ROLL NUMBER				

SET B

INDIAN SCHOOL MUSCAT
FIRST PERIODIC TEST

MATHEMATICS

CLASS: XII | Sub. Code: 041 | Time Allotted: 50 mts.

19.04.2022 | Max. Marks: 20

GENERAL INSTRUCTIONS:

(3) ***This question paper consists of 10 questions. All questions are compulsory.***

(ii) Questions 1 – 3 are MCQ carrying 1 mark each.

(iii) Questions 4 – 7 carry 2 marks each.

(iv) Questions 8 – 10 carry 3 marks each.

1. Which of the following is the principal value branch of $tan^{-1}x$? (1)

   (a) $\left(-\frac{\pi}{2},\frac{\pi}{2}\right)$ (b) $\left[-\frac{\pi}{2},\frac{\pi}{2}\right]$ (c) $(0,\pi)$ (d) $\left(-\frac{\pi}{2},\frac{\pi}{2}\right)-\{0\}$

2. Let $f(x)=3x$ be a function with domain $\{0,-1,-3,2\}$. Then domain of f^{-1} is (1)

   (a) $\{-3,2,-1,0\}$ (b) $\{-9,-3,0,6\}$ (c) $\{0,1,9,6\}$ (d) $\{0,-1,8,-27\}$

3. Let $A=\{a,b,c,d\}$ and $R=\{(a,b),(b,a),(a,a)\}$ be a relation on set A. Then R is (1)

   (a) reflexive and transitive only (b) symmetric and transitive only

   © symmetric only (d) transitive only

4. Find the value of : $\tan^{-1}\left[2\,sin\left(2\,\cos^{-1}\frac{\sqrt{3}}{2}\right)\right]$ (2)

5. For the set $A=\{1,2,3\}$, define a relation in the set as (2)

   $R=\{(1,1),(2,2),(1,2)\}$. Write any two ordered pairs to be added to R to make it an equivalence relation.

6. Find the value of : $\cot^{-1}\left(\frac{1}{\sqrt{3}}\right) - \sec^{-1}(-2)$ (2)

7. Show that the function $f: N \to N$ given by $f(x) = 1 + x^2$ for all $x \in N$, is not surjective. (2)

8. Show that the relation in the set of real numbers, defined as $R = \{(a, b): a \leq b^2\}$ is neither symmetric nor transitive. (3)

9. Find the principal value of : $cos^{-1}\left(\sin\frac{3\pi}{4}\right)$ (3)

10. Let $A = R - \{3\}$ and $B = R - \{1\}$. If $f: A \to B$ is a function defined by $f(x) = \frac{x-2}{x-3}$, show that f is one-one and onto. (3)

End of the Question Paper

ROLL NUMBER				

SET C

INDIAN SCHOOL MUSCAT
FIRST PERIODIC TEST

MATHEMATICS

CLASS: XII | Sub. Code: 041 | Time Allotted: 50 mts.

19.04.2022 | Max. Marks: 20

GENERAL INSTRUCTIONS:

(3) ***This question paper consists of 10 questions. All questions are compulsory.***

(ii) Questions 1 – 3 are MCQ carrying 1 mark each.

(iii) Questions 4 – 7 carry 2 marks each.

(iv) Questions 8 – 10 carry 3 marks each.

1. Let $f(x) = x^3$ be a function with domain $\{0, -1, -2, -3\}$. Then domain of f^{-1} is (1)

   (a) $\{3, 2, 1, 0\}$ (b) $\{0, -1, -2, -3\}$ (c) $\{0, 1, 8, 27\}$ (d) $\{0, -1, -8, -27\}$

2. Let $A = \{1, 2, 3\}$ and $R = \{(1, 1), (2, 2), (3, 3)\}$ be a relation on set A. Then R is (1)

   (a) transitive only (b) symmetric only

   © reflexive only (d) an equivalence relation.

