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

Question Paper Code: 59306

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Electrical and Electronics Engineering

15UEE906 – SPECIAL ELECTRICAL MACHINES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The unit of flux density in the air gap in _____ CO1- R

   (a) no unit (b) wb/m^2 (c) wb (d) wb/m

2. When the load – torque is increased, the rotor speed tends to ------ CO1 -R

   (a) constant (b)zero (c) fall (d) increased

3. The attractive force that exists in an object or substance after it has been removed from a magnetic field is called CO2- R

   (a) Residual magnetism (b) Residual current

   (c) armature reaction (d) demagnetizing

4. A material's resistance to becoming magnetized is called CO2- R

   (a) electro magnetizing (b) inductance (c) resistivity (d) reluctance

5. The field coils of opposite poles are connected in series such that mmfs are additive is called------- CO3 -R

   (a) Phase winding (b) pole shoe (c) winding (d) none of the above

6. The converter allows fast --------of phases during commutation CO3- R

   (a) demagnetization (b) magnetization (c) cross magnetization (d) none of the above

7. It is the maximum load torque which the energized stepper motor can withstand slipping from equilibrium position is known as----- CO4- R

(a) starting torque (b) holding torque (c) detent torque (d) high torque

8. Actual step angle is slightly different from the theoretical step angle is called--- CO4 -R

(a) stepping Error (b) positional Error (c) resolution (d) none of the above

9. Types of linear induction motor based on the principle of operation CO5- R

(a) Linear Induction motor (b) Linear synchronous motor

(c) DC commutator linear motor (d) All the above

10. Hysteresis loop is based on ------ curve. CO5 -R

(a)H-I curve (b)I-V curve (c)B-H curve (d)B-L curve

PART – B (5 x 2= 10Marks)

11. Write comparison of brushless dc motor relative to induction motor drives. CO1- R

12. Write the emf equation of PMSM. CO2- R

13. Mention some applications of SRM. CO3 -R

14. What is stepper motor? CO4- R

15. Write the applications of linear induction motor. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Draw and explain the constructional details of PMBLDC motor. CO1 -U (16)

Or

(b) Sketch the torque-speed characteristics of a PMBLDC motor. Also Explain. CO1- U (16)

17. (a) Derive the torque equation of an ideal PMSM. CO2 -App (16)

Or

(b) Explain the construction and operation of PMSM. CO2- U (16)

18.	(a)	Explain the construction and working principle of switched reluctance motor.	CO3- U	(16)
		Or		
	(b)	Explain the operation with suitable circuit diagram of two power semiconductor switching devices and two diodes applicable to switched reluctance motor.	CO3 -U	(16)
19.	(a)	Draw and explain single stack variable reluctance stepper motor also electrical connections.	CO4 -U	(16)
		Or		
	(b)	State and explain the static and dynamic characteristics of a stepper motor.	CO4 -Ana	(16)
20.	(a)	What is the principle and working of hysteresis motor? Explain briefly	CO5- U	(16)
		Or		
	(b)	Draw and explain AC series motor also write with applications.	CO5 -U	(16)