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

Question Paper Code: 37303

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

Seventh Semester

Electrical and Electronics Engineering

01UEE703 - SPECIAL ELECTRICAL MACHINES

(Regulation 2013)

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. Reluctance Motors are

(a) Doubly excited (b) Singly excited

(c) Either doubly excited or singly excited (d)None of the above

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. Permanent Magnet Brushless DC Motors are compact in size due

(a) Absence of field winding (b) Presence of smaller field winding

(c) Present of magnets (d) Any of the mentioned

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. Synchronous Motors are generally not self-starting because

(a) The direction of rotation is not fixed

(b) The direction of instantaneous torque reverses after half cycle

(c) Starters cannot be used on these machines

(d) Starting winding is not provided on the machines

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Describe the constructional details, working principle, Torque equation and applications of synchronous reluctance motor. (8)

12. Enlighten the various modes of excitation of VR stepping motor with excitation table. (8)

13. Explicate the constructional feature and principle of operation of switched reluctance motor. (8)

14. Derive the Torque and EMF equations of the permanent magnet brushless DC Motor. (8)

15. Draw and describe torque speed characteristics of PMSM. (8)