

Unit 7 - Week 4

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Week 4 Assignment 4

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

Due on 2019-08-28, 23:59 IST.

1) Savings of copper, in an autotransformer will be significant over a two winding transformer of same rating when the ratio of the voltages is

(a) = 1
(b) >> 1
(c) << 1

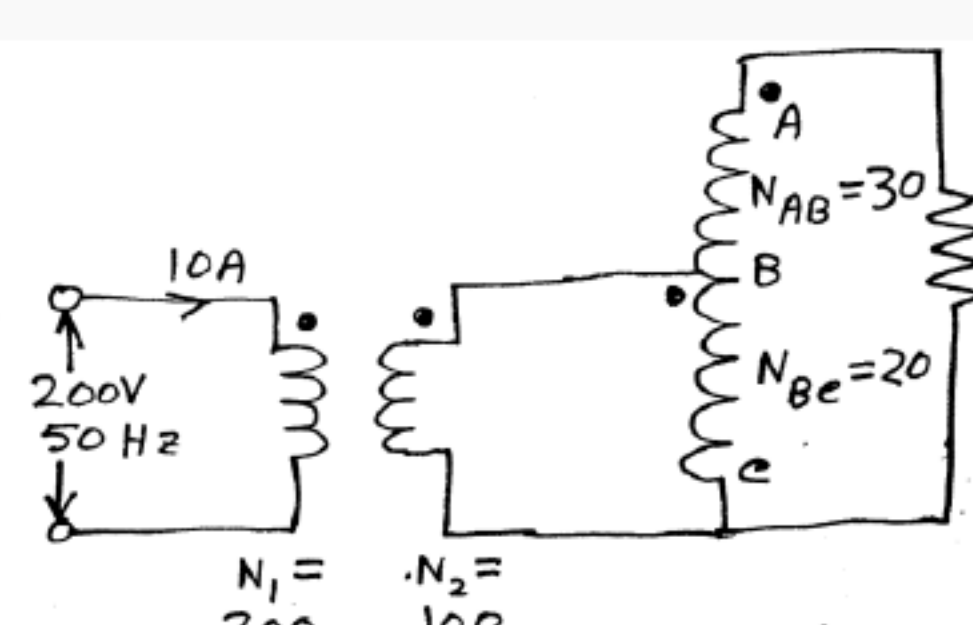
(a)
 (b)
 (c)

No, the answer is incorrect.
Score: 0
Accepted Answers: (a)

2) 110 V, 50 Hz single phase supply is needed from a 220 V, 50 Hz source. The ratio $\frac{\text{Weight of copper needed for a two winding transformer}}{\text{Weight of copper needed for an autotransformer}} = ?$ for this purpose

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 2

3)



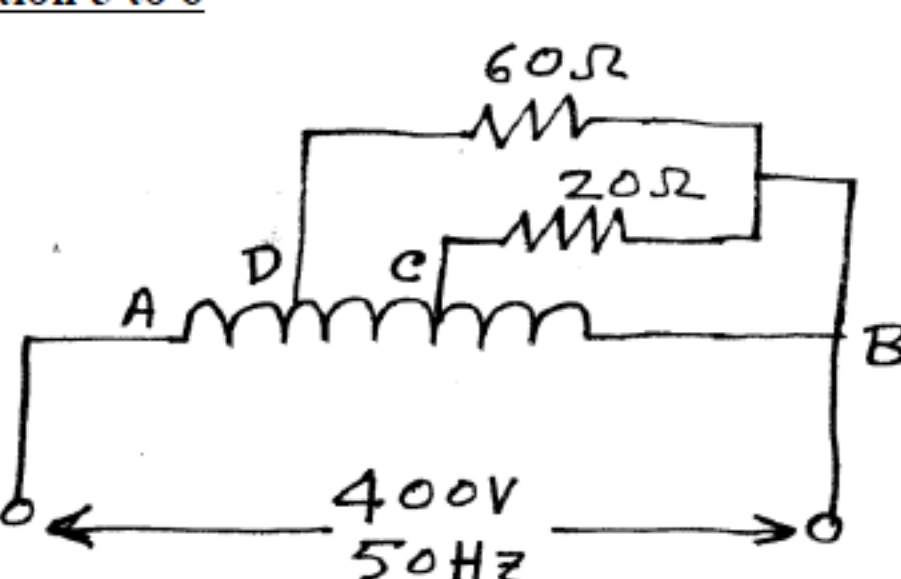
The two winding transformer and the autotransformer of the circuit shown in the figure are ideal. The current in the section BC of the autotransformer is ____ A.

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 12

4) A 22 kVA, 110 V/ 220 V, 50 Hz transformer is connected in such a way that it steps up 110 V supply to 330 V. The maximum kVA that can be handled by the transformer is ____ kVA.

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 33

Common data for question 5 to 6



The figure shows an ideal autotransformer with number of turns of various sections as $N_{AB} = 100$, $N_{CB} = 60$ and $N_{DB} = 80$. The supply voltage is 400V, 50Hz.

