

## B.B.A. Sem.-1 Examination

CC 107

Basic of Mathematics

December-2025

Time : 2-30 Hours]

[Max. Marks : 70

**Instructions:**

- 1) Figures to the right indicate marks.
- 2) Use of simple calculator is allowed.

- Q-1 (A) If  $A = \{1, 2, 3\}$  and  $B = \{2, 4, 6\}$ ; find  $A \times B$  7  
 (B) If  $A = \{2, 3, 4\}$  and  $B = \{3, 4, 5, 6, \}$ ; find  $A \cap B$  and  $A \cup B$  7
- OR**
- Q-1 (A) If  $n(A) = 14, n(B) = 20, n(C) = 24,$   
 $n(A \cap B) = 11, n(B \cap C) = 2, n(A \cap C) = 3,$   
 $n(A \cap B \cap C) = 0;$   
 find  $n(A \cup B \cup C)$  7  
 (B) If  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}; A = \{1, 2, 3\}; B = \{2, 4, 6\}; C = \{0, -1, 4\};$   
 Find  $A' - B'$  7
- Q-2 (A) If  $F = 60,000; V(x) = 50x$  and  $R(x) = 100x$  then find Break-Even Point. 7  
 (B) Solve the following: 7
1.  $\lim_{x \rightarrow 2} \frac{x^2 + 5x + 5}{2x - 1}$
  2.  $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$
- OR**
- Q-2 (A) If the demand function is  $x = \frac{50 - 2p}{3}$ ; find the revenue function. Also find the  
 revenue when the demand is of 10 Units. 7  
 (B) Solve the following: 7
1.  $\lim_{x \rightarrow 1} \frac{\sqrt{x+2} - \sqrt{3}}{x-1}$
  2.  $\lim_{n \rightarrow \infty} \frac{1+2+3+\dots+n}{(n+3)(n+4)}$
- Q-3 (A) How many different words can be formed by using all letters of the word  
 MISSISSIPPI? 7  
 (B) How many different words can be formed by using all the letters of the word  
 MONDAY? How many of them will begin with M? How many of them will  
 begin with M and end with Y? 7
- OR**
- Q-3 (A) 4 books of Statistics, 3 books of Economics and 5 books of Accountancy are to  
 be arranged on a shelf in one row. Find the number of ways in which the  
 arrangement can be made if the books of the same subjects are to be kept together. 7  
 (B) In how many ways a committee of 4 professors can be formed out of 11  
 professors? 7
- Q-4 (A) Find the equations of the line passing through  $A(3, -7)$  and  $B(-4, 9)$  7

- (B) The 4<sup>th</sup> term of an AP is 19 and its 12<sup>th</sup> term is 51, find its 21<sup>st</sup> term. 7
- OR**
- Q-4 (A) Find the sum of the first  $n$  terms of the series 7  
 $2 + 22 + 222 + 2222 + \dots$  to  $n$  terms.
- (B) Prove that the lines  $3x + 4y + 2 = 0$  and  $12x + 16y - 7 = 0$  are parallel. 7
- Q-5 State whether the statements are True or False (Any Seven and write in 14  
sequence)
1. In set theory,  $A \times B \neq B \times A$
  2. If  $U = \{1, 2, 3, 4, 5, 6\}$ ;  $A = \{2, 4\}$  then  $A' = \{1, 3, 5, 6\}$
  3.  $A = \{1, 2, 3, 4\}$  and  $B = \{1, 4, 9, 16\}$  is an example of equivalent set.
  4. Constant function may have different images.
  5. Set A is having name of students and Set B is having their roll numbers is an example of One-One Function.
  6. If  $R(x)$  is a revenue function and  $C(x)$  is a cost function then  $R(x) > C(x)$ .
  7. 
$$\binom{n}{x} = \frac{n!}{x!(n-x)!}$$
  8.  ${}^5P_4 = 120$
  9. Circular permutations of  $n$  things =  $(n + 1)!$
  10. If two lines are perpendicular; their slopes are equal.
  11. If three numbers are in AP, the common difference is  $d$ .
  12.  $T_n = a + (n - 1)d$
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