**INDIAN SCHOOL SOHAR** **SET I**

**UNIT TEST I (2023-24)**
**MATHEMATICS**

**CLASS: XI** **MAX. MARKS: 20**
**DATE: 25/05/23** **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.

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| | **SECTION – A**<br>(Multiple Choice Questions) Each question carries 1 mark |
| 1. | For any 2 sets A and B, (A−B)∪(B−A) =<br>(a) (A−B) ∪ A (b) (B−A) ∪ B (c) (A∪B) − (A∩B) (d) (A∪B)∩(A∩B) |
| 2. | Which of the following is not a function?<br>(a) $\{(x,y) : x,y \in R, x^2 = y\}$ (b) $\{(x,y) : x,y \in R, y^2 = x\}$<br>(c) $\{(x,y) : x,y \in R, x = y^3\}$ (d) $\{(x,y) : x,y \in R, y = x^3\}$ |
| 3. | The value of sin(-765°) is<br>(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{-1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{2}}$ |
| 4. | If tan θ = -3 and θ is in 2nd quadrant, then the value of sin θ is<br>(a) $\frac{1}{\sqrt{10}}$ (b) $\frac{-1}{\sqrt{10}}$ (c) $\frac{-3}{\sqrt{10}}$ (d) $\frac{3}{\sqrt{10}}$ |
| 5. | Assertion – Reason based question<br>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.<br>(a) Both A and R are true and R is correct explanation of A<br>(b) Both A and R are true and R is not correct explanation of A<br>(c) A is true but R is false<br>(d) A is false but R is true<br>Assertion (A) : If A×B = {(p,q), (p, r), (m,q), (m,r)} then sets A and B are respectively {p,m}, {q,r}<br>Reason (R) : Domain of $f(x) = \frac{1}{\sqrt{x-5}}$ is (5,∞) |
| | **SECTION – B**<br>[This section comprises of very short answer type questions (VSA) of 2 marks each] |
| 6. | Find in degrees the angle through which a pendulum swings if its length is 50cm and the tip describes an arc of length 10 cm.<br>[OR]<br>A horse is tied to a post by a rope. If the horse moves along a circular path always keeping the rope tight and describes 88 metres when it has traced out 72° at the centre, find the length of the rope. |
| 7. | If U = { x : 50 ≤ x ≤ 60, x ∈ Z }<br>A = {x : x is a multiple of 2 }<br>and B = {x : x is a multiple of 3 }. Find (i) A ∩ B' (ii) A' ∪ B' |

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| | **SECTION – C**<br>[This section comprises of short answer type questions (SA) of 3 marks each] |
| 8. | If A, B and C are any three sets, then prove that A ∪ $(B \cap C) = (A \cup B) \cap (A \cup C)$ using properties of sets<br>OR<br>If A, B and C are any three sets such that A ∪ B = A ∪ C and A ∩ B = A ∩ C, show that B=C using properties of sets |
| 9. | Determine a quadratic function 'f'defined by $f(x) = ax^2 + bx + c$ if $f(0) = 6$, $f(2) = 11$ and $f(-3) = 6$ |
| | **SECTION – D**<br>[This section comprises of long answer type questions (LA) of 5 marks ] |
| 10. | Find the domain and range of<br>(a) $f(x) = \frac{x-7}{\|x-7\|}$ (b) $f(x) = \sqrt{64 - x^2}$<br>OR<br>Draw the graph of the following function in the interval [-4, 4]<br>(a) Signum function<br>(b) $f$: R→R defined by $f(x) = [x]$ (Greatest integer function)<br>(c) $f$: R→R defined by $f(x) = \|x\|$ (Modulus function) |
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**INDIAN SCHOOL SOHAR** **SET II**

**UNIT TEST I (2023-24)**
**MATHEMATICS**

**CLASS: XI** **MAX. MARKS: 20**
**DATE: 25/05/23** **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.

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|---|---|
| | **SECTION – A**<br>(Multiple Choice Questions) Each question carries 1 mark |
| 1. | For any 2 sets A and B, (B−A) ∪ (A−B) =<br>(a) (A∪B)∩(A∩B) (b) (B−A) ∪ B (c) (A∪B) − (A∩B) (d) (A−B) ∪ A |
| 2. | The value of sin(765°) is<br>(a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{-1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{2}}$ |
| 3. | Which of the following is not a function?<br>(a) $\{(x,y) : x,y \in R, y = x^3\}$ (b) $\{(x,y) : x,y \in R, x^2 = y\}$<br>(c) $\{(x,y) : x,y \in R, y^2 = x\}$ (d) $\{(x,y) : x,y \in R, x = y^3\}$ |
| 4. | If tan θ = -3 and θ is in $4^{th}$ quadrant, then the value of sin θ is<br>(a) $\frac{1}{\sqrt{10}}$ (b) $\frac{-1}{\sqrt{10}}$ (c) $\frac{-3}{\sqrt{10}}$ (d) $\frac{3}{\sqrt{10}}$ |
| 5. | Assertion – Reason based question<br>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.<br>(a) Both A and R are true and R is correct explanation of A<br>(b) Both A and R are true and R is not correct explanation of A<br>(c) A is true but R is false<br>(d) A is false but R is true<br>Assertion (A) : Let A = {a, b, c, d} and B = {1,2,3,4,5} and f = {(a,1), (b,1), (c, 3), (d,4)} is a function<br>Reason (R) : Range of $f(x) = \cos x$ is [-1,1] |
| | **SECTION – B**<br>[This section comprises of very short answer type questions (VSA) of 2 marks each] |
| 6. | If U = { x : 50 ≤ x ≤ 60, x ∈ Z }<br>A = {x : x is a multiple of 2 } and<br>B = {x : x is a multiple of 3 }, Find (i) A ∩ B (ii) A' ∩ B |
| 7. | Find in degrees the angle through which a pendulum swings if its length is 50cm and the tip describes an arc of length 10 cm.<br>[OR]<br>A horse is tied to a post by a rope. If the horse moves along a circular path always keeping the rope tight and describes 88 metres when it has traced out 72° at the centre, find the length of the rope. |

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| | **SECTION – C**<br>[This section comprises of short answer type questions (SA) of 3 marks each] |
| 8. | If A, B and C are any three sets, then prove that A ∩ (B ∪ C) = (A ∩ B) ∪ (A ∩ C) using properties of sets<br>OR<br>If A, B and C are any three sets such that A ∪ B = A ∪ C and A ∩ B = A ∩ C, show that B=C using properties of sets |
| 9. | Determine a quadratic function 'f'defined by $f(x) = px^2 + qx + c$ if $f(0) = 6$, $f(2) = 11$ and $f(-3) = 6$ |
| | **SECTION – D**<br>[This section comprises of long answer type questions (LA) of 5 marks ] |
| 10. | Find the domain and range of<br>(a) $f(x) = \frac{\|x-8\|}{x-8}$ (b) $f(x) = \sqrt{x^2 - 121}$<br>OR<br>Draw the graph of the following function in the interval [-3, 3]<br>(a) Signum function<br>(b) $f$: R→R defined by $f(x) = [x]$ (Greatest integer function)<br>(c) $f$: R→R defined by $f(x) = \|x\|$ (Modulus function) |
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