

Chapter End Test

Date : _____	Mathematics	BATCH
Duration: 45 Min. Max. Marks : 25	Topic : Sets & Relations and Functions (Set-2)	XI

Disclaimer: The objective is to test the understanding of the children. For long question is to write coherently in more than one paragraph.

General instruction:

1. This paper consist of two Sections. Students has to attempt both sections.
2. Section – A is objective carry 1 mark each.
3. Section – B is subjective.

[Section – A]

1. If $A = \{1, 2, 4\}$ and $B = \{2, 4, 5\}$ and $C = \{2, 5\}$, then $A - B \times B - C$
 - (a) $\{(1, 2), (1, 5), (2, 5)\}$
 - (b) $\{(1, 4)\}$
 - (c) $\{(1, 4), (4, 1)\}$
 - (d) none of these
2. If $A = \{1, 2, 3\}$ and $B = \{1, 4, 6, 9\}$ and R is relation from A to B defined by $R = \{(x, y) : x \text{ is greater than } y\}$ the range of R is
 - (a) $\{1, 4, 6, 9\}$
 - (b) $\{4, 6, 9\}$
 - (c) $\{1\}$
 - (d) $\{1, 2, 3\}$
3. If $R = \{(x, y) : x \& y \in \mathbb{Z}, x^2 + y^2 \leq 4\}$ is a relation on \mathbb{Z} , then domain of R is
 - (a) $\{0, 1, 2\}$
 - (b) $\{0, -1, -2\}$
 - (c) $\{-2 - 1, 0, 1, 2\}$
 - (d) none of these
4. R is relation from $\{11, 12, 13\}$ to $\{8, 10, 12\}$ defined by $R = \{(x, y) : y = x - 3\}$ Then R will be
 - (a) $\{(11, 8), (13, 10)\}$
 - (b) $\{(8, 11), (10, 13)\}$
 - (c) $\{(13, 10), (11, 8), (10, 12)\}$
 - (d) None of these
5. If R is a relation on a finite set having n element, then number of relation on A is
 - (a) 2^n
 - (b) 2^{n^2}
 - (c) n^2
 - (d) n^n
6. If the set A has p elements, B has q elements, then number of elements in $A \times B$ is
 - (a) $p + q$
 - (b) $p + q + 1$
 - (c) pq
 - (d) p^q
7. Let R be relation from a set A to a set B , then
 - (a) $R = A \cup B$
 - (b) $R = A \cap B$
 - (c) $R \subseteq A \times B$
 - (d) $R \subseteq B \times A$
8. If $A = \{3, -3\}$, then $A \times A$ will be
 - (a) $\{(3, -3), (-3, 3)\}$
 - (b) $\{(3, 3), (-3, -3)\}$
 - (c) $\{(3, 3), (3, -3), (-3, 3), (-3, -3)\}$
 - (d) $\{(3, 3), (-3, -3), (-3, 3)\}$
9. The set $(A \cap B)' \cup (B \cap C)$ is equal to
 - (a) $A' \cup B \cup C$
 - (b) $A' \cup B$
 - (c) $A' \cup C'$
 - (d) $A' \cap B$
10. In a class of 60 students, 25 students play cricket, 20 students play tennis and 10 students play both the games. Then number of students who play neither is
 - (a) 0
 - (b) 25
 - (c) 35
 - (d) 45

11. If A and B are two sets, then $A \cap (A \cup B)$ equals
 (a) B (b) ϕ
 (c) $A \cap B$ (d) A
12. What will be interval form of set $\{x : x \in \mathbb{R}, -12 < x < -10\}$
 (a) $[-12, 10]$ (b) $(-12, -10)$
 (c) $[-12, -10)$ (d) $(-12, -10]$
13. If R is the set of real number and Q is the set of rational number then what is $\mathbb{R} - \mathbb{Q}$.
 (a) set of real number (b) set of irrational number
 (c) set of rational number (d) empty set
14. If $A \subset B$ then
 (a) $C - A \subset C - B$ (b) $C - B \subset C - A$
 (c) $C - A = C - B$ (d) $C - B \cap C - A = \phi$
15. Let U be set of all triangles in a plane. If A is the set of all triangles with at least one angle is different from 60° , then what is A'
 (a) set of isosceles triangles (b) set of all equilateral triangles
 (c) set of scalene triangles (d) set of triangles

[Section – B]

16. There are 200 individuals with skin disorder, 120 has been exposed to chemical C_1 , 50 to chemical C_2 , and 30 to both the chemical C_1 and C_2 . Find number of individuals exposed to
 (i) Chemical C_1 or chemical C_2
 (ii) Chemical C_1 but not chemical C_2
 (iii) Chemical C_2 but not chemical C_1 **[4]**
17. (a) Find domain and range of real function $f(x) = \sqrt{16 - x^2}$ **[3]**
 (b) Let $A = \{1, 2, 3, 4, 5, 6\}$. Let R be a relation on A defined by $R = \{(a, b) : b \in A, b \text{ is exactly divisible by } a\}$ **[3]**
 (i) Write R in roster form
 (ii) Find domain of R
 (iii) Find range of R

OR

- (a) Let R be a relation on N defined by $R = \{(a, b) : a, b \in \mathbb{N}, \text{ and } a = b^2\}$
 Are the following true? Justify your answer in each case **[3]**
 (i) $(a, a) \in R$ for all $a \in \mathbb{N}$
 (ii) $(a, b) \in R \Rightarrow (b, a) \in R$
 (iii) $(a, b) \in R, (b, c) \in R \Rightarrow (a, c) \in R$
- (b) (i) Find domain of real function $f(x) = \frac{x^2 + 3x + 5}{x^2 - 5x + 4}$ **[1]**
 (ii) Find range of real function **[2]**
 (a) $f(x) = x^2 + 3$ (b) $f(x) = 2 - 3x, x > 0$



Hints/Solutions to Chapter End Test

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[Section – A]

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|------------|-----|------------|-----|
| 1. | (b) | 2. | (c) |
| 3. | (c) | 4. | (a) |
| 5. | (a) | 6. | (c) |
| 7. | (c) | 8. | (c) |
| 9. | (c) | 10. | (b) |
| 11. | (c) | 12. | (b) |
| 13. | (c) | 14. | (d) |
| 15. | (a) | | |

