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No. of Printed Pages : 2 **BIEE-011**

B.Tech. - VIEP - ELECTRICAL ENGINEERING

(BTELVI)

Term-End Examination, 2019

BIEE-011 : ELECTRICAL MACHINES-II

Time : 3 Hours] **[Maximum Marks : 70**

Note : Answer **any seven** questions. All questions carry equal marks. Missing data may be suitably assumed.

1. Explain the effect of varying excitation on armature current and power factor in a synchronous motor. Draw V-curves and state their significance. [10]

2. Explain with neat sketches the principle of operation of a 3-phase synchronous motor. Also explain why it will not run at other than synchronous speed. [10]

3. Explain the terms direct-axis synchronous reactance and quadrature-axis synchronous reactance of a salient pole alternator. Upon what factors do these values depend ? [10]

4. Derive an expression for finding regulation of salient-pole alternator using two reaction theory. Draw its phasor diagram. [10]

5. Develop the equivalent circuit for a 3-phase induction motor and explain how the mechanical power developed is taken care in the equivalent circuit. [10]

6. Discuss briefly the various methods of speed control of 3-phase induction motors. [10]

7. Describe the construction and working of a capacitor-start single-phase induction motor. [10]

8. Name the most popular types of Stepper motors. Describe the operation of a Permanent magnet (PM) type of Stepper Motor. [10]

9. Explain the torque versus stepping rate characteristics of a stepper motor. What is the slew range ? [10]

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