INDIAN SCHOOL SOHAR **SET II**

UNIT TEST I (2024-25)
MATHEMATICS

CLASS: XI **MAX. MARKS: 20**
DATE: 23/05/24 **TIME: 40 MINUTES**

General Instructions:

1. This Question paper contains - four sections A, B, C and D. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 4 MCQ's and 1 Assertion-Reason based questions of 1 mark each.
3. Section B has 2 Very Short Answer (VSA)-type questions of 2 mark each.
4. Section C has 2 Short Answer (SA)-type questions of 3 mark each.
5. Section D has 1 Long Answer (LA)-type questions of 5 marks.

	SECTION – A (Multiple Choice Questions) Each question carries 1 mark
1.	For any 2 sets A and B, $A \cap (A \cup B)'$= (a) A (b) B (c) $\emptyset$ (d) $A \cap B$
2.	Let the universal set contain 800 elements. If A and B are subsets of U such that n(A) = 200, n(B) = 400, n(A∪B) = 500. Then n $(A' \cup B')$ is (a) 600 (b) 700 (c) 300 (d) none of these
3.	Let R be a relation on N defined by R = { (x,y) : x + 2y = 8 }, then the domain of R is (a) { 2, 4, 8 } (b) { 2, 4, 6, 8 } (c) { 2, 4, 6 } (d) { 1, 2, 3, 4 }
4.	The range of the function $f(x) = \frac{\lvert x+2 \rvert}{x+2}$, $x \neq -2$ is (a) { 1 } (b) { -1, 0, 1 } (c) { -1, 1 } (d) none of these
5.	Assertion – Reason based question. In the following question, 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 correct explanation of A (b) Both A and R are true and R is not correct explanation of A (c) A is true but R is false. (d) A is false but R is true. Assertion (A): Let A be the set of natural numbers and B = {1,2,3,4,5} and $A - B$ = { 5, 6, 7, 8, 9….} Reason (R) : If $A \subset B$, then $A \cap B = A$
	SECTION – B [This section comprises of very short answer type questions (VSA) of 2 marks each]
6.	Let f(x) = $x^2 - x$ and g(x) = x be be two real functions defined on positive real numbers. Find (f – g)(x) and (fg)(x). Hence find (f - g) (-1) and $(fg)\left(\frac{1}{2}\right)$
7.	Find the angle in degrees through which a pendulum swings if its length is 50cm and the tip describes an arc of length 10 cm. **[OR]** Find the radius of the circle in which a central angle of 60° intercepts an arc of length 37.4 cm. (Use $\pi = \frac{22}{7}$)

	SECTION – C [This section comprises of short answer type questions (SA) of 3 marks each]
8.	A and B are any two sets such that n(A – B) = 20 + x, n(B – A) = 3x and n($A \cap B$) = x + 1. Draw a Venn diagram to illustrate the information. If n(A) = n(B), then find (i) value of x (ii) $n(A \cup B)$ **[OR]** Let U = { x ϵ N : x ≤ 20 }, A = { x ϵ N : 4 < x^2 < 40 } and B = { x ϵ N : x is prime number less than 10 } C = { x ϵ N : x^3 < 10 } Verify $A \cap (B \cup C) = (A \cap B) U (A \cap C)$
9.	Express the following angles in degrees (a) $\frac{15\pi}{3}$ (b) -3
	SECTION – D [This section comprises of long answer type questions (LA) of 5 marks]
10.	Find the domain and range of (a) $f(x) = \frac{1}{\sqrt{5+x}}$ (b) $f(x) = \sqrt{25 - x^2}$ **[OR]** Define Constant function and Greatest Integer function. Write their domain and range. Also draw rough sketch of both the graphs.