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**Question Paper Code: 59306**

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

Elective

Electrical and Electronics Engineering

15UEE906 – SPECIAL ELECTRICAL MACHINES

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. The speed of permanent magnet dc motor cannot be controlled by\_\_\_\_\_ CO1- R  
(a) Flux control method (b) electronic circuits  
(c) rheostatic control method (d) none of these
2. Radial airgap motor has ----- CO1 -R  
(a) low mechanical strength (b) high mechanical strength  
(c) no mechanical strength (d) none of the above.
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. PMSM does not have CO2- R  
(a) Slip ring (b) field winding (c) armature winding (d) both a &b
5. The chopping mode of control in SRM is applied only during CO3 -R  
(a) High speed (b) low speed (c) Very high speed (d) Medium speed
6. Which of the following motors is generally used in toys? CO3- R  
(a) Reluctance motor (b) hysteresis motor  
(c) shaded-pole motor (d) two-value capacitor motor

7. Operation of stepper motor at high speed is referred to as CO4- R  
 (a) Fast forward      (b) Slewing      (c) Inching      (d) Jogging
8. The rotational speed of a given stepper motor is determined by CO4 -R  
 solely by  
 (a) Shaft load      (b) Polarity of Stator current  
 (c) Step pulse frequency      (d) Magnitude of stator current
9. Radial airgap motor has ----- CO5- R  
 (a) axial laminations      (b) radial laminations  
 (c) both laminations      (d) none of the above
10. Which factor is convenient measure for assessing the quality of CO5 -R  
 LIM.  
 (a) Retentivity      (b) Hysterisis      (c) Goodness factor      (d) quality factor

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain the Construction & principle of operation of PMBLDC motor. CO1 -U      (8)
12. Explain the working of Microprocessor based control in PMSM CO2 -U      (8)
13. Explain in detail the control circuits used in switched reluctance motor. CO3- U      (8)
14. With a neat sketch explain the operation of two pole three stack VR CO4 -U      (8)  
 stepper motor
15. Describe the principle of operation of hysteresis motor and also draw CO5- U      (8)  
 its characteristics