

# Unit 14 - Week 12

Course outline
How to access the portal
Week 0 Assignment 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
<ul style="list-style-type: none"> <li>Lecture 60 : Three phase Induction Motors (Contd.)</li> <li>Lecture 61 : Three phase Induction Motors (Contd.)</li> <li>Lecture 62 : DC Motors</li> <li>Lecture 63 : DC Motors (Contd.)</li> <li>Lecture 64 : DC Motors (Contd.)</li> <li>Week 12 Lecture Material</li> <li>Quiz : Week 12 Assignment 12</li> <li>Week 12 Feedback Form</li> </ul>
Download Videos
Detail Solution

## Week 12 Assignment 12

The due date for submitting this assignment has passed. **Due on 2019-10-23, 23:59 IST.**  
 As per our records you have not submitted this assignment.

1) A 4 pole, 50 Hz, 3 phase induction motor running on full load develops a useful torque of 100 Nm when the rotor e.m.f makes 120 complete cycles per minute. Calculate the shaft power output (in kW).

a. 11.0 – 13.0  
 b. 14.0 – 16.0  
 c. 17.0 – 19.0  
 d. 20.0 – 22.0

a.  
 b.  
 c.  
 d.

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

2) A 4 pole, 50 Hz, 3 phase induction motor has a rotor resistance of 0.35 Ω per phase and a maximum torque of 20 Nm at 1200 rpm. The value of torque (in Nm) for 6% slip is

a. 6.5 – 7.5  
 b. 7.6 – 8.6  
 c. 10.5 – 11.5  
 d. 11.6 – 12.6

a.  
 b.  
 c.  
 d.

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

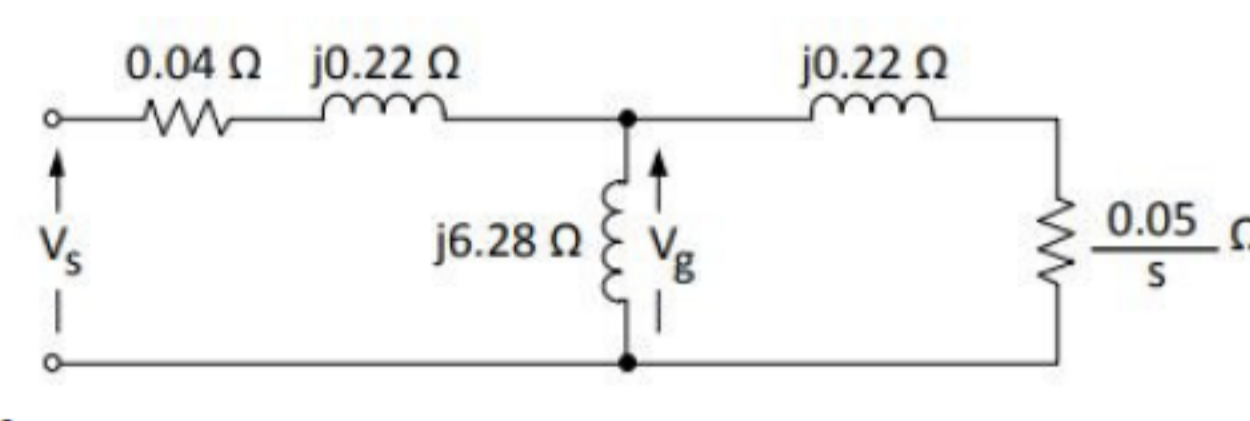
3) The power input to a 3 phase induction motor is 60 kW. The total stator loss is 1 kW. Find the per phase rotor copper loss (in kW) of the machine if it is running with a slip of 3%.

a. 0.59  
 b. 1.77  
 c. 5.9  
 d. 0.83

a.  
 b.  
 c.  
 d.

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

4) Figure shows the per-phase equivalent circuit of a two-pole three-phase induction motor operating at 50 Hz. The “air-gap” voltage,  $V_g$  across the magnetizing inductance, is 210 V (rms), and the slip, is 0.05. The torque (in Nm) produced by the motor is:



a. 330 to 332  
 b. 400 to 402  
 c. 410 to 412  
 d. 42 to 44

a.  
 b.  
 c.  
 d.

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

5) The direction of rotation of a dc motor can be reversed by-

A. By reversing the polarity of the terminal voltage  
 B. By reversing the connection of the field terminals  
 C. By reversing both the polarity of the terminal voltage and connection of the field terminals at the same time

a. A only  
 b. B only  
 c. C only  
 d. Either A or B

a.  
 b.  
 c.  
 d.

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

6) In a DC generator, a cylindrical structure built up of segments made of hard drawn copper which converts ac to dc is called as-

a. Slip ring  
 b. Commutator  
 c. Interpole  
 d. Pole shoe

a.  
 b.  
 c.  
 d.

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

7) A 4 pole, lap winding, DC generator generates 220 V DC. If it would have been wave winding (with rest of construction same) then the induced e.m.f would be-

a. 220 V  
 b. 880 V  
 c. 440 V  
 d. 110 V

a.  
 b.  
 c.  
 d.

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

8) A DC shunt generator delivers 45 A at a terminal voltage of 220 V. The armature and the shunt field resistances are 0.01 Ω and 44 Ω respectively. The stray losses are 375 W. The percentage efficiency of the DC generator is:

a. 86 to 87  
 b. 89 to 90  
 c. 91 to 92  
 d. 93 to 94

a.  
 b.  
 c.  
 d.

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

9) The armature resistance of a 200 V shunt dc motor is 0.4Ω and no-load armature current is 2A. When the machine is loaded, it is found that the armature current is 50 A while the speed of the machine is 1200 rpm. Find the approximate no-load speed (in rpm) of the machine. Neglect the effect of armature reaction.

a. 1338.67  
 b. 1095.27  
 c. 1086.54  
 d. 1328.00

a.  
 b.  
 c.  
 d.

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

10) A D.C shunt generator delivers 50kW at 250 V when running at 400 rpm. The armature and field resistance are 0.02Ω and 50Ω respectively. Calculate the speed of the machine (in rpm) when running as a shunt motor and taking 50kW input at 250V. Neglect the voltage drop in the brush contacts.

a. 387.2 – 387.5  
 b. 395.6 – 395.9  
 c. 412.9 – 413.2  
 d. None of the above.

a.  
 b.  
 c.  
 d.

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

11) A D.C series motor draws full load armature current of 5 A from 220V D.C supply and runs at a full load speed of 500 rpm. If its armature resistance is 1 Ω and field resistance is 20 Ω then calculate its speed (in rpm) when it is half loaded.

a. 300 – 500  
 b. 501 – 1000  
 c. 1001 – 1500  
 d. 1500 – 2000

a.  
 b.  
 c.  
 d.

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

12) A D.C shunt motor draws full load armature current of 10 A from 220V D.C supply and runs at a full load speed of 1500 rpm. If its armature resistance is 0.15 Ω and field resistance is 440 Ω then calculate its speed (in rpm) when it is half loaded.

a. 1509 – 1515.9  
 b. 1482 – 1489.9  
 c. 1490 – 1499.9  
 d. 1500 – 1508.9

a.  
 b.  
 c.  
 d.

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