Name: ....
Roll No: ....

DEPARTMENT OF ELECTRICAL ENGINEERING
FIRST SEMESTER M.TECH (MONSOON 2022) INTERIM EXAMINATION
EE6303D DYNAMICS OF ELECTRICAL MACHINES

Time: Two Hours   *Answer all questions.*   **Maximum: 30 Marks**

1. Develop the electrodynamic model of plunger-spring system using Lagrangian analysis, considering the losses.   **[08 Mark]**

2. Use the Runge-Kutta method with h=0.1 to find approximate values for the solution of the problem $y'+2y=xe^{-x}$ at x=0.1. Assume y(0)=1   **[07 Marks]**

3. With necessary derivation, develop the condition for average power conversion in a smooth airgap machine.   **[08 Marks]**

4. Discuss Clarke and Park transformation with relevant diagrams. Derive transformation matrix to convert three-phase voltages to synchronous reference frame.   **[07 Marks]**