

**B.Tech. - VIEP - ELECTRICAL ENGINEERING
(BTELVI)**

Term-End Examination

June, 2016

00576

**BIEE-020 : ELECTRICAL MACHINES AND
ELECTRONICS**

Time : 3 hours

Maximum Marks : 70

Note : Attempt any seven questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. Describe the power measurement by wattmeter methods and derive an expression for power factor when the power is measured in a polyphase circuit for balanced load by two-wattmeter method. Explain this with the help of phasor diagrams. 4+6=10
2. Why does the primary current of a transformer increase when a load is connected across the secondary ? Derive the equation for efficiency and voltage regulation for a single phase transformer. 2+4+4=10
3. A 2200/220 V, single phase transformer has maximum possible voltage regulation of 6% and it occurs at power factor of 0.3. Find the load voltage at full load at power factor of 0.8 lead. 10

4. Describe the working principle of a single phase induction motor. Describe the torque – slip characteristics of a single phase induction motor. 10
 5. Classify different types of single phase induction motors. Also, explain the working principle for any one of them with a neat schematic diagram. 10
 6. Describe the different sizes of motors available in the market and also explain the steady and dynamic characteristics of electric drives. $2+4+4=10$
 7. What are the factors that affect the selection of motors ? What is the importance of load equalization ? 10
 8. Describe the working principle of SCR with the help of a neat diagram and also explain the turn-on method of a thyristor. $4+6=10$
 9. Describe the working principle of an inverter with a neat schematic diagram. 10
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