Unit 5 - Week 2

Week 2 Assignment 2

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.

1) The eddy current loss in a magnetic circuit is found to be 100 W when the exciting coil is energized by 200 V, 50 Hz source. If the coil is supplied with 180 V, 54 Hz instead, how much will be the eddy current loss (in W)?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 80,82

1 point

2) The hysteresis loop of a sample steel-sheet is given for a flux density of $B_{max} = 1.5\ T$. The area of the loop is found to be $0.9\ cm^2$.The scale is such that 1 cm = 10 A/m and 1 cm = 0.8 T. Find the loss in Watt due to hysteresis if 1200 cm^3 of this iron is subjected to an 50 Hz alternating flux density with peak value 1.5 T.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.432

1 point

3) Calculate the loss per kg in a specimen of alloy steel for a maximum density of 1.1 T and a frequency of 50 Hz, using 0.4 mm plates. Resistivity is $\rho = 24\ \mu\Omega cm$; density is $7.75\ g/cm^3$; hysteresis loss $355\ J/m^3$ per cycle.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 2.67,2.77

1 point

4) If the applied voltage of a transformer is increased by 50 %, while the frequency is reduced to 50 %, the core flux density will become _____ times

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 3

1 point

Common data for Question 5 to 7

A single phase transformer has 90 and 180 turns respectively in the primary and the secondary windings. The respective resistances are 0.067Ω and 0.233Ω.

5) Calculate the equivalent resistance (in Ω) of the secondary winding as seen from (referred to) the primary side

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.05,0.06

1 point

6) Calculate the equivalent resistance (in Ω) of the primary winding as seen from (referred to) the secondary side

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.26,0.27

1 point

7) Calculate the total equivalent resistance (in Ω) of the transformer as seen from (referred to) the primary side

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.12,0.13

1 point

Common data for Question 8 to 9

A 50-Hz, 1-phase transformer with a turn-ratio of 6. The resistances are 0.90 Ω and 0.03 Ω, and the reactances 5 Ω and 0.13 Ω for HV and LV windings respectively. Neglect no-load current.

8) Find the voltage to be applied to the HV side to obtain current of 200 A in the low voltage winding on short circuit.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 325,330

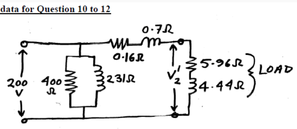
1 point

9) Find the power factor on short circuit

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.18,0.22

1 point

Common data for Question 10 to 12



The diagram shows the approximate equivalent circuit (referred to primary) for 1–phase, 50-Hz, 4-kVA transformer. The ratio of primary to secondary turns = 1:10.

10) Calculate the primary current in A.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 25,27

1 point

11) Calculate the secondary terminal voltage or load voltage in V.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1850,1870

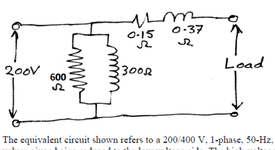
1 point

12) Calculate the efficiency in percentage. (Hint: $Efficiency = \frac{Load\ power}{total\ input\ power} \times 100\%$. Total input power = sum of power losses in all resistances. Load power is the power in the load resistance)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 94,96

1 point

Common data for Question 13 to 16



The equivalent circuit shown refers to a 200/400 V, 1-phase, 50-Hz, 4kVA transformer, the values given being reduced to the low voltage side. The high-voltage current is 10A at a lagging power factor of 0.8.

13) Calculate the magnitude of the load impedance in Ω

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 37.62,39.62

1 point

14) Calculate the voltage at the terminals of the high-voltage side in Volt.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 383,389.5

1 point

15) Calculate the low voltage input current in Ampere.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 20.3,21

1 point

16) Calculate the efficiency in percentage.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 95,97

1 point