Reg. No. : | | | | | | | | | | |

Question Paper Code: 47303

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Seventh Semester

Electrical and Electronics Engineering

14UEE703- SPECIAL ELECTRICAL MACHINES

(Regulation 2014)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Vernier motor is an _____type synchronous motor

   (a) unexcited reluctance (b) excited reluctance

   (c) unexcited permeance (d) excited permeance

2. The material's resistance to becoming magnetized is called

   (a) Resistance (b) Resistivity (c) Reluctance (d) Permeance

3. Operation of stepper motor at high speed is referred to as

   (a) Fast forward (b) Slewing

   (c) Inching (d) Jogging

4. The rotational speed of a given stepper motor is determined solely by the

   (a) Shaft load (b) Polarity of stator current

   (c) Step pulse frequency (d) Magnitude of stator current.

5. A switched reluctance motor differs from a VR stepper motor in the sense that it_____

   (a) has rotor poles of ferromagnetic material
   (b) rotates continuously
   (c) is designed for open-loop operation only
   (d) has lower efficiency

6. For which one of the following applications a Reluctance Motor is preferred?

(a) Electric shavers (b) Refrigerators

(c) Signaling and timing devices (d) Lifts and hoists

7. Which one of the following permanent magnet material has low coercive force?

(a) Cobalt – samarium (b) Alnico

(c) Barium and strontium ferrites (d) Neodymium – iron - boron

8. The qualities aspired to obtain a good permanent magnet is/are_____

(a) high residual flux (b) lowcoercivity

(c) high coercivity (d) high residual flux and high coercivity

9. In order to get maximum torque in Permanent Magnet Synchronous Motor, the angle between the stator flux and rotor flux is kept closer to.

(a) 90^o (b) 45^o (c) 30^o (d) 60^o

10. In PMSM the airgap flux distribution is _____

(a) Sinusoidal (b) Quasi sinusoidal

(c) Triangular (d) both a and b

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Discuss about the various types of Synchronous reluctance motor based on rotor construction with neat sketch (8)

12. Describe the construction and operation of Hybrid Stepper Motor with different modes. (8)

13. Describe the various operating modes of Switched Reluctance motor (8)

14. Sketch the structure of controller for permanent magnet brushless DC motor and explain the functions of various blocks. (8)

15. Write short note on constructional features of Permanent Magnet Synchronous Motor. (8)