BBA-102(N)

B. B. A. (First Semester)

EXAMINATION, Dec., 2016

(New Course)

Paper Second

BUSINESS MATHEMATICS

Time Three Hours] [Maximum Marks 70

Note: Attempt questions from all Sections as directed.

Inst. The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section-A

(Short Answer Type Questions)

Note: Attempt all questions from this Section. Each question carries 3 marks.

1. (A) Distinguish between the following:

(i) Scalar matrix and unit matrix.

(ii) Square matrix and non-singular matrix.

(B) Verify commutative law of addition for the following matrix:

$$A = \begin{bmatrix} 0 & 2 & 3 \\ 2 & 4 & 1 \end{bmatrix} \text{ and } B = \begin{bmatrix} 7 & 6 & 3 \\ 1 & 4 & 5 \end{bmatrix}$$

(C) Find the rank of the matrix:

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 7 \\ 3 & 6 & 10 \end{bmatrix}$$

(D) The price of petrol is increased by 15%. Find how much percent a man must reduce his consumption so as not to increase his expenditure."

(E) What do you understand by 'Ratio' and 'Proportion'? Explain with examples.

(F) Insert five geometric means between 2 and 1458.

G) There are 15 teachers is Science group of a school, 4 of them teach Maths only and 3 of them teach both Maths and Science. Find the number of teachers who teach Science only.

(H) Find the value of 's' if:

$^{18}C_{,} = {}^{18}C_{,.2}$

Differentiate the function w. r. t. r:

(a) $(x^4 - x)(5x^3 + 6x - 7)$

(b) $y = (3x^2 + 1)(x^2 + 2x)$

(J) Find the maximum and minimum values of the function:

(a) $f(x) = 5 - x - x^2$

(b) $f(x) = 2x^3 - 9x^2 + 12x - 1$

Section-B

(Long Answer Type Questions)

Note: Attempt any two questions. Each question carries 10 marks.

2. Find the inverse of matrix :

$$A = \begin{bmatrix} 1 & 2 & 5 \\ 2 & 3 & 1 \\ -1 & 1 & 1 \end{bmatrix}$$

3. Using Gauss elimination method solve the following system of equations:

$2x + 3y + 3x = 5$

$x + 2y + z = -4$

$3x - y - 2x - 3$

4. Find the sum of A. P. G. P. series:

$$1 + 2, \frac{1}{3} - 3, \frac{1}{3^2} + 4, \frac{1}{3^3} + \ldots \infty$$

5. 72.90 litres of a mixture contains milk and water in the ratio of 7: 2. How much more water must be added to this mixture so that the ratio of milk and water may be 7:3

Section C

(Long Answer Type Questions)

Note: Attempt any two questions. Each question carries 10 marks.

6. Divide ₹ 6,305 into three such parts that their amounts at 5%, compound interest compounded annually in 2, 3, 4 years respectively may all be equal.

7. If:

U = (2, 3, 4, 5, 6, 7, 8, 9, 10, 11)

A = (2,4,7)

B = (3,5,7,9,11)

C = (7,8,9, 10, 11)

find the value of the following:

(i) B∩C

(ii) B∪C

(i) (A∩U) ∩ (B∪C)

(iv) C - B

(v) (B-C)

8. Evaluate of the following:

(i) $\int \frac{(1+\sqrt{x})^n}{\sqrt{x}} . dx$

(ii) $\int \frac{8x^2}{(x^3+2)^3} . dx$

9. A party of 3 ladies and 4 gentleman is to be formed from 8 ladies and 7 gentlemen. In how many different ways can the party be formed if Mr. X and Mr. Y refuge to join the same party?