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BIEEE-003

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00816

Term-End Examination

June, 2016

BIEEE-003 : SPECIAL ELECTRICAL MACHINES

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is allowed.*

1. (a) Describe the slip power recovery control scheme in Static Kramer's Drive. 7

(b) Explain the construction and operation of capacitor start capacitor run induction motor. Also draw its slip-torque characteristics. 7

2. (a) Draw and explain the torque-speed characteristics of two phase AC servomotor. 7

(b) Enlist the applications of AC servomotors and stepper motors. 7

3. Explain the phenomenon of providing high rotor resistance during starting of squirrel cage induction motor using : *2×7=14*

(a) double cage rotor

(b) deep bar rotor

4. (a) What are the criteria for selecting a suitable drive circuit for a stepper motor ? Explain unipolar drive circuit with proper diagrams. 7

(b) Describe the constructional features of a permanent magnet stepper motor. Also explain its principle of operation with neat sketches. 7

5. (a) Explain the features and applications of brushless DC motor (BLDC) in detail. 7

(b) How is linear force produced in linear induction motor ? Also enlist its industrial applications. 7

6. (a) Draw the hysterisis loop of a permanent magnet. Also explain its magnetization characteristics. How does the demagnetizing effect influence its characteristics ? 7

(b) Explain the construction and operation of a single phase synchronous motor. 7

7. Write short notes on any ***two*** of the following : *2×7=14*

(a) Shaded pole induction motor

(b) Repulsion motor

(c) PM (Permanent Magnet) AC motor