Differential Calculus-3

Model Exam Question paper - 3

11th Standard

Business Maths

Reg.No. : | | | | | | |

I.Answer all the questions

Time : 01:05:00 Hrs

Total Marks : 50

Part-A

4 x 1 = 4

1) If $y = e^{2x}$ then $\frac{d^2y}{d^2x}$ is

(a) 2y (b) 4y (c) y (d) 0

2) If $y = \sin mx$ then $\frac{d^2y}{dx^2}$ is

(a) $-m^2y$ (b) m^2y (c) my (d) -my

3) If $y = 3x^3 + x^2 + 1$ then $\frac{d^2y}{dx^2}$ is

(a) 18 x (b) 18 x + 1 (c) 18 x + 2 (d) $3x^2 + 1$

4) $\frac{d}{dx}(log\sqrt{x})$ is

(a) $1/\sqrt{x}$ (b) 1/2x (c) 1/x (d) $1/2\sqrt{x}$

Part-B

4 x 2 = 8

5) Differentiate the following with respect to x.

(xv) $x^2 \tan x + 2x \cot x + 2$

6) Differentiate the following with respect to x.

(xviii) $\frac{e^x}{1+e^x}$

7) Differentiate the following with respect to x.

(3) $cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$

8) Differentiate the following with respect to x.

(13) e^{xx}

Part-C

6 x 3 = 18

9) Find $\frac{dy}{dx}$ of the following

(13) $x^y = e^{x-y}$

10) Find $\frac{d^2y}{dx^2}$, when $y = (4x - 1)^2$

11) If $x = at^2$, $y = 2at$ find y_2.

12) Find the points of discontinuity of the function $\frac{X^2+6X+8}{X^2-5X+6}$

13) Differentiate : $\cos^{-1}\left(4X^3 - 3X\right)$ with respect to X.

14) Given $X = t + \frac{1}{t}$ and $y = t - \frac{1}{t}$; find the value of $\left(\frac{d^2y}{dX^2}\right)$ at the point t = 2.

Part-D

4 x 5 = 20

15) Find that $\frac{dy}{dx}$ for the following functions.

10) $x = 2cos^2\theta; y = 2sin^2\theta$

16) Evaluate $\underset{X\to\pi/4}{Lt}\frac{3\sin 2X+2\cos 2X}{2\sin 2X-3\cos 2X}$

17) If $\underset{X\to1}{Lt}\frac{X^4-1}{X-1} = \underset{X\to a}{Lt}\frac{X^3-a^3}{X^2-a^2}$, find the value of a.

18) If $y = \left(X + \sqrt{1+X^2}\right)^m$, prove that $\left(1+X^2\right)y_2 + Xy_1 - m^2y = 0$

****