Practice Questions

1) Order & degree of $1+\frac{dy}{dx}+\left(\frac{d^2y}{dx^2}\right)^{3/2}=0$ is

2) Order & degree of $x=\frac{1}{\left(1+\frac{dy}{dx}+\frac{d^2y}{dx^2}\right)^{3/2}}$ is

3) The order of D.E whose general sol^n is given by $y=C_1+C_2e^x+C_3e^{-x}+C_4e^{-2x}$ is

4) The order of D.E whose G.S is given by $y=(D_1+D_2+D_3+D_4)e^x$ is

5) D.E whose general sol^n is given by $y^2=4ax$ is .... ?

6) D.E whose general sol^n is given by $y^2=C(4+e^x)$ is .... ?

7) Solution of $\frac{dy}{dx}+y=0$ is .... ?

8) Solution of $\frac{dy}{dx}=\frac{1+y}{1+x}$ is .... ?

9) Solution of $\sec^2x\tan y\,dx+\sec^2y\tan x\,dy=0$ is .. ?

10) Solution of $\frac{dy}{dx} = e^{x+y} + e^{y-x}$ is ... ?

11) I.F of $(x^2y^2+xy+1)ydx + (x^2y^2-xy+1)xdy = 0$

12) I.F of $(2x\log x - xy)dy + 2ydx = 0$ is

13) Solution of non-exact D.E $(3xy^2-y^3)dx + (xy^2-2x^2y)dy = 0$ with integrating factor I.F $= \frac{1}{x^2y^2}$ is ...

14) I.F of $\frac{dy}{dx} + \frac{y}{1+x^2} = x^2$ is ... ?

15) The Bernoulli's D.E $\frac{dy}{dx} - y\tan x = y^4\sec x$ reduces to L.D.E ?
(Write Reduced D.E only).

16) O.T of family of curves $e^x + e^{-y} = c$ is

17) O.T of family of curves $r = a\cos^2\theta$ is

18) The D.E for the current 'i' in an electric circuit containing resistance 100 Ω and an Inductance of 0.5 H connected in series with 20 V battery is .... ?

19) In RL circuit, $i = \frac{E}{R}(1 - e^{-\frac{R}{L}t})$ then $i_{max} = ?$

20) A pipe 10 cm in diameter contains steam at 100°C. It is protected with asbestos 5 cm thick for $k = 0.0006$ and outer surface is at 30°C. The differential equation of conduction of heat is $dT = -\frac{Q}{2\pi k} \cdot \frac{dx}{x}$.

The amount of heat loss Q is.

i) $\frac{\log 2}{70(2\pi k)}$ ii) $\frac{70(2\pi k)}{\log 2}$

iii) $\frac{70(2\pi k)}{\log 2}$ iv) $\frac{2\pi k}{\log 2}$.

1) The equation of tangents at origin to the curve $y(1+x^2)=x$ is _____

2) Asymptote parallel to y-axis to the curve $x^2y^2=a^2(y^2-x^2)$ is _____

3) Region of absence to curve $y^2(2a-x)=x^3$ is

4) For curve $r=a(1+\cos\theta)$, check symmetry & passing through pole.

5) The tangents at pole to $r=a\sin 3\theta$ are $\theta=$?

6) For curve $x(x^2+y^2)=a(x^2-y^2)$, check symmetry and passing through origin.