

Code No: R21013

R10**SET - 1****II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2017****ELECTRICAL AND ELECTRONICS ENGINEERING**

(Com. to CE, ME, CHEM, PE, AME, MM)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** QuestionsAll Questions carry **Equal** Marks

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1. a) Explain the voltage and current relations in star connection? (8M)  
b) Two ammeters x and y are connected in series and a current of 25A flows through them. The potential differences across the ammeters are 0.3V and 0.4V respectively. Find how the same current will divide between x and y when they are connected in parallel? (7M)
2. a) Draw a neat sketch of a dc generator. State the function of each part? (8M)  
b) Derive the torque and emf equation for a dc motor? (7M)
3. a) Describe the operation of a single phase transformer, explaining clearly the functions of the different parts? (8M)  
b) A 50KVA single phase transformer has iron losses of 750W and copper loss of 1040W when supplying its full load at unity power factor. Calculate the efficiency of the transformer at unity power factor at full load and half load? (7M)
4. a) Explain the synchronous impedance method of determining the voltage regulation of an alternator. (8M)  
b) Draw a typical torque slip characteristics and deduce the condition for maximum torque. (7M)
5. a) Explain how a P-N junction diode acts as a rectifier. (8M)  
b) Explain the concept of bridge rectifier with circuit diagram. (7M)
6. a) Explain the mechanism of current flow in a PNP transistor. (8M)  
b) In a NPN silicon transistor  $\alpha=0.895$ ,  $I_E=8\text{mA}$  and leakage current  $I_{CBO}$  (for  $I_{CO}=0.3\mu\text{A}$ , determine  $I_{CEO}$ .? (7M)
7. a) What are the factors which limit the choice of frequency in Induction Heating? (8M)  
b) What is dielectric heating? How is this different from induction heating? (7M)
8. a) Explain the principle of operation of strain gauge with a neat sketch? (8M)  
b) Explain the principle of operation of CRO with neat sketch? (7M)