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 $\log\frac{bc}{a^2} + \log\frac{ca}{b^2} + \frac{\log ab}{c^2} = 0$.

(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 × 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.

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 × 15 = 45)**

6. (a) Solve the equation by elimination method

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

(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.