	BCM SCHOOL LUDHIANA ASSIGNMENT CLASS XII
1	The degree of the differential equation $\frac{d^2y}{dx^2} + 3\left(\frac{dy}{dx}\right)^2 = x^2 \log\left(\frac{d^2y}{dx^2}\right)$ is (A)not defined (B)1 (C)2 (D)3
2	If m and n are respectively the order and the degree of the differential equation $\frac{d}{dx}\left[\left(\frac{dy}{dx}\right)\right]^4 = 0$, then m + n is (a) 1 (b) 2 (c) 3 (d)4
3	Find the particular solution of the differential equation $\frac{dy}{dx} - 3y\cot x = \sin 2x$, given that y = 2 when $x = \frac{\pi}{2}$.
4	Show that the differential equation $ydx + x\log\left|\frac{y}{x}\right|dy - 2xdy = 0$ is homogeneous and solve it.
5	Verify that the function $y = c_1 e^{ax}\cos bx + c_2 e^{ax}\sin bx$ where c_1, c_2 are arbitrary constants is a solution of the differential equation $\frac{d^2y}{dx^2} - 2a\frac{dy}{dx} + (a^2 + b^2)y = 0$
6	Solve the differential equation $(xdy - ydx)y\sin\left(\frac{y}{x}\right) = (ydx + xdy)x\cos\left(\frac{y}{x}\right)$
7	Find a particular solution of the differential equation (x - y) (dx + dy) = dx - dy, given that y = -1, when x = 0.
8	Prove that $(x^2 - y^2) = c(x^2 + y^2)^2$ is the general solution of differential equation $(x^3 - 3xy^2)dx = (y^3 - 3x^2y)dy$, where c is a parameter
9	An equation which involves unknown functions and their derivatives with respect to one or more independent variables is called a differential equation. Now, consider if a curve passing through the point (0, −2) given that at any point (x, y) on the curve, the product of the slope of its tangent and y-coordinate of the point is equal to the x-coordinate of the point. On the basis of above information, answer the following questions: (i)Write the differential equation for the curve. (ii) Find the solution of differential equation. (iii) Find the equation of the curve passing through the point (0, −2). OR (iii) Find the equation of curve passing through the point (2, 3).