3. Which of the following is the principal value branch of $\sec^{-1} x$? (1)

   (a) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ (b) $[0, \pi] - \left\{\frac{\pi}{2}\right\}$ (c) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ (d) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right] - \{0\}$

4. For the set $A = \{a, b, c\}$, define a relation in the set as (2)

   $R = \{(a, a), (a, b), (b, c)\}$.

   List down the minimum ordered pairs to be added in R to make R reflexive and transitive.

5. Find the value of : $tan^{-1}\left(\frac{1}{\sqrt{3}}\right) - \text{cosec}^{-1}(-\sqrt{2})$ (2)

6. Show that the function $f: Z \to Z$ given by $f(x) = 1 + x^2$ for all $x \in Z$, is not (2)

surjective.

7. Evaluate: $cos\left\{\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)+\frac{\pi}{6}\right\}$ (2)

8. Let $A = R - \{2\}$ and $B = R - \{1\}$. If $f: A \to B$ is a function defined by $f(x) = \frac{x-1}{x-2}$, show that f is one-one and onto. (3)

9. Find the principal value of : $cos^{-1}\left(\sin\frac{5\pi}{6}\right)$ (3)

10. Show that the relation in the set of real numbers, defined as $R = \{(a, b): a \leq b^3\}$ is neither symmetric nor transitive. (3)

End of the Question Paper

ROLL NUMBER				

SET A

INDIAN SCHOOL MUSCAT
FIRST PERIODIC TEST

MATHEMATICS

CLASS: XII | Sub. Code: 041 | Time Allotted: 50 mts.

19.04.2022 | Max. Marks: 20

GENERAL INSTRUCTIONS:

(i) This question paper consists of 10 questions. All questions are compulsory.

(ii) Questions 1 – 3 are MCQ carrying 1 mark each.

(iii) Questions 4 – 7 carry 2 marks each.

(iv) Questions 8 – 10 carry 3 marks each.

1. Let $A = \{1, 2, 3\}$ and $R = \{(1, 2), (2, 3), (1, 3)\}$ be a relation on set A. Then R is (1)

   (a) neither reflexive nor transitive (b) neither symmetric nor transitive

   (c) transitive only (d) neither reflexive, nor symmetric, nor transitive.

2. Which of the following is the principal value branch of $\text{cosec}^{-1} x$? (1)

   (a) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ (b) $[0, \pi] - \left\{\frac{\pi}{2}\right\}$ (c) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ (d) $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right] - \{0\}$

3. Let $f(x) = x^3$ be a function with domain $\{0, 1, 2, 3\}$. Then domain of f^{-1} is (1)

   (a) $\{3, 2, 1, 0\}$ (b) $\{0, -1, -2, -3\}$ (c) $\{0, 1, 8, 27\}$ (d) $\{0, -1, -8, -27\}$

4. Show that the function $f: R \to R$ given by $f(x) = x^2 + 2$ for all $x \in R$, is not surjective. (2)

5. Evaluate: $cos\left\{\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) - \frac{\pi}{2}\right\}$ (2)

6. For the set $A = \{a, b, c\}$, define a relation in the set as (2)

$R = \{(a, a), (a, b), (b, c)\}$. List down the minimum ordered pairs to be added in R to make R reflexive and transitive.

7. Find the value of : $\cot^{-1}\left(\frac{1}{\sqrt{3}}\right) - \sec^{-1}(-2)$ (2)

8. Let $A = R - \{2\}$ and $B = R - \{1\}$. If $f: A \to B$ is a function defined by (3)

$f(x) = \frac{x-1}{x-2}$, show that f is one-one and onto.

9. Show that the relation in the set of real numbers, defined as (3)

$R = \{(a, b): a \leq b^2\}$ is neither symmetric nor transitive.

10. Find the principal value of : $\sin^{-1}\left(\cos\frac{7\pi}{6}\right)$ (3)

End of the Question Paper