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BBA-102(N)

5. (a) The sum of three numbers of a Geometric Progression is 42 and their product is 512, find these numbers.
- (b) Insert five geometric means between 2 and 1458.

Section—C

(Long Answer Type Questions)

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

6. (a) The sum of money at compound interest to ₹ 2,100 in one year and ₹ 2,205 in two years. Find the sum and the rate of interest.
- (b) If the interest on ₹ 1,200 for 3 years is less than the interest on ₹ 1,500 for the same period by ₹ 60. Find the rate of interest.
7. Find the maximum and minimum values of the following functions :
- (a) $2x^3 + 3x^2 - 36x + 10$
- (b) $2x^2 - 6x + \frac{17}{2}$
8. Find the differential coefficient of the following functions w.r.t. x :
- (a) $y = (2x^3 + 3) \cdot \log x$
- (b) $y = \frac{2(x+1)}{x^2 + 2x - 3}$

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Roll No.

BBA-102(N)

B. B. A. (First Semester)

EXAMINATION, Dec., 2019

(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 : All questions are compulsory. Each question carries 3 marks.

1. (A) Define matrix and its various types.
- (B) Find the values of x , y and z so that matrices A and B are equal, where :

$$A = \begin{bmatrix} x+y & z \\ 2 & x-y \end{bmatrix}, B = \begin{bmatrix} 6 & 8 \\ 2 & 14 \end{bmatrix}$$

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- (C) Find the rank of the matrix A, where :

$$A = \begin{bmatrix} 2 & 4 & 6 \\ 4 & 6 & 8 \\ 0 & 4 & 4 \end{bmatrix}$$

- (D) If:

$$A = \begin{bmatrix} 2 & 4 \\ -6 & 0 \end{bmatrix}$$

find $A^2 + 3A + 5I$.

- (E) When the cost of sugar increased by 40%, a man reduces his consumption by 20%. Find the percentage change in his expenditure on sugar.
- (F) The 5th and 8th terms of a G. P. is 80 and 640 respectively. Find the first term and the common ratio.
- (G) Divide ₹ 250 in 2 parts in such a way that the interest on 1st part at 5% and on the 2nd part at 6% fetch an annual income of ₹ 14.
- (H) If:

$$A = \{1, 2, 3, 4\}$$

$$B = \{1, 3, 5, 7\}$$

and $C = \{3, 4, 5, 6\}$

find $A \cup (B \cap C)$ and $(A \cup B) \cap (A \cup C)$.

- (I) Find
- $\frac{dy}{dx}$
- for the function :

$$y = (x^4 - 5x^3) \cdot (5x^6 + 7x)$$

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- (J) Integrate the following functions w. r. t. x :

(i) $\int \frac{1}{5\sqrt{x^3}} dx$

(ii) $\int (5 - 4x)^4 dx$

Section—B

(Long Answer Type Questions)

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

2. Find the adjoint and inverse of the following matrix :

$$A = \begin{bmatrix} 1 & 2 & 4 \\ 5 & 7 & 8 \\ 9 & 10 & 12 \end{bmatrix}$$

3. Using Gaussian Elimination method, solve the following system of linear equation :

$$5x - 6y + 4z = 1$$

$$7x + 4y - 3z = 19$$

$$2x + y + 6z = 46$$

4. Show that the matrix :

$$A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$$

satisfies the equation given by :

$$A^3 + 7A + 2I = 6A^2$$

9. If:

$$U = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A = \{2, 4, 7\}$$

$$B = \{3, 5, 7, 9, 11\}$$

and

$$C = \{7, 8, 9, 10, 11\}$$

Find the value of:

(i) $B \cap C$

(ii) $(A \cap U) \cap (B \cup C)$

(iii) $C - B$

(iv) $(B - C)$

(v) $(B - C)'$

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