Obtain Mark:	**Mathematics** **Differentiation**	Time: 30 hour
Date: 09/08/2024		Total Mark: 40

1. If $y = 5x^3 - (\sqrt{x} + \frac{1}{\sqrt{x}}) + \frac{1}{2x^4} - \log\sqrt{x} + e^{5x} + 17$ then find $\frac{dy}{dx}$.
2. If $y = e^x + \log x + a^{px+q} + \log_a x + 9$ then find $\frac{dy}{dx}$.
3. Find $\frac{dy}{dx}$ at x=1, if $x = e^{\tan^{-1}(y-x^2)/x^2}$.
4. x^3 এর ভিত্তিতে এর $\cos x^2$ অন্তরক সহগ নির্ণয় কর?
5. If $x^y = e^{x-y}$ show that, $\frac{dy}{dx} = \frac{\log x}{(1+\log x)^2}$.
6. If $x = e^t \cos t$ and $y = e^t \sin t$ then find $\frac{dy}{dx}$.
7. If $y = \log[e^x(\frac{x-2}{x+2})^{\frac{3}{4}}]$ then find $\frac{dy}{dx}$.
8. If $x = \frac{3at}{1+x^2}$ and $y = \frac{3at^2}{1+t^2}$ then find $\frac{dy}{dx}$.