$Dashboard\ /\ My\ courses\ /\ EEE\ 3352\ /\ Lecture\ 4: Single\ phase\ transformer\ /\ Assignment\ 4\ (Quiz): 9\ October\ 2022: 1600-1730\ hrs$ 

Started on Sunday, 9 October 2022, 4:06 PM

State Finished

Completed on Sunday, 9 October 2022, 5:14 PM

Time taken 1 hour 7 mins

Grade 100.0 out of 100.0

Question **1** 

Correct

Mark 10.0 out of 10.0

A 200-kVA, 50-Hz, 1732/240-V single-phase transformer has an iron core cross-sectional area of  $22500 \, \mathrm{mm}^2$ , and the maximum allowable magnetic flux density is 1.4 T. Calculate the number of primary turns  $N_1$ . [Whole number, i.e. 0 decimal places].



The correct answer is: 248

#### Question 2

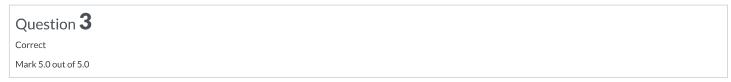
Correct

Mark 5.0 out of 5.0

With the information in Question 1, calculate the number of secondary turns  $N_2$ . [Whole number, i.e. 0 decimal places]



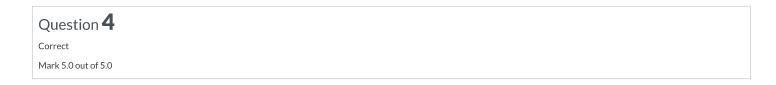
The correct answer is: 34



With the information in Question 1, calculate the rated primary current  $I_1$ , in A. [Whole number, i.e. 0 decimal places]



The correct answer is: 115



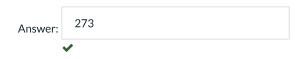
With the information in Question 1, calculate the rated secondary current  $I_2$ , in A. [Whole number, i.e. 0 decimal places]



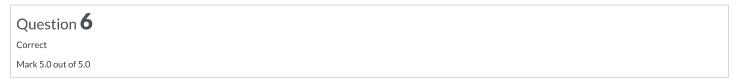
The correct answer is: 833

Question 5
Correct
Mark 10.0 out of 10.0

The length of the magnetic circuit of the transformer given in Question 1 is 4 m and the relative permeability is 2000. What is the magnetising reactance  $X_0$ , in  $\Omega$  [Whole number, i.e. 0 decimal places]



The correct answer is: 272



With information given in the previous questions, what is the magnetising current  $I_{mag}$ , in A? [1 decimal place]



The correct answer is: 6.4

## Question **7**

Correct

Mark 10.0 out of 10.0

With the information in Question 1, what is the iron-loss resistance  $R_0$ , in  $\Omega$ , if the iron loss is 2 kW? [Whole number, i.e. 0 decimal places].



The correct answer is: 1500

#### Question 8

Correct

Mark 5.0 out of 5.0

With the information in previous questions, what is the iron-loss current  $I_{Loss}$ , in A? [2 decimal places].



The correct answer is: 1.15



With the information in previous questions/answers and given that the load current  $I_2$  is 200 A at 0.8 power factor lag, what is the supply current  $I_1$ , in A? [1 decimal place].



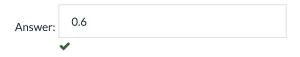
The correct answer is: 32.7

### Question **10**

Correct

Mark 5.0 out of 5.0

A 10-MVA transformer has iron losses of 72 kW and full-load copper losses of 200 kW. At what load current **x**, a pure number, does maximum efficiency occur? [1 decimal place]



The correct answer is: 0.6

#### Question **11**

Correct

Mark 10.0 out of 10.0

A 10-MVA transformer has iron losses of 72 kW and full-load copper losses of 200 kW. What is the maximum efficiency,  $\eta_{max}$ , a pure number? [2 decimal places].

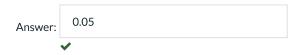


The correct answer is: 0.98

Mark 15.0 out of 15.0

# Question 12 Correct

A 240-V / 110-V transformer has a total resistance of 2  $\Omega$  and a total leakage reactance of 4  $\Omega$ , both referred to the primary-side. The secondary current is 12 A. What is the regulation at unity power factor? [2 decimal places]



The correct answer is: 0.05

Question 13
Correct
Mark 5.0 out of 5.0

With the information in Question 12, what is the power factor, a pure number, which gives maximum regulation? [2 decimal places]



The correct answer is: 0.45

#### **◄** [2021] LECTURE 4 - EXAMPLES

Jump to...

[2021] LECTURE 5: ROTATING MACHINES ▶