

[4]

BBA-102(N)

8. Find the maximum and minimum values of the following functions :

(i) $x^3 - 12x^2 + 10$

(ii) $x^3 - 2x^2 + x + 6$

9. Evaluate :

(i) $\int \frac{1}{x \log x} dx$

(ii) $\int \frac{x^{e-1} + e^{x-1}}{x^e + e^x} dx$

BBA-102(N)

4,200

(C-83)

P. T. O.

(C-83) P. T. O.

Roll No. 0302457

2

BBA-102(N)

B. B. A. (First Semester)

EXAMINATION, Nov./Dec., 2018

(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) Give definition of Matrix. Explain the procedure of the multiplication of matrices.

(B) If $A = \begin{bmatrix} 1 & 2 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 2 \\ -1 & 3 \end{bmatrix}$, find $A^2 - B^2$.

[2]

BBA-102(N)

(C) Find the rank of matrix $A = \begin{bmatrix} 1 & 2 & 6 \\ 3 & 1 & 2 \\ 2 & 1 & 4 \end{bmatrix}$.

(D) If $A = \begin{bmatrix} 5 & -2 \\ 3 & -2 \end{bmatrix}$, then verify that:

$$A \cdot (\text{adj } A) = (\text{adj } A) \cdot A.$$

(E) The ratio of present age of A and B is 3 : 4. The ratio of age 5 years back was 5 : 7. Find their present ages.

(F) A candidate polled 65% votes and won by 2745 votes. Find out total votes polled.

(G) If $A = \{2, 3, 4, 5, 6\}$; $B = \{3, 4, 5, 6, 7\}$; $C = \{4, 5, 6, 7, 8\}$, then find the values of:

(i) $(A \cup B) \cap (A \cup C)$

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

(H) In how many ways can a committee of 5 people be chosen out of 9 people?

(I) Differentiate $(3x^2 + 2)^3(5x^2 - 1)^2$ with respect to x .

(J) Find the two positive numbers whose sum is 16 and sum of whose cubes is minimum.

Section—B

(Long Answer Type Questions)

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

2. Verify that matrix multiplication is associative for the following matrices :

$$A = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix} \text{ and } C = \begin{bmatrix} -1 & 0 \\ 0 & 2 \end{bmatrix}$$

(C-83)

[3]

BBA-102(N)

3. Find the inverse of the following matrices:

$$\begin{bmatrix} 1 & 0 & -4 \\ -2 & 2 & 5 \\ 3 & -1 & 2 \end{bmatrix}$$

4. Solve the following system of Linear equation by Gauss-Elimination method :

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

$$x + y - 6z = -12$$

$$3x - y - z = 4$$

5. A man spends 80% of his income and saves rest. When the cost of living increased his expenses increased by $37\frac{1}{2}\%$ and his income also increased by $16\frac{2}{3}\%$. What percentage of his income does he now save?

Section—C

(Long Answer Type Questions)

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

6. Divide ₹ 2,600 into 3 parts in such a way that the interest on the 1st part at 4%, on the 2nd part at 6% and on the 3rd part at 8% is equal.

7. Insert 6 geometric means between 8 and $\frac{1}{16}$.

(C-83) P. T. O.