

JD-104

January-2025

IMBA-1, Sem.-I (NEP Syllabus)**IMBA in Finance (FM) / IMBA in HR and Public Administration (HRPA)/****IMBA in Business Management (BM)****DPPG-IMBA-MDC-114/ DPPG-IMBAF-MDC-114/ DPPG-IMBAH-MDC-114 :****Business Mathematics (BM)****Time : 2 Hours]****[Max. Marks : 50**

1. Let $A = \{x | x \text{ is a divisor of } 60\}$ and $B = \{x | x \text{ is a divisor of } 48\}$. Find: **10**
- The union of A and B, i.e., $A \cup B$.
- The intersection of A and B, i.e., $A \cap B$.
- The difference of A and B, i.e., $A - B$.
- The complement of set B (denoted B') relative to the universal set U.

OR

1. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ be the universal set. Define : **10**
- $A = \{2, 4, 5, 6, 8\}$
- $B = \{1, 3, 5, 7, 9\}$
- $C = \{4, 5, 6, 7\}$
- Find :
- The complement of set C (denoted C') relative to the universal set U.
- The symmetric difference of A and C, denoted $A \Delta C$.
- The union of A, B, and C, i.e., $A \cup B \cup C$.

2. (A) A survey of 200 people showed that 120 people liked chocolate, 100 people liked vanilla, and 80 people liked both chocolate and vanilla. Additionally, 30 people liked neither chocolate nor vanilla. The question is: How many people liked only chocolate or only vanilla ? **6**
- (B) Plot the points with the following coordinates on graph : **4**
- $P(-5, 3)$
- $R(4, 5)$
- $Q(3, -4)$
- $S(0, -5)$

OR

2. (A) In a class of 120 students, 75 students take mathematics, 50 students take science, and 30 students take both mathematics and science. It is also given that 20 students do not take either mathematics or science. How many students take only mathematics ? **6**
- (B) Plot the points with the following coordinates : **4**
- P(-5, 9)
- R(10, 5)
- Q(-3, -4)
- S(0, -7)
3. (A) Find the 17th term of the series mentioned below : **5**
- $35 + 47 + 59 + 71 + \dots$
- (B) Find the sum of the first 39 terms of the series mentioned below : **5**
- $2 + 4 + 8 + 16 + \dots$

OR

3. (A) Find the 40th term of – **5**
- $1 + 2 + 4 + 8 + \dots$
- (B) Find the sum of first 15 units of series mentioned below : **5**
- $14 + 10 + 6 + 2 + \dots$
4. (A) How many ways can 6 men and 4 women be arranged in a row such that the 6 men must sit in one block together and the 4 women must sit in another block together ? **5**
- (B) How many ways can 4 balls be selected from 3 different colors of balls (red, blue, green), if repetition is allowed and the total number of balls selected must be 4 ? **5**

OR

4. (A) From a group of 8 men and 6 women, how many ways can a committee of 5 people be formed such that at least 3 members are men ? 5
- (B) How many ways can a committee of 3 men and 2 women be selected from a group of 5 men and 6 women, if the committee must include at least one man and at least one woman ? 5
5. Short Answer / MCQ : (Any 10 out of 12) 10
- (1) Which of the following is a subset of the set $A = \{1, 2, 3, 4\}$?
- (a) $\{2, 3, 4\}$ (b) $\{5, 6\}$
(c) $\{1, 2, 4, 5\}$ (d) $\{2, 3, 4, 5\}$
- (2) What is the union of the sets $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$?
- (a) $\{1, 2, 3, 4, 5\}$ (b) $\{3\}$
(c) $\{1, 2, 3\}$ (d) $\{1, 2, 4, 5\}$
- (3) Which of the following is a proper subset of the set $A = \{1, 2, 3, 4\}$?
- (a) $\{1, 2, 3, 4\}$ (b) $\{1, 2, 3\}$
(c) $\{1, 2\}$ (d) $\{1, 2, 3, 4, 5\}$
- (4) What is the intersection of the sets $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$?
- (a) $\{1, 2, 3, 4, 5\}$ (b) $\{3\}$
(c) $\{1, 2\}$ (d) $\{\}$
- (5) What is the complement of the set $A = \{1, 2, 3\}$ in the universal set $U = \{1, 2, 3, 4, 5\}$?
- (a) $\{4, 5\}$ (b) $\{1, 2, 3\}$
(c) $\{3, 4, 5\}$ (d) $\{5\}$
- (6) How many ways can 5 people be arranged in a line ?
- (a) 120 (b) 60
(c) 25 (d) 240

