

Code No: R21041

R10**SET - 1****II B. Tech I Semester Supplementary Examinations, Dec - 2015****ELECTRICAL TECHNOLOGY**

(Com. to ECE, EIE, BME)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
~~~~~

1. a) Draw and explain the magnetization characteristics of shunt and series generators.  
b) A DC generator generates an e.m.f. of 520V if it has 2,000 armature conductors, flux per pole of 0.013 Wb, speed of 1200 r.p.m and the armature winding has four parallel paths. Find the number of poles.
2. a) Discuss the current-speed and current-torque characteristics of a DC shunt motor.  
b) Explain the operation of three-point starter with a neat diagram.
3. a) Draw and explain the equivalent circuit of transformer referred to primary and secondary.  
b) A 50 kVA single phase transformer has 500 turns on the primary and 200 turns on the secondary. The primary is connected to 3000 V, 50 Hz supply. Determine (i) The secondary voltage on open circuit (ii) The current flowing through the two windings on full load (iii) The maximum value of flux.
4. a) Enumerate the various losses in a transformer. How these losses are minimized?  
b) In a 25 kVA, 2000V/200V, single phase transformer, the iron and full load copper losses are 350 and 400W respectively. Calculate the efficiency at unity power factor on (i) full load (ii) Half full load.
5. What is needed for starter to start a motor? Explain various starting methods of a 3-phase induction motor.
6. a) Explain the construction and principle operation of an alternator.  
b) Derive the expression for induced e.m.f of a 3 phase alternator.
7. a) Explain the operation and characteristics of stepper motors. Also list their applications.  
b) Explain the operation of AC tachometers with a neat diagram.
8. With a neat sketch explain the working of attraction type moving-iron instrument. Also give the relation between deflection and current.