

BBA-102(N)

Roll No.

B.B.A (First Semester) EXAMINATION, Dec., 2015

Paper Second

BUSINESS MATHEMATICS

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt questions from all the Sections as directed.

SECTION - A

1. Attempt all questions : Each question will carry three marks.
 - (i) At what rate of percent a sum will double itself in 10 years.
 - (ii) If a ratio set is sold for Rs. 550, there is a loss of 12%. If it is sold for Rs. 700, find the percentage of profit.
 - (iii) If $A = \begin{bmatrix} 3 & 2 \\ 7 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 7 \\ 8 & 8 \end{bmatrix}$ find $(AB)^{-1}$
 - (iv) If $f(x) = \frac{x^4}{2} + \frac{3}{2}x^3 + 2x - 5$ find $f'(x)$ and $f'(-2)$
 - (v) How many terms of the AP $3+5+7+\dots$ will sum up to 441
 - (vi) Find dy/dx , when $y=e^{x \log x}$
 - (vii) Out of group of 5 men and 6 women, a committee of 5 is to be formed. In how many ways can committees be formed to include :
 - (a) at least one woman
 - (b) not more than 3 men.

(viii) Find $I = \int \frac{5x+6}{x+3} dx$

(ix) If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{2, 4, 5, 7\}$

$B = \{1, 3, 8, 9\}$

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

Find (i) $B \cap C$ (ii) $A \cup (B \cap C)$ (iii) $(A \cup B)'$

(x) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 4 & 2 \\ 3 & 6 & 0 \\ 0 & 1 & 2 \end{bmatrix}$

Find (i) $2A+B$

(ii) $3A-2B$

SECTION - B

(Long Answer Type Question)

Note : Attempt any two question: Each question will carry ten marks.

2. If $2x + 3y = \begin{bmatrix} 4 & 6 \\ 8 & 0 \end{bmatrix}$ and $3x + 2y = \begin{bmatrix} -6 & 6 \\ 3 & -15 \end{bmatrix}$

Find matrix X and Y.

3. Solve the following equations with the help of matrix method.

$3x + 5y - 7z - 13 = 0$

$4x + y - 12z - 6 = 0$

$2x + 9y - 3z - 20 = 0$

4. Three containers are full of mixture of milk and water. Whose volumes are in the ratio of 2:3:4. In the first container ratio of milk and water is 1:5, in the second 3:5 and in the third 5:7. All the three mixtures were mixed in a bigger container. What is the resulting ratio of milk and water?
5. The sum of three consecutive terms is 27 and 293 of their squares and the terms are in A.P. Find these terms.

SECTION - C

Long Answer Type Question)

Note : Attempt any two question: Each question will carry ten marks.

6. 200 students of a government inter college appeared for the board exam. Following is the data about students in the school : Pass in English = 41, Pass in Maths = 22, Pass in Hindi = 30, Pass in Hindi and English = 11, Pass in English and Maths = 9, Pass in Maths and Hindi = 7, Pass in all three = 4, Find who :
- Passed only in English and Hindi but not Maths.
 - Passed only in Hindi and Maths, but not in English.
 - Passed only in Maths and English but not Hindi.
 - Passed only in Maths.
 - No. of students passed and failed.
7. (a) Out of 10 consonants and 4 vowels how many words can be formed each containing 6 consonants and 3 vowels? (4)
- (b) If ${}^nC_8 = {}^nC_{12}$, then find ${}^nC_{17}$ (6)
8. Find the maximum and minimum values of the function
- $f(x) = 3x^4 - 2x^3 - 6x^2 + 6x + 5$

9. Integrate the following functions

a) $I = \int \frac{(x^3 + 8)(x - 1)}{(x^2 - 2x + 4)} dx$

b) $I = \int \frac{1}{\sqrt{2x+1} + \sqrt{2x+2}} dx$