



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – Dip.EE-2024

Course Name – Electrical Machine II

Course Code - DEE40112

(Semester IV)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify a 3-phase 440 V, 50 Hz induction motor that has a 4% slip. The frequency of the rotor current will be
 - a) 2Hz
 - b) 5Hz
 - c) 25Hz
 - d) 50Hz
- (ii) Select with the increase in load, the speed of the induction motor will
 - a) Increase
 - b) Decrease
 - c) Remains constant
 - d) Not related
- (iii) Identify when the rotor resistance of a three-phase induction motor becomes equal to its rotor reactance, its starting torque will be
 - a) zero
 - b) maximum
 - c) minimum
 - d) none
- (iv) Select the correct option if we increase the air gap in the induction motor.
 - a) Power factor will reduce
 - b) Power factor will increase
 - c) reduction in harmonics
 - d) speed will increase
- (v) Choose the type of induction motor which is best for the pole-changing method
 - a) SCIM
 - b) WRIM
 - c) Single-phase IM
 - d) Linear IM
- (vi) Choose the option: when a rotor resistance starter is used with an induction motor then
 - a) Only starter current is limited
 - b) Only starting torque is limited
 - c) Both starting current and starting torque are limited
 - d) Neither starting current nor starting torque is limited
- (vii) Choose The frequency of voltage generated in an alternator depends on
 - a) number of poles
 - b) rotative speed

- c) number of poles and rotative speed d) number of poles, rotative speed and type of winding
- (viii) Select in an alternator, the armature reaction will be completely magnetizing in case the load power factor is
- a) Zero lagging b) 0.866
c) Zero leading d) Unity
- (ix) Select if the field of a synchronous motor is under excited, the power factor will be
- a) Lagging b) Leading
c) Unity d) More than unity
- (x) Select the type of source which generates the rotor Cu losses in a synchronous motor
- a) Motor input b) Armature input
c) Supply lines d) D.C. source
- (xi) Select the motor used for the compressors is
- a) Reluctance motor b) Shaded pole motor
c) DC series motor d) Capacitor start-capacitor run motor
- (xii) Choose the correct occurrence if the capacitor of a single-phase motor is short-circuited
- a) The motor will not start b) The motor will run in the same direction at reduced speed
c) The motor will run in reverse direction d) None of the above
- (xiii) Identify that in a split-phase motor, the running winding should have
- a) High resistance and low inductance b) High resistance and High inductance
c) Low resistance and high inductance d) Low resistance and Low inductance
- (xiv) Select from the following, the type of single-phase motors is suitable for timing and control purposes
- a) Universal Motor b) Reluctance Motor
c) Series Motor d) Split phase motor
- (xv) Identify that the power factor of a synchronous motor varies when the
- a) applied voltage is varied b) load is changed
c) supply frequency and field excitation is changed d) all of the mentioned

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Discuss about the V- Curve with a diagram. (3)
3. Differentiate the star-delta starter, and the D.O.L starter. (3)
4. Explain how to calculate slip in induction motors. (3)
5. Explain the term cogging in an induction motor. (3)
6. Explain the effect of excitation at constant load. (3)

OR

Differentiate Synchronous Motor with Induction Motor.

(3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain the pole-changing method of three phase induction motors. (5)
8. Describe the equivalent circuit of 3-phase induction motor and explain. (5)
9. Deduce the E.M.F equation of the Alternator. (5)
10. Evaluate the number of armature conductors in series per phase required for the armature of a 3-phase, 50Hz, 10-pole alternator. The winding is star-connected to give a line voltage of (5)

11000V. The flux per pole is 0.16Wb. Assume the winding to be full pitched and distribution factor to be 0.96.

11. Discuss the function of a centrifugal starting switch in a single-phase induction motor. (5)
12. Explain why a single-phase induction motor does not start in the concept of the double-field revolving theory. (5)

OR

Explain how to make a Single-Phase Induction Motor Self-Starting. (5)

Library
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