CAMBRIDGE SCHOOL SRINIVASPURI
PERIODIC ASSESSMENT I – (2025-26)
MATHEMATICS
CLASS – XI
SET B

TIME: 60 MINS **MM : 30**

General Instructions:

1. The question paper consists of **17** questions. It contains **five** sections – **section A, B, C, D and E.** Each section is compulsory.
2. **Section A** has **10** MCQ's and **2** Assertion-Reason based questions of **1** mark each.
3. **Section B** has **1** Very Short Answer (VSA)-type question of **2** marks.
4. **Section C** has **1** Short Answer (SA)-type question of **3** marks.
5. **Section D** has **1** Long Answer (LA)-type question of **5** marks.
6. **Section E** has **2** source based/case based/passage based/integrated units of assessment (**4** marks each) with sub parts.

SECTION A

Multiple Choice Questions 1x12=1

1. The set of odd prime numbers less than 12 is
   (a) $\{1,3,5,7,9,11\}$ **(b)** $\{1,3,5,7,11\}$
   (c) $\{3,5,7,11\}$ **(d)** $\{3,5,11\}$

2. Given relation $R = \{(1,6), (2,9), (3,6), (5,10)\}$. Then, the number of elements in the range of R is
   (a) 2 **(b)** 4
   (c) 3 **(d)** 1

3. Range of the function $f(x) = \frac{|x+4|}{x+4}$ is
   (a) $\{4\}$ **(b)** $\{-4\}$
   (c) $\{+1, -1\}$ **(d)** $\{0\}$

4. If $f(x) = y = \frac{ax-b}{cx-a}$, then
   (a) $f(y) = -x$ **(b)** $f(y) = x$
   (c) $f(y) = \frac{1}{x}$ **(d)** $f(y) = -\frac{1}{x}$

5. Which one of the following is correct ?
   (a) $A \cup A = U$ **(b)** $A \cap A = \emptyset$
   (c) $A \cup \emptyset = \emptyset$ **(d)** $A \cap \emptyset = \emptyset$

6. If $A = (1,5)$ and $B = [2,7)$, then $A \cap B$ is
   (a) $[2,5]$ **(b)** $(2,5]$
   (c) $(2,5)$ **(d)** $[2,5)$

7. If X and Y are two sets and X' denotes the compliment of X, then $X \cap (X \cup Y)'$ is equal to

(a) X (b) Y

(c) $\emptyset$ (d) $X \cap Y$

8. Given set $aN = \{ax | x \in N, a \text{ is a constant natural number}\}$, then the set $4N \cap 6N$ is

(a) $12N$ (b) N

(c) $2N$ (d) $24N$

9. If $n(A) = 3, n(B) = 6$. The minimum number of elements in $A \cap B$ is

(a) 3 (b) 6

(c) 9 (d) 12

10. Domain of the function $f(x) = \sqrt{16 - x^2}$ is

(a) $R - (-4,4)$ (b) $R - [-4,4]$

(c) $(-4,4)$ (d) $[-4,4]$

ASSERTION – REASON BASED QUESTIONS

In the following questions, a statement of assertion **(A)** is followed by a statement of Reason **(R)**. Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

11. **Assertion (A):** If $(x + 3, 5) = (2, y - 1)$ then $x = -1, y = 6$.
Reason (R) : If $(a, b) = (c, d)$, then $a + c = b + d$.

12. **Assertion (A):** An Interval is a subset of real numbers.
Reason (R) : Infinite real numbers lie in the interval $[a, b]$.

SECTION B

2x1=2

Very Short Answer Type Question

13. Two finite sets have m and n elements. The number of subsets of the first set is 112 more than that of the second set. Find the values of m and n.

SECTION C

Short Answer Type Question

3x1=3

14. Find the domain and range of the function $f(x) = \frac{x-1}{x-2}$.

SECTION D

5x1=5

Long Answer Type Question

15. Draw the graph of the greatest integer function. Also, mention its domain, range and co-domain.

4x2=8

SECTION E

Case-Based Questions

16. Case-Study I:

A survey of 400 people was conducted to ask about their transportation preferences. 200 people use public transport, 180 use bicycle, and 80 people use both public transport and bicycle.

Based on the above information, answer the following questions.

(i) How many people use at least one of the two transport methods? 1

(ii) How many people use only public transport ? 1

(iii) **(a)** How many people use only one mode of transport? 2

OR

(b) How many people use neither public transport not bicycle to travel? 2

17. Case-Study II:

A teacher while teaching relations and function to the class, wrote a question on the board, which is as follows.

Let f and g be two real functions defined by $f(x) = 1 + x^2$ and $g(x) = 3 + 2x$.

Based on the above information, answer the following questions.

(i) Find the domain and range of f. Also find $f\left(\frac{1}{x}\right)$. 2

(ii) Find $\frac{1}{g}$. For which value of x is $\frac{1}{g}$ not defined ? 2

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