

Roll No. ....

**57002**

**BBA 1st Semester (Old) 2011-14  
Examination – November, 2017**

**BUSINESS MATHEMATICS**

**Paper : BBA - 102**

*Time : Three Hours ] [ Maximum Marks : 80*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *compulsory* Question No. 1 from Section - A and *four* questions from Section - B (one question from each Unit). All questions carry equal marks.

**SECTION – A**

1. (a) What are equal and equivalent sets ?
- (b) If  $u = \{1,2,4,6,5,10,9\}$  and  $A = \{1,4,5,9\}$ , find  $A'$
- (c) Find the value of  $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$

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(d) Find the value of  $\frac{\log 9^{11}}{\log 3^{11}}$

(e) Find the sum of first 10 natural numbers.

(f) In how many ways can an examinee attempt 7 questions out of 10 questions ?

(g) What is transpose of a matrix ? Show.

(h) Find  $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$

### SECTION - B

#### UNIT - I

2. If  $A = \{1,3,5,7\}$ ,  $B = \{2,3,4,5\}$ ,  $C = \{2,4,6,8\}$

and  $D = \{4,5,6\}$ , find (i)  $A \cap B$ ; (ii)  $A \cup (B \cap C)$ ;

(iii)  $(A \cap C) \cup (B \cap D)$  and (iv)  $[(A \cap B) \cup C] - D$

3. (a) Let A and B any two sets, prove that  $(A \cup B)' = A' \cap B'$

(b) Let A, B and C be any three sets.

Prove that  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

#### UNIT - II

4. If  $\frac{a^n \cdot 3^2(3^{-\frac{n}{2}})^{-2} - (27)^n}{3^{3m} \cdot 2^3} = \frac{1}{27}$ , show that  $m = 1 + n$

5. Find 5 numbers in A.P. whose sum is 25 and the sum of their squares is 135.

#### UNIT - III

6. (a) If  ${}^n P_4 = 12 \cdot {}^n P_2$ , find n.

(b) Prove that  ${}^{n+1}C_r = {}^n C_r + {}^n C_{r-1}$

7. Write down the 4th term of the expansion  $\left(px + \frac{q}{x}\right)^n$ .  
If this term is independent of x, find the value of n.

#### UNIT - IV

8. Find the inverse of the matrix  $A = \begin{pmatrix} 2 & 2 & 2 \\ 3 & 0 & 0 \\ 1 & -1 & 2 \end{pmatrix}$

9. (a) Differentiate  $(4x+3)^2(2x^2+1)$  w.r.t. x

(b) Integrate  $x^3 + 7x^2 - 5x$  w.r.t. x