

Unit 13 - Week 12

Course outline

How to access the portal?

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Week 12

• Synchronization of Alternators

• Synchronous Machines: Equivalent Circuit and Phasor Diagram

○ Synchronous Machines: OC and SC Test

• Synchronous Machines: Power Angle Relationship, V and Inverted V Curves

• Single Phase Induction Motors

○ Quiz : Assignment 12

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Solutions for Assignments

Assignment 12

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

Due on 2019-10-23, 23:59 IST.

1) 1. A synchronous generator supplies leading current and lagging current, respectively, when it is

0 points

- Over excited and under excited
 Over excited and over excited
 Under excited and under excited
 Under excited and over excited

No, the answer is incorrect.
Score: 0

Accepted Answers:
Over excited and under excited

2) The maximum power in a synchronous generator (alternator) is obtained when the load angle is

1 point

- 90°
 45°
 180°
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
90°

3) In an alternator, the inverted V curve is drawn between

1 point

- Field current on X-axis and armature current on Y axis
 Field current on Y axis and armature current on X axis
 Field current on Y axis and Power factor on X axis
 Field current on X axis and Power factor on Y axis

No, the answer is incorrect.
Score: 0

Accepted Answers:
Field current on X axis and Power factor on Y axis

For questions 4, 5 & 6

A 10-kVA, 380-V, 60-Hz, 2-pole, three-phase, Y-connected, synchronous generator delivers the rated load at 0.8 pf lagging. The synchronous impedance is $1.2 + j4 \Omega$ / phase.

4) Determine the synchronous speed.

1 point

- 1800 rpm
 2100 rpm
 3200 rpm
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

5) Determine the generated voltage per phase

1 point

- 300 V
 288 V
 263 V
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

6) Determine the efficiency if fixed loss is 1 kW.

1 point

- 83.39%
 79.82%
 81.37%
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
81.37%

7) A 10.8-kVA, 208 V, Y-connected, three-phase, synchronous generator supplies the rated load at 0.8 pf lagging. The synchronous impedance is $0.1 + j1 \Omega$ /phase. The field-winding resistance is 20Ω . Its per-phase OCC at the rated speed is given as $E_a = \frac{2400I_f}{7.5 + 6.5I_f}$. Find Field current and external resistance (R_c) to be connected in the field circuit if $V_f = 120 V$.

1 point

- $I_f = 0.61 A, R_c = 176.7 \Omega$
 $I_f = 0.83 A, R_c = 124.6 \Omega$
 $I_f = 0.722 A, R_c = 146.2 \Omega$
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $I_f = 0.722 A, R_c = 146.2 \Omega$

8) The starting torque developed by a single-phase induction motor fitted only with the main winding is

1 point

- Less than the rated torque
 More than the rated torque
 Zero
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Zero

9) A shaded pole motor does not possess

1 point

- Commutator
 Centrifugal switch
 Capacitor
 All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

10) The capacitors used in single-phase induction motors have no

1 point

- Polarity Marking
 Voltage Rating
 Dielectric medium
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Polarity Marking