

The LNM Institute of Information Technology

Math-II, Quiz-I: Section-A

Time: 20Minutes

Maximum Marks: 10

- **Problem 1.** The equation

$$\frac{d^2x}{dt^2} + kx + \alpha x^3 = 0 \quad k > 0$$

describes the motion of a hard spring if $\alpha > 0$ and a soft spring if $\alpha < 0$. Reduce it into a system of first order differential equation of the form $X' = AX$.

- **Problem 2.** Find the radius of convergence of the power series

$$\sum_{m=0}^{\infty} \frac{x^m}{c^m} \quad (c \neq 0).$$