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Question Paper Code: 54302

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

Fourth Semester

Electrical and Electronics Engineering

15UEE402- AC MACHINES

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. A SCIM runs at constant speed only so long as CO1-R
 - (a) Stator flux remains constant
 - (b) Its torque exactly equals the mechanical load
 - (c) Its supply voltage remains constant
 - (d) Torque developed by it remains constant

2. If the frequency of input power to an induction motor increases, the rotor copper loss CO1-R
 - (a) Decreases
 - (b) Increases
 - (c) Remains the same
 - (d) None of these

3. The drawback of speed control of a slip ring induction motor with the help of resistance in the circuit is that CO2-R
 - (a) It is applicable only to motors having power of more than 100 kW
 - (b) It results in high losses
 - (c) With reduction in speed, the torque decreases significantly
 - (d) The speed can be controlled only very broadly

4. In an induction motor, rotor runs at a speed CO2-R
 - (a) Equal to the speed of stator field
 - (b) Lower than the speed of stator field
 - (c) Higher than the speed of stator field
 - (d) Having no relation with the speed of stator field

5. How many poles will be required if an alternator runs at 1500 rpm and CO3-R

given frequency of 50 Hz?

- (a) 8 pole (b) 6 pole (c) 4 pole (d) 2 pole
6. The power factors of an alternator is determined by its CO3-R
(a) Speed (b) Load (c) Excitation (d) Prime mover
7. When a 3-phase synchronous motor is switched on, there exists a CO4-R
rotating magnetic field. The magnitude of this field flux
(a) Varies with power factor (b) Varies with load
(c) Is constant at all loads (d) None of these
8. The back emf set up in the stator of synchronous motor depends on CO4-R
(a) Speed of the rotor (b) Input to prime mover
(c) Rotor excitation (d) Coupling angle
9. A capacitor start single phase induction motor will usually have power CO5-R
factor of
(a) Unity (b) 0.6 leading (c) 0.8 leading (d) 0.6 lagging
10. All single phase motors have CO5-R
(a) Large starting torque (b) Zero starting torque
(c) Medium starting torque (d) Very small starting torque

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Draw the slip-torque characteristics for a three-phase induction motor CO1-R (8)
and explain.
12. With neat diagrams explains the working of any two types of starters CO2-R (8)
used for squirrel cage type 3 phase induction motor.
13. What is an armature reaction? Explain the effect of an armature CO3-U (8)
reaction on the terminal voltage of an alternator at
(i) unity power factor load and
(ii) zero leading power factor load.
Draw the relevant phasor diagrams.
14. Explain briefly the construction and principle of operation of three- CO4-U (8)
phase synchronous motor.
15. Explain the double field revolving theory for operation of single phase CO5-U (8)
induction motor.