AX-4705

B. Com. (Hon's) (First Semester) Examination, 2017

BUSINESS MATHEMATICS

Peper : Second

(Compulsory)

Time Allowed : Three hours

Maximum Marks : 60

Note : *Attempt five question in all. Question no. 1 is compulsory carrying 20 marks. Remaining questions carry 10 marks each. Log tables and graph paper shall be provided on demand. Only basic calculator is allowed.*

Section - A

(Short Answer Type Question) **10×2=20**

Note : *Attempt all questions. Each question carries 2 marks.*

1. (i) Express the following log value in exponential

form :

$\log_8 32 = 5/3$

(ii) Find the value of $\log_{17} 243$

(iii) Write down the characteristic of the common logarithm of the following number :

0·003002

(iv) If $\begin{bmatrix} x & 3x - y \\ 2x + z & 3y + w \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 4 & 7 \end{bmatrix}$, then find value of x, y, z and w.

(v) If $\begin{bmatrix} x & 3 \\ 2 & y \end{bmatrix} + \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} = \begin{bmatrix} 3 & 6 \\ 7 & 4 \end{bmatrix}$, find x and y.

(vi) Divide 240 into three parts so that 1/3 of the first, 1/4 of the second, and 1/5 of the third part are equal.

(vii) Solve for x :

$2 : 3 : : x : 6$

(viii) A man buys 11 oranges for ₹ 10 and sells 10 oranges for ₹ 11. What is his gain percent.

(ix) A cloth merchant allows a discount of 15% on the clothes purchased. A person purchases clothes worth ₹ 1,470. How much money will he give?

(x) What principal should be deposited in a bank to earn ₹ 525 per annum when the rate of interest is 3.5% per annum.

Section - B

(Long Answer Type Question) **4×10=40**

Note : *Attempt any four questions. Each question carries 10 marks.*

2. Prove that for function $y = \sqrt{\frac{1-x}{1+x}}$; $\frac{dy}{dx}$ will be equal to $\frac{-1}{(1+x)\sqrt{1-x^2}}$

3. (a) If $\log(a^2 - 4a + 5) = 0$, prove that $a = 2$.

(b) Find the value of following without using log table :

$$\log 2 + 16 \log \frac{16}{15} + 12 \log \frac{25}{24} + 7 \log \frac{81}{80}$$

4. Simplify the following transportation problem using Vogel's Approximation method :

		Warehouse to				
		W_1	W_2	W_3	W_4	Available
Factory	F_1	19	30	50	10	07
from	F_2	70	30	40	60	09
	F_3	40	08	70	20	18
Requirement		05	08	07	14	34

5. In a cash-box, there are coins worth ₹ 128. The ratio between one rupee, 50 paise and 25 paise coins as per their number is 4 : 5 : 6. Find the total number of coins of each denomination.

6. A person borrowed ₹ 12,000 for 10 years on compound interest. The rate percent p.a. was 5% for the first 3 years, 6% for the next 4 years, and 7% for the rest of 3 years. Calculate the compound interest.

7. If

$$A = \begin{bmatrix} 1 & 1 & -1 \\ 2 & -3 & 4 \\ 3 & -2 & 3 \end{bmatrix}, B = \begin{bmatrix} -1 & -2 & -1 \\ 6 & 12 & 6 \\ 5 & 10 & 5 \end{bmatrix} \text{ and}$$

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

prove that AB and CA are null matrices.

8. If

$$A = \begin{bmatrix} 0 & -2 & -3 \\ -1 & 1 & -4 \\ 0 & -2 & 1 \end{bmatrix} \text{ and } I = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

find $[I - A]^{-1}$.