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BIEEE-003(S)

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

00469

Term-End Examination

December, 2016

BIEEE-003(S) : 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) What is the purpose of using deep-bar cage rotors ? *4*

(b) Describe the construction of a double-cage induction motor. Explain its working. *10*

2. (a) Explain the working principle of (i) Split phase, and (ii) Capacitor-start single-phase induction motors with the help of neat sketches. *10*

(b) How can you reverse the direction of rotation of a single-phase induction motor ? What are the industrial and domestic applications of such motors ? *4*

3. (a) What is a two-phase servomotor ? Describe its construction and working. *10*

(b) Draw the torque – speed characteristics of a servomotor for various control voltages. *4*

4. (a) Describe the construction, working and applications of a reluctance motor. *10*

(b) Draw and explain typical torque – speed characteristics of a reluctance motor. *4*

5. (a) Explain the construction and the operating principle of a linear induction motor. *10*

(b) Mention some of the applications of linear induction motors. *4*

6. (a) Describe the operation of a variable reluctance type stepper motor. What is microstepping ? *10*

(b) What are the differences in the behaviour of variable reluctance type stepper motors and permanent magnet type stepper motors ? *4*

7. (a) Describe the construction of a permanent magnet dc motor. What are the advantages and disadvantages of Permanent Magnet DC (PMDC) motors compared to conventional shunt dc motors ? *10*

(b) State some important applications of PMDC motors. *4*