

Unit 2 - Week 1

Course outline

How to access the portal?

Week 1

- Introduction to Electrical Machines -I
- Single-phase & Three-phase AC Circuits, Magnetic circuits
- Magnetic Circuit-II
- **Quiz : Assignment 1**
- Sample Numericals
- Feedback Form

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Solutions for Assignments

Assignment 1

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

Due on 2019-08-14, 23:59 IST.

For Questions 1 and 2

A 4500 VA load at power factor 0.75 lagging is supplied by a 60 Hz source at effective voltage 240V.

- 1) Determine the parallel capacitance in microfarads necessary to improve the power factor to 0.90 lagging

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 61.5,62

0 points

- 2) Determine the parallel capacitance in microfarads necessary to improve the power factor to 0.90 leading

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 211.5,213

1 point

For Questions 3 and 4

The addition of a 20 kVAR capacitor bank improved the power factor of a certain load to 0.90 lagging.

- 3) Determine active power (in kW) before the addition of the capacitors, if the final apparent power is 185 kVA.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 166,167

1 point

- 4) Determine reactive power (in kVAR) before the addition of the capacitors, if the final apparent power is 185 kVA.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 100,101

1 point

For Questions 5 and 6

Three identical impedances are connected in delta to a 3-phase supply of 400 V. The line current is 34.65 A and the total power taken from the supply is 14.4 kW.

Note - Answers should be strictly given in SI units.

- 5) Calculate the resistance

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 11.5,12.2

1 point

- 6) Calculate reactance of each impedance

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 15.5,16.5

1 point

For Questions 7 and 8

Obtain the reading of two wattmeter's (in watts) in a three phase three wire system having effective line voltage 240V and balanced Δ -connected load impedances $20 \angle 80^\circ \Omega$

Note - Please consider the wattmeter reading with negative value in question No 7 (Include minus sign also in the answer).

- 7) Obtain the wattmeter's 1 (in watts)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) -1710,-1700

1 point

- 8) Obtain the wattmeter's 2 (in watts)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 3200,3210

1 point

- 9) A 25 kVA load with power factor 0.80 lagging has a group of resistive heating units added at unity power factor. How many kilowatts (kW) do these units take, if the new overall power factor is 0.85 lagging.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 4.1,4.4

1 point

- 10) A balanced Δ -connected load having impedances $27.0 \angle -25^\circ \Omega$ and a balanced Y-connected load having impedances $10.0 \angle -30^\circ \Omega$ are supplied by the same three phase ABC system with $V_{cn}=169.8 \angle -150^\circ$ V. Obtain the magnitude of line current. (Give your answer in SI unit.)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 35,36

1 point

- 11) A three phase three wire ABC system with a balanced load has an effective line voltage 200V and (peak) line current of 13.61 A with a phase PF angle of 30 degrees. Obtain the total power. (Give your answer in SI units)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 2885,2890

1 point

- 12) A three phase three wire ABC system has effective line voltage 173 V. Wattmeter's in lines A and B read -301W and 1327W respectively. Find the impedances of the balanced Y- connected load. (Give your answer in SI units)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 9.8,10.2

1 point