Roll Number		

A

INDIAN SCHOOL MUSCAT
FIRST PERIODIC ASSESSMENT

MATHEMATICS

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

08.04.2019 | Max. Marks: 20

GENERAL INSTRUCTIONS:

- ***All questions are compulsory.***
- ***Questions 1 to 4 carry TWO marks each.***
- ***Questions 5 to 7 carry FOUR marks each.***

SECTION – A (2 x 4 = 8 marks)

1. Find the value of $\tan^{-1}\left(\tan\frac{3\pi}{5}\right)$ — 2 mks

2. Show that the function $f: N \to N$ given by $f(x) = 2x$, is one-one but not onto. — 2 mks

3. Find gof and fog, if $f(x) = 8x^3$ and $g(x) = x^{\frac{1}{3}}$ — 2 mks

4. Write $\cot^{-1}\left(\frac{1}{\sqrt{x^2-1}}\right)$, $|x| > 1$ in simplest form. — 2 mks

SECTION – B (4 x 3 = 12 marks)

5. Let $f: N \to R$ be a function defined as $f(x) = 4x^2 + 12x + 15$. Show that $f: N \to S$, where S is the range of f, is invertible. Also find the inverse of f. — 4 mks

6. Show that the relation R in the set $A = \{x \in Z : 0 \leq x \leq 12\}$ given by $R = \{(a, b): |a - b| \text{ is a multiple of } 4\}$ is an equivalence relation. — 4 mks

7. If $\tan^{-1}\left(\frac{x-1}{x-2}\right) + \tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$, find the value of x. — 4 mks

End of the Question Paper

Roll Number		

B

INDIAN SCHOOL MUSCAT
FIRST PERIODIC ASSESSMENT

MATHEMATICS

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

08.04.2019 | Max. Marks: 20

GENERAL INSTRUCTIONS:

- ***All questions are compulsory.***
- ***Questions 1 to 4 carry TWO marks each.***
- ***Questions 5 to 7 carry FOUR marks each.***

SECTION – A (2 x 4 = 8 marks)

1. Find gof and fog, if $f(x) = 8x^3$ and $g(x) = x^{\frac{1}{3}}$ — 2 mks

2. Write $\tan^{-1}\left(\frac{1}{\sqrt{x^2-1}}\right)$, $|x| > 1$ in simplest form. — 2 mks

3. Find the value of $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ — 2 mks

4. Show that the function $f: N \to N$ given by $f(x) = 2x$, is one-one but not onto. — 2 mks

SECTION – B (4 x 3 = 12 marks)

5. Show that the relation R in the set $A = \{x \in Z : 0 \leq x \leq 12\}$ given by $R = \{(a, b): |a - b| \text{ is a multiple of } 4\}$ is an equivalence relation. — 4 mks

6. If $\tan^{-1}\left(\frac{x-1}{x-2}\right) + \tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$, find the value of x. — 4 mks

7. Let $f: N \to R$ be a function defined as $f(x) = 4x^2 + 12x + 15$. Show that $f: N \to S$, where S is the range of f, is invertible. Also find the inverse of f. — 4 mks

End of the Question Paper

Roll Number		

C

INDIAN SCHOOL MUSCAT
FIRST PERIODIC ASSESSMENT

MATHEMATICS

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

08.04.2019 | Max. Marks: 20

GENERAL INSTRUCTIONS:

- ***All questions are compulsory.***
- ***Questions 1 to 4 carry TWO marks each.***
- ***Questions 5 to 7 carry FOUR marks each.***

SECTION – A (2 x 4 = 8 marks)

1. Write $\cot^{-1}\left(\frac{1}{\sqrt{x^2-1}}\right)$, $|x| > 1$ in simplest form. 2 mks

2. Show that the function $f: N \to N$ given by $f(x) = 2x$, is one-one but not onto. 2 mks

3. Find gof and fog, if $f(x) = 8x^3$ and $g(x) = x^{\frac{1}{3}}$ 2 mks

4. Find the value of $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ 2 mks

SECTION – B (4 x 3 = 12 marks)

5. If $\tan^{-1}\left(\frac{x-1}{x-2}\right) + \tan^{-1}\left(\frac{x+1}{x+2}\right) = \frac{\pi}{4}$, find the value of x. 4 mks

6. Consider $f: R_+ \to [-5, \infty)$ given by $f(x) = 9x^2 + 6x - 5$. Show that f is invertible. 4 mks
   Also find the inverse of f.

7. Show that the relation R in the set $A = \{x \in Z : 0 \leq x \leq 12\}$ given by 4 mks
   $R = \{(a, b): |a - b| \text{ is a multiple of } 4\}$ is an equivalence relation.

End of the Question Paper