Roll Number		

A

INDIAN SCHOOL MUSCAT
SECOND PERIODIC ASSESSMENT

MATHEMATICS

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

14.05.2019 **Max. Marks: 20**

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper consists of **7** questions divided into two sections A and B.
3. **Section A** comprises of **4** questions of **2** marks each and **Section B** comprises of **3** questions of **4** marks each.

SECTION: A

1. If $x = a\cos\theta$ and $y = b\sin\theta$, find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{6}$. 2

2. Differentiate the function $\tan^{-1}\frac{\sqrt{1+x^2}-1}{x}$ with respect to x. 2

3. Prove that the greatest integer function $[x]$ is not differentiable at x = 1. 2

4. Show that the function defined by $f(x) = \sin(x^2)$ is a continuous function 2

SECTION: B

5. Find the values of a and b such that the function f defined by $f(x) = \begin{cases} 5, if x \le 2 \\ ax + b, if\ 2 < x < 10 \\ 21, if x \ge 10 \end{cases}$ is a continuous function. 4

6. Differentiate the function $x^{\sin x} + (\sin x)^{\cos x}$ with respect to x. 4

7. If $y = (\sin^{-1} x)^2$, show that $(1-x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} = 2$. 4

End of the Question Paper

Roll Number		

B

INDIAN SCHOOL MUSCAT
SECOND PERIODIC ASSESSMENT

MATHEMATICS

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

14.05.2019 **Max. Marks: 20**

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper consists of **7** questions divided into two sections A and B.
3. **Section A** comprises of **4** questions of **2** marks each and **Section B** comprises of **3** questions of **4** marks each.

SECTION: A

1. Show that the function defined by $f(x) = \cos(x^2)$ is a continuous function. 2

2. Differentiate the function $\tan^{-1}\frac{\sqrt{1+x^2}+1}{x}$ with respect to x. 2

3. Prove that the greatest integer function $[x]$ is not differentiable at x = 1. 2

4. If $x = a(\theta + \sin\theta)$ and $y = a(1-\cos\theta)$, find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{3}$. 2

SECTION :B

5. Differentiate the function $x^{\sin x} + (\sin x)^{\cos x}$ with respect to x. 4

6. If $y = (\sin^{-1} x)^2$, show that $(1-x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} = 2$. 4

7. Find the values of a and b such that the function f defined by $f(x) = \begin{cases} 5, if x \le 2 \\ ax + b, if\ 2 < x < 10 \\ 21, if x \ge 10 \end{cases}$ is a continuous function. 4

End of the Question Paper

Roll Number		

C

INDIAN SCHOOL MUSCAT
SECOND PERIODIC ASSESSMENT

MATHEMATICS

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

14.05.2019 **Max. Marks: 20**

GENERAL INSTRUCTIONS:

1. All questions are compulsory.
2. The question paper consists of **7** questions divided into two sections A and B.
3. **Section A** comprises of **4** questions of **2** marks each and **Section B** comprises of **3** questions of **4** marks each.

SECTION :A

1. Differentiate the function $\tan^{-1}\frac{\sqrt{1+x^2}-1}{x}$ with respect to x. 2

2. If $x = a(\theta + \sin\theta)$ and $y = a(1-\cos\theta)$, find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{3}$ 2

3. Show that the function defined by $f(x) = \cos(x^2)$ is a continuous function. 2

4. Prove that the greatest integer function $[x]$ is not differentiable at x = 1. 2

SECTION :B

5. If $y = (\sin^{-1} x)^2$ show that $(1-x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} = 2$. 4

6. Find the values of a and b such that the function f defined by $f(x) = \begin{cases} 5, if x \le 2 \\ ax + b, if\ 2 < x < 10 \\ 21, if x \ge 10 \end{cases}$ 4

   is a continuous function.

7. Differentiate the function $x^{\sin x} + (\sin x)^{\cos x}$ with respect to x. 4

End of the Question Paper