

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: 59713

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

Third Semester

Electrical and Electronics Engineering

19UEE303 – ELECTRICAL MACHINES - I

(Regulation 2019)

Duration: One hour

Maximum: 30Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The unit of magnetic flux is CO1- R
(a) Henry (b) Weber (c) Ampere-turn/Weber (d) Ampere/metre
2. The unit of reluctance is CO1- R
(a) metre/henry (b) henry/metre (c) henry (d) 1/henry
3. If the number of conductors and speed of a lap wound generator is doubled then the generated emf will be CO1-R
(a) Remains same (b) Twice of the former
(c) Four times of former emf (d) Half of the former emf
4. In D.C. generators, current to the external circuit from armature is given through CO1- R
(a) Commutator (b) Solid connection (c) Slip rings (d) None of the above
5. Which starter is suitable for controlling the speed of DC motor in field side CO4- U
(a) Two point (b) Three point (c) Four point (d) All of the above
6. A 4 pole wave wound dc motor having flux per pole of 9.56×10^{-3} Wb contains 460 armature conductors. Calculate the back emf produced when it is running at a speed of 1500 rpm. CO4- R
(a) 220 volt (b) 230 volt (c) 240 volt (d) 440 volt
7. A transformer has 500 turns in the primary and 1,000 turns in the secondary windings. The transformation ratio is CO4- U
(a) 2 (b) 4 (c) 5 (d) 6
8. Which one is the protective device in power transformer CO4- R
(a) Winding (b) Core (c) Breather (d) Tank

9. Iron loss in transformer is measured by CO5- U
 (a) OC Test (b) SC Test
 (c) Swinburne's test (d) BDV Test
10. Copper loss in transformer is measured by CO6- R
 (a) OC Test (b) SC Test (c) Swinburne's test (d) BDV test

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Apply the electromagnetic induction principle to derive statically and dynamically induced e.m.f. and give suitable example. CO2- App (8)
12. Explain the different methods of excitation and characteristics of DC Generators with suitable diagram. CO3- U (8)
13. Develop an expression for the torque developed in a DC motor. CO1- U (8)
14. A 11000/230 V, 150 kVA, 1-phase, 50 Hz transformer has loss of 1.4 kW and Full Load copper loss of 1.6 kW. CO6- App (8)
 Determine (i) the kVA load for maximum efficiency and the value of maximum efficiency at unity p.f.
 (ii) The efficiency at 0.8 pf leading.
15. Interpret in detail about the autotransformer, their principle. Arrive at the expression for saving of copper. CO5- U (8)