Group-A
Answer any <u>TWO</u> questions :

1. If $\vec{a} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{b} = \hat{i} - \hat{j}$, then find $\vec{a} + \vec{b}$, $\vec{a} \cdot \vec{b}$, $\vec{a} \times \vec{b}$.

2. Find all differential equation of lines passing through $(0,0)$

3. Find the differential equation whose solution is $y = a + bx$, where $a,\ b$ are parameters.

Group-B
Answer any <u>ONE</u> questions :

4. Solve $\frac{dy}{dx} = \frac{2x+1}{3y}$.

5. Solve $(D^2 - 9)y = 0$.

Group-C
Answer any <u>ONE</u> questions :

6. Evaluate $\lim\limits_{x \to 0} \dfrac{x^2 - 4}{x - 2}$.

7. Find order and degree of $(\frac{d^2 y}{dx^2} + 1)^3 = \frac{dy}{dx}$.