Question Bank (K-Scheme)

Name of course: DC Machines and Transformers   **Unit Test: I**

Subject code: 314322 (DMT)   **Semester: IV**   **Program: EE**

Chapter 1: DC Generators

2 Marks

1. Classification of DC Generator.
2. List types of winding.
3. Write the applications of DC Generator.
4. Write the Material used for Commutator , Pole core , Brush .
5. State Fleming's right hand rule.

4 Marks

6. Explain the principle of operation of D.C.Generator.
7. Derive EMF equation of DC Generator.
8. List parts of the DC Generator and write its function and material.(any four)
9. Draw the Internal and External Characteristics of DC Series and DC Shunt Generator.

Chapter 2: DC Motors

2Marks

1. State significance of back emf
2. State types of losses in DC Motor.

4Marks

3. Draw and explain with neat labeled sketch of three-point starter.
4. Describe with suitable diagram speed control of d.c shunt motor by field current control method.
5. Draw and explain with neat sketch of two-point starter.
6. A 4 pole, 220 V shunt motor has 540 lap wound conductor. It takes 32A from the supply mains and develops output power of 5.595 KW. The field winding takes 1A. The armature resistance is 0.09 Ω and the flux per pole is 30 m wb. Calculate: (i) the speed and (ii) the torque developed in N-M.
7. Explain with simple sketch the working of the brushless DC motor.
8. A dc series motor draws a current of 44 A at 220 V running at 820 RPM. The armature and field resistances are 0.2 ohm and 0.1 ohm respectively. The total of iron and friction

losses at this load condition is 0.5 kW. Determine the armature torque and efficiency of the motor.

9. Explain with neat diagram Break load test.

10. Draw and Write any two applications for: (i) D.C shunt motor (ii) D.C series motor

Chapter 3: Single Phase Transformers

2Marks

1. List the various losses take place in transformer.
2. Name four Materials used for core of transformers.
3. Why transformer is rated in KVA instead of KW?
4. Define Transformation Ratio of a transformer.

4 Marks

5. A 250/125 V, 5 KVA single- phase transformer has primary resistance of 0.2 Ω and reactance of 0.75 Ω. The secondary resistance is 0.05 Ω and reactance of 0.2 Ω. Determine its regulation while supplying full load on 0.8 leading P.F.

6. Derive the EMF equation for the single phase transformer. State the clearly the terms/symbols used there in.

7. A 40 kVA, single phase transformer with a ratio of 2000 V / 250 V has a primary resistance of 1.15Ω and a secondary resistance of 0.01555Ω. If the transformer is designed for maximum efficiency at 85% of full load. Find its efficiency when delivering full load at 0.9 power factor lag.

8. Draw the equivalent circuit of transformer referred to primary. State the meaning of each term related to equivalent circuit.

9. A 30KVA, 2400/120V, 50 Hz, single phase transformer Primary winding resistance 0.1 ohm and leakage reactance 0.22 ohm. The Secondary winding resistance is 0.035 ohm and reactance 0.012 ohm. Find equivalent resistance, reactance and impedance referred to Primary side.