Unit 7 - Week-5

Assignment 5

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-04, 23:59 IST.

1) AC dynamic braking of induction motor is performed by *1 point*

- Single-phasing the stator of induction motor
- Single-phasing the rotor of induction motor
- applying balanced 3-phase ac voltage to the rotor
- applying balanced 3-phase ac voltage to the stator

No, the answer is incorrect.
Score: 0
Accepted Answers:
Single-phasing the stator of induction motor

2) A 3-phase, 50 Hz, 4 pole induction motor was running at 1440 rpm when it was subjected to dc dynamic braking. The frequency of the rotor induced emf at the start of braking instant is *1 point*

- 2 Hz
- 24 Hz
- 48 Hz
- 50 Hz

No, the answer is incorrect.
Score: 0
Accepted Answers:
48 Hz

3) The rated rms stator current (I_s) of a 3-phase, star connected, induction motor is 10 A. The motor is subjected to dc dynamic braking with two phases connected to a dc supply while the third phase remained open circuited. The equivalent dc current (I_{dc}) to realize the same peak armature mmf as that of the normal three phase ac stator current of 10 A (rms) is *3 points*

- 12.2 A
- 10.0 A
- 8.6 A
- 8.1 A

No, the answer is incorrect.
Score: 0
Accepted Answers:
12.2 A

4) For self excited braking using capacitor, the current through capacitor is *1 point*

- inversely proportional to the value of capacitance
- proportional to the value of capacitance
- inversely proportional to the speed of the motor
- independent of the motor speed and the value of capacitance

No, the answer is incorrect.
Score: 0
Accepted Answers:
proportional to the value of capacitance

5) A 3-phase, 50 Hz, 4 pole, star connected induction motor has the following per phase parameters *3 points*
$R_s = 1.2\,\Omega, R_r' = 4.5\,\Omega, X_s = X_r' = 3.0\,\Omega, X_m = 80\,\Omega$
The motor is braked by dc dynamic braking while running at a speed of 1400 rpm by applying a dc current of 10 A between two stator terminals. The third phase remains open circuited. The per phase rotor current(rms) of the motor referred to the stator at the start of the braking as obtained from the AC equivalent circuit, is

- 5.55 A
- 6.29 A
- 7.85 A
- 8.16 A

No, the answer is incorrect.
Score: 0
Accepted Answers:
7.85 A

6) The braking torque of the motor in Q5 at the start of the braking is *3 points*

- 5.6 Nm
- 6.5 Nm
- 7.3 Nm
- 8.1 Nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
5.6 Nm

7) For V/f control of induction motor with constant flux operation below rated speed, the ratio V/f is *1 point*

- kept constant throughout to account for stator resistance drop
- increased at lower speed to account for stator resistance drop
- decreased at lower speed to account for stator resistance drop
- increased uniformly throughout the speed range to account for stator resistance drop

No, the answer is incorrect.
Score: 0
Accepted Answers:
increased at lower speed to account for stator resistance drop

8) A three phase, 50 Hz, 4 pole induction motor is controlled from a stator voltage regulator. The motor is running at a speed of 1000 rpm. Neglecting the core loss and stator impedance, the efficiency of the motor is *2 points*

- 11.11 %
- 33.33 %
- 55.55 %
- 66.66 %

No, the answer is incorrect.
Score: 0
Accepted Answers:
66.66 %

9) A star connected 400 V, 50 Hz, 4 pole, 1370 rpm motor has the following parameters *3 points*
$R_s = 2.0\,\Omega, R_r' = 3.0\,\Omega, X_s = X_r' = 3.5\,\Omega$
The motor is controlled by a voltage source inverter at constant V/f ratio. Calculate the breakdown motoring torque (T_{max}) when f=25 Hz.

- 12.2 Nm
- 22.2 Nm
- 32.2 Nm
- 42.2 Nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
42.2 Nm

10) Repeat Q9 for a frequency f=10 Hz *2 points*

- 12.8 Nm
- 22.9 Nm
- 32.8 Nm
- 40.6 Nm

No, the answer is incorrect.
Score: 0
Accepted Answers:
22.9 Nm

11) A 3-phase, 50 Hz, 4 pole induction motor is running at 1425 rpm. What is the slip frequency in Hz? *1 point*

- 0.05 Hz
- 1.05 Hz
- 1.25 Hz
- 2.5 Hz

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.5 Hz

12) For a slip speed regulated V/f controlled induction motor drive, the operating mode for the range of frequency from zero to rated frequency is known as *1 point*

- constant torque mode of operation
- constant power mode of operation
- constant slip mode of operation
- constant acceleration mode of operation

No, the answer is incorrect.
Score: 0
Accepted Answers:
constant torque mode of operation

13) A volt/Hz controlled induction motor is operated higher than the rated frequency with the stator voltage kept constant at the rated value. Which of the following statements is correct for operation beyond the rated frequency? *1 point*

- The peak power of the motor increases beyond the rated frequency of operation
- The peak torque increases beyond the rated frequency of operation
- The peak torque decreases beyond the rated frequency of operation
- The slip speed decreases beyond the rated frequency of operation

No, the answer is incorrect.
Score: 0
Accepted Answers:
The peak torque decreases beyond the rated frequency of operation

14) For a slip regulated V/f controlled induction motor drive operating below rated frequency, which of the following statements is true? *1 point*

- The torque increases with increase in slip speed
- The torque decreases with increase in slip speed
- The current decreases with increase in slip speed
- The torque is independent of slip speed

No, the answer is incorrect.
Score: 0
Accepted Answers:
The torque increases with increase in slip speed

15) For a slip regulated constant V/f controlled induction motor drive operating under rated frequency, limiting slip speed leads to *1 point*

- limiting the frequency
- limiting the power
- limiting the stator voltage
- limiting the stator current

No, the answer is incorrect.
Score: 0
Accepted Answers:
limiting the stator current