



BRAINWARE UNIVERSITY

LIBRARY
Brainware University
Berasat, Kolkata -700125

Term End Examination 2023
Programme – Dip.EE-2018/Dip.EE-2019/Dip.EE-2021
Course Name – Electrical Machine II
Course Code - DEE401
(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) Express when the rotor of three phase induction motor is blocked, its rotor-induced emf is
- | | |
|----------|------------|
| a) zero | b) Minimum |
| c) unity | d) maximum |
- (ii) Explain what will happen 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 |
- (iii) Which type of induction motor is best for pole changing method?
- | | |
|--------------------|--------------|
| a) SCIM | b) WRIM |
| c) Single-phase IM | d) Linear IM |
- (iv) Recognize an over-excited synchronous motor is used for
- | | |
|----------------------|------------------------------|
| a) Fluctuating loads | b) Variable speed loads/span |
| c) Low torque loads | d) Power factor corrections |
- (v) Define the power factor of an alternator under short circuit conditions will be almost near _____
- | | |
|-----------------|--|
| a) zero lagging | b) zero leading |
| c) unity | d) depends on the type of the alternator |
- (vi) Explain 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 |
- (vii) Define how many poles will be required if an alternator runs at 1500 rpm and a given frequency of 50 Hz?
- | | |
|-----------|-----------|
| a) 6 pole | b) 8 pole |
| c) 2 pole | d) 4 pole |

- (viii) Choose the frequency of voltage generated in large alternators is
 a) 50 Hz
 b) 60 Hz
 c) In kilo cycles
 d) In kilo cycles
- (ix) Select in an alternator, at a lagging power factor, the generated voltage per phase, as compared to that at a unity power factor
 a) must be same as terminal voltage
 b) must be less than the terminal voltage
 c) must be more than the terminal voltage
 d) must be 1.41 time the terminal voltage
- (x) Define when the load on a synchronous motor running with normal excitation is increased, the armature current drawn by it increases because
 a) Back e.m.f. E_b becomes less than applied voltage V
 b) Power factor is decreased
 c) Net resultant voltage E_R in armature is increased
 d) Motor speed is reduced
- (xi) Which kind of rotor is most suitable for turbo alternators which are designed to run at high speed?
 a) Salient pole type
 b) Non-salient pole type
 c) Both (a) and (b) above
 d) None of the above
- (xii) Choose the induction motor with peak speed.
 a) 10 pole
 b) 12 pole
 c) 14 pole
 d) 16 pole
- (xiii) Starters are required in the induction motor because
 a) of high starting current
 b) they are not self starting
 c) torque produced is very low at starting to overcome inertia
 d) all of the mentioned
- (xiv) 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
- (xv) Examine the starting torque of a cage rotor induction motor can be increased by using a rotor having
 a) Low inductance and low resistance
 b) Low inductance and high resistance
 c) High inductance and high resistance
 d) High inductance and low resistance

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain the condition of parallel operation of the Alternator. (3)
3. Define what is the importance of slip in a 3-phase induction motor. (3)
4. Define V curve in Synchronous Motor. (3)
5. Derive the torque equation of 3 phase induction motor. (3)
6. Explain the advantage of a D.O.L. starter. (3)

OR

Differentiate between Squirrel cage type rotor and Wound type rotor. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain how can you control the speed of an induction motor. (5)
8. Draw the torque slip characteristics and derive the equation for the different zone. (5)
9. Explain the working principle of the Capacitor start and run Induction Motor. (5)
10. Discuss what is a resistance-starting method of 3 phase induction motor. (5)

11. Define What is a slip? And explain three conditions of slip.

(5)

12. Explain the capacitor used in the Single Induction Motor.

(5)

OR

Explain the working principle of the shaded pole Induction Motor.

(5)

LIBRARY
Brainware University
Barasat, Kolkata -700125

LIBRARY
Brainware University
Barasat, Kolkata -700125