

# Grade :12 CYCLE TEST – 1 Date: 12 .07.22

# Marks: 20 MATHEMATICS (041) Time : 40min

**Each question in section A carries two marks**

**Each question in section b carries three marks**

**Each question in section c carries five marks**

**Students have to answer all the questions.**

**Section A**

1. Differentiate : e3xcos3x with respect to x

2. Find $\frac{dy}{dx}$ when 2x+3y=siny

3. Differentiate : xxcosx

**Section B**

4. Find $\frac{dy}{dx}$ if y=$\sqrt{sinx+\sqrt{sinx+\sqrt{sinx+….+\infty }}}$

5. a) Find the derivative of $tan^{-1}\left(\frac{3a^{2}x-x^{3}}{a^{3}-3ax^{2}}\right)$ , $-\frac{1}{\sqrt{3}}<\frac{x}{a}<\frac{1}{\sqrt{3}}$.

(or)

b) Differentiate tan-1$\left(\frac{acosx-bsinx}{bcosx+asinx}\right)$ , $\frac{-π}{2}<x<\frac{π}{2} and \frac{a}{b}tanx>-1$

6. Find the derivative of $cos^{-1}\left(\frac{sinx+cosx}{\sqrt{2}}\right)$

**Section C**

7. a) If y = $sec^{-1}\left(\frac{x^{2}+1}{x^{2}-1}\right)$ , then find $\frac{dy}{dx}.$

(or)

b) Find $\frac{dy}{dx}$ when y= xcotx + $\frac{2x^{2}-3}{x^{2}+x+2}. $

**ALL THE BEST**