DEPARTMENT OF ELECTRICAL ENGINEERING
FIRST SEMESTER M.TECH (MONSOON 2021) TEST-1
EE6303D DYNAMICS OF ELECTRICAL MACHINES

> We expect sincere and matured response from you, without indulging in any sort of malpractices. All the best! :)

Time: Two Hours   *Answer all questions.*   **Maximum: 25 Marks**

1. How you relate Lagrangian equation in general form for an RLC series circuit with quality factor. Discuss.

   [05 Mark]

2. With necessary derivations, develop Lagrangian equation of doubly excited coil. Assume the coils do not have any resistance. Discuss the dynamics in that case, if the coils are displaced by angle of "theta" before applying excitation. **[08 Marks]**

3. Describe the nonlinear relation between mutual inductance and rotor angle in a generalized smooth airgap machine **[07 Marks]**

4. In a generalized machine with excitable windings on both stator and rotor, develop condition for average power conversion. **[05 Marks]**