

Unit 4 - Week 3

Course outline

How to access the portal?

Week 1

Week 2

Week 3

- Transformer Equivalent circuit and Reducing leakage
- Transformer equivalent circuit parameter determination
- Transformers -Voltage regulation and efficiency

Quiz : Assignment 3

Feedback Form

Week 4

Week 5

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Solutions for Assignments

Assignment 3

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

Due on 2019-08-21, 23:59 IST.

For Questions 1 and 2

The total core loss of a ferromagnetic specimen is found to 1500 W at 50 Hz and 3000 W at 75 Hz when the flux density is kept constant.

- 1) Calculate the hysteresis loss in watts for 50 Hz

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 498,502

1 point

- 2) Calculate the eddy current loss in watts for 50 Hz

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 998,1002

1 point

For Questions 3 and 4

A coil has 250 turns and is wound around a toroidal core made of silicon steel whose permeability is 0.00277 T/A/m. The inner and outer radii of the toroid are 20 cm and 25 cm respectively.

Note: Assume that the flux density is uniform throughout the toroidal core.

- 3) For a coil current of 2.5 A, find the magnetic flux density (in T) at the mean radius of the toroid.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1.1,1.3

1 point

- 4) For a coil current of 2.5 A, find the inductance of the coil in mH.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 240,241

1 point

For Questions 5,6 and 7

The primary and secondary number of turns of a 10-kVA ideal transformer are 150 and 300, respectively. The transformer is connected to a 220V, 50Hz source.

- 5) Determine the maximum flux in the core in mwb.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 6.5,6.7

1 point

- 6) Determine the full load primary current.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 45,46

1 point

- 7) Determine the full load secondary current.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 22.3,23

1 point

For Questions 8 and 9

A single-phase transformer has 2000 turns on the primary and 800 turns on the secondary. Its no-load current is 5 A at a power factor of 0.20 lagging. Assuming the volt drop in the windings is negligible.

- 8) Determine the primary current in ampere when the secondary current is 100 A at a power factor of 0.85 lagging.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 43,44

1 point

- 9) Calculate the input power factor when the secondary current is 100 A at a power factor of 0.85 lagging.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.8,0.85

1 point

For Questions 10,11 and 12

A transformer takes a current of 0.8 A when its primary is connected to a 240 V, 50 Hz supply, the secondary being on open circuit.

- 10) If the power absorbed is 72 watts, determine real component of no-load current in Amps

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.28,0.32

1 point

- 11) If the power absorbed is 72 watts, determine the power factor on no-load

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.35,0.39

1 point

- 12) If the power absorbed is 72 watts, determine the magnetizing current.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.73,0.75

1 point

For Questions 13,14 and 15

A current transformer has a single turn on the primary winding and a secondary winding of 60 turns. The secondary winding is connected to an ammeter with a resistance of 0.15 Ω . The resistance of the secondary winding is 0.25 Ω . The current in the primary winding is 300 A.

- 13) Determine the reading on the ammeter in amps.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 4.9,5.2

1 point

- 14) Determine the potential difference across the ammeter in volts.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.73,0.78

1 point

- 15) Determine the total load (in VA) on the secondary.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 9.8,10.2

1 point

For Questions 16 and 17

A single-phase transformer has 400 primary and 1000 secondary turns. The net cross sectional of the core is 60 cm². The primary winding is connected to a 50 Hz supply at 500 volts.

- 16) Calculate the peak value of flux density in the core (in wb/m²)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.9,0.96

1 point

- 17) Calculate voltage induced in secondary winding.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1248,1252

1 point

For Questions 18 and 19

The required no load ratio in a single phase 50 Hz core type transformer is 6000/250V. The flux is 0.061 wb.

- 18) Find the number of turns in primary winding.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 442,444

0 points

- 19) Find the number of turns in secondary winding.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 17,19

0 points