to find Quotient rule.

   (f) Find X. $A = \begin{bmatrix} 0 & x-2 \\ 2x-1 & 0 \end{bmatrix}$

   (g) State any two uses of calculus.

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PART – B

Answer any **THREE** questions. Each question carries **5** marks : **(3 × 5 = 15)**

2. State derivative of a linear function.

3. Solve the equation using factorization method $x^2 - 4x + 3 = 0$.

4. Find X if $\begin{bmatrix} x^2 & 3 \\ 4 & 5 \end{bmatrix} -2\begin{bmatrix} x & 1 \\ -1 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ 6 & 5 \end{bmatrix}$.

5. Find the period in which ₹ 5,500 will amount to ₹ 6050 @ 4% P.A.

PART – C

Answer any **THREE** questions. Each question carries **15** marks : **(3 × 15 = 45)**

6. (a) Find AB and BA, if $A = \begin{bmatrix} 1 & 2 & -3 \\ 5 & 0 & 2 \\ 1 & -1 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 3 & -1 & 2 \\ 4 & 2 & 5 \\ 2 & 0 & 3 \end{bmatrix}$.

(b) If $A = \begin{bmatrix} -2 & 1 \\ 0 & 3 \end{bmatrix}$ find $2A^2 - 3A - 7I$.

7. Solve using elimination method :

(a) $x + y = 15$
$3x - y = 21$

(b) $2x + 3y = 42$
$5x - y = 20$

8. Find the nominal and effective rates of interest in each of the following cases:

(a) 1000 Lent @ 12% P.A., Interest payable half yearly

(b) 750 Lent @ 8% P.A., Interest payable quarterly

(c) 10,000 Lent @ 15% P.A., Interest payable annually.

9. An electric current, when flowing in a circular coil of radius r, exerts a force $F = \dfrac{KX}{(x^2 + r^2)^{5/2}}$ on a small magnet located a distance x above the centre of the coil. Show that F is maximum, when $x = \dfrac{r}{2}$.