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 :

 $(5 \times 2 = 10)$

- 1. (a) What is a Diagonal Matrix?
 - (b) Find the third proportional to 8:2.
 - (c) Show that $\log \frac{bc}{a^2} + \log \frac{ca}{b^2} + \frac{\log ab}{c^2} = 0$.
 - (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: $(3 \times 5 = 15)$

- 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 4th and 9th 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 ports. In how many ways can we fill the ports?

SECTION - C

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

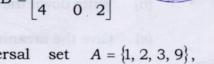
6. (a) Solve the equation by elimination method

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

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