

Q.P. Code : 34163

**First Semester B.Com.(A & F) Degree Examination,  
November/December 2019**

(CBCS – New Scheme – Freshers)

**Commerce**

**Paper 1.5 – BUSINESS MATHEMATICS AND LOGICAL REASONING**

Time : 3 Hours]

[Max. Marks : 70

Instructions to Candidates : Answers should be completely in English.

SECTION – A

Answer any **FIVE** sub-questions. Each sub-question carries **2** marks :

(5 × 2 = 10)

1. (a) What is a Diagonal Matrix?
- (b) Find the third proportional to 8 : 2.
- (c) Show that  $\log \frac{bc}{a^2} + \log \frac{ca}{b^2} + \log \frac{ab}{c^2} = 0$ .
- (d) Write down the subsets and power sets of the set  $A = \{x, y, z\}$ .
- (e) Give the meaning of Geometric mean.
- (f) If  $\begin{vmatrix} X & 3 \\ 8 & 4 \end{vmatrix} = 0$  find X.
- (g) Find the derivative of  $e^x \log x$ .



SECTION – B

Answer any **THREE** questions of the following. Each question carries **5** marks :

(3 × 5 = 15)

2. Two numbers are in the ratio of 4 : 5 and if 24 is subtracted from each of them, the remainder are in the ratio of 2 : 3. Find the numbers.
3. The 4<sup>th</sup> and 9<sup>th</sup> term of a G.P. are 8 and 256 respectively. Find the GP.

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4. Find the values of  $x, y, z$  and  $a$  if

$$\begin{bmatrix} x+3 & 2y+x \\ z-1 & 4a-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2a \end{bmatrix}.$$

5. There are seven candidates for four different posts. In how many ways can we fill the posts?

**SECTION - C**

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

6. (a) Solve the equation by elimination method

$$\frac{8}{x} - \frac{9}{y} = 1 \quad \frac{10}{x} + \frac{6}{y} = 6\frac{2}{2}.$$

- (b) Find the 40<sup>th</sup> term of an A.P. whose 9<sup>th</sup> term is 465 and 20<sup>th</sup> term is 388.

7. (a) Solve the following equations by Cramer's rule :

$$10x + 5y = 125$$

$$9x + 12y = 150$$

- (b) Solve A and B if  $A - 2B = \begin{bmatrix} 4 & 6 & -10 \\ 6 & -4 & 2 \end{bmatrix}$  and  $2A - B = \begin{bmatrix} 4 & -8 & 2 \\ 4 & 0 & 2 \end{bmatrix}$

8. (a) If  $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$  is the universal set  $A = \{1, 2, 3, 9\}$ ,  $B = \{2, 3, 6, 7, 8, 9\}$  find  $A \cup B$ ,  $A \cap B$ ,  $A - B$ ,  $B - A$ .

- (b) If  $a^2 + b^2 = 14ab$ , show that  $2\log(a+b) = 2\log 4 + \log a + \log b$ .

9. (a) How many arrangements of the letters of the word REMAND are possible if :

(i) There are no restrictions?

(ii) They begin with RE...?

(iii) They do not begin with RE...?

- (b) A man borrowed ₹ 62,500 from a bank. After two years he paid ₹ 67,600 in full settlement of his debt. Find the rate of compound interest.

