VIDYAPEETH

SET THEORY

DPP-01 (JAM/011)

[Sets and Their Representation]

1. Which of the following are sets?

(i) The collection of all the months of a year beginning with the letter J.

(ii) The collection of ten most talented writers of India.

(iii) A team of eleven best-cricket batsmen of the world.

(iv) The collection of all boys in your class.

(v) The collection of all natural numbers less than 100.

(vi) A collection of novels written by the writer Munshi Prem Chand.

(vii) The collection of all even integers.

(A) (i), (iv), (v), (vi), (vii)

(B) (iii), (ii), (vi), (vii)

(C) (i), (ii), (v), (vi)

(D) (i), (iii), (i), (v)

2. The set of intelligent students in a class is:

(A) A null set

(B) A singleton set

(C) A finite set

(D) Not a well-defined collection

3. Write the solution set of the equation $x^2 + x - 2 = 0$ in roster form.

(A) $\{1, -3\}$

(B) $\{1, -2\}$

(C) $\{2, -2\}$

(D) $\{3, -2\}$

4. Write the set $\{x : x$ is a positive integer and $x^2 < 40\}$ in the roster form.

(A) $\{1, 2, 4, 5, 6\}$

(B) $\{1, 2, 3, 5, 6\}$

(C) $\{1, 2, 3, 4, 6\}$

(D) $\{1, 2, 3, 4, 5, 6\}$

5. Let $A = \{1, 2, 3, 4, 5, 6\}$. Which one of the following is true:

(i) $5 \in A$ (ii) $8 \in A$

(iii) $0 \in A$ (iv) $4 \in A$

(v) $2 \in A$ (vi) $10 \in A$

(A) (i), (iv), (v)

(B) (ii), (iii), (v)

(C) (iv), (i), (ii)

(D) (iii), (i), (vi)

6. Write the set $\left\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}\right\}$ in the set-builder form.

(A) $\left\{x : x = \frac{n}{n+1}, n \in N \text{ and } 1 \le n \le 2\right\}$

(B) $\left\{x : x = \frac{n}{n+1}, n \in N \text{ and } 1 \le n \le 5\right\}$

(C) $\left\{x : x = \frac{n}{n+1}, n \in N \text{ and } 1 \le n \le 3\right\}$

(D) $\left\{x : x = \frac{n}{n+1}, n \in N \text{ and } 1 \le n \le 6\right\}$

7. The number of elements in the set $\{(a,b): 2a^2 + 3b^2 = 35, a, b \in Z\}$, where Z is the set of all integers, is

(A) 2
(B) 4
(C) 8
(D) 12

8. Represent the set $A = \{M_a, M_e, M_i, M_0, M_u\}$ in set- builder form.

(A) $A = \{M_x : x$ is a vowel of English alphabet$\}$
(B) $A = \{M_x : x$ is a consonant of English alphabet$\}$
(C) $A = \{x : x, x$ is $a,e,i,o,u.\}$
(D) None of these

9. Let A = {n : n is a square of natural no. and n is less than 100} and B is a set of even natural no. What is the cardinality of $A \cap B$?

(A) 4 (B) 5
(C) 9 (D) None

10. Set builder form of the relation

$R = \{(-2,-7),(-1,-4),(0,-1),(1,2),(2,5)\}$is

(A) $\{(a,b): b = 2a - 3; a, b, \in Z\}$
(B) $\{(x,y): y = 3x - 1; x, y, \in Z\}$
(C) $\{(a,b): b = 3a - 1; a, b \in N\}$
(D) $\{(u,v): v = 3u - 1; -2 \le u < 3 \text{ and } u \in Z\}$