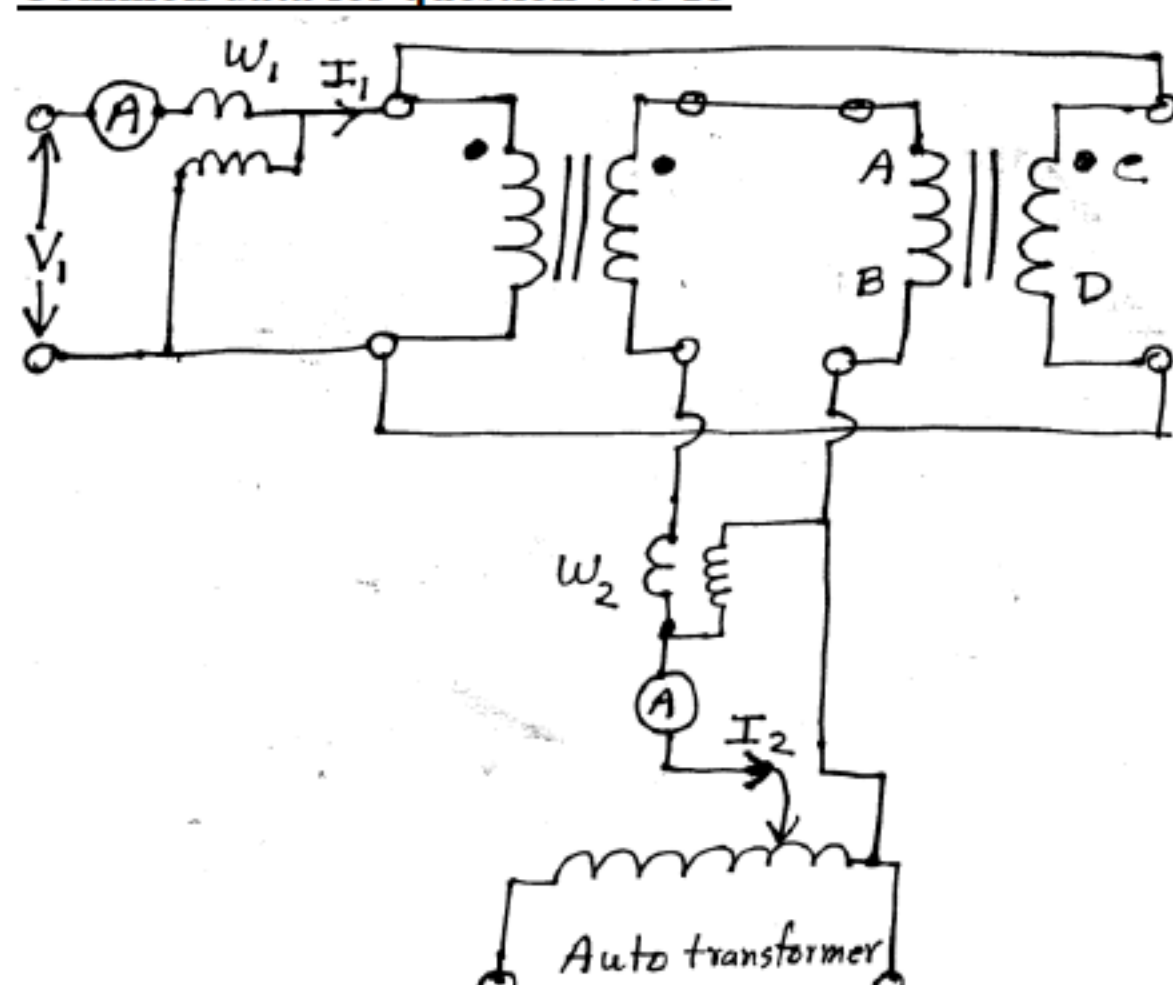
5) Calculate the current drawn from the supply (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 11.27,11.67

6) Calculate the input power factor

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 1

Common data for question 7 to 15



The figure shows the circuit diagram of a Sumpner's test or back to back test carried out on two 10-kVA, 200-V/100-V, 50-Hz transformers. Consider the two transformers to be absolutely identical. Answer the following linked questions

7) In the above circuit, one dot symbol is not shown. Where should be the missing dot?

a. At terminal A
b. At terminal B
c. Either terminal A or B
d. None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.

8) If $N_{AB} = 200$ and $N_{CD} = 400$, then how much voltage should be applied across V_1 (in volt)?

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 200

9) What should be the value of I_2 (in A) during the test?

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 100

10) The value of I_1 is found to be 5A from the ammeter. Estimate the no load current for individual transformers (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 2.5

11) The wattmeter W_1 reads 400W and the wattmeter W_2 reads 500W during the test. Estimate the core loss of individual transformers (in W)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 200

12) The wattmeter W_1 reads 400W and the wattmeter W_2 reads 500W during the test. Estimate the copper loss of individual transformers at full load (in W)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Numeric) 250

13) Estimate the percentage efficiency of these transformers at full load and 0.8 power factor

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 94.17,95.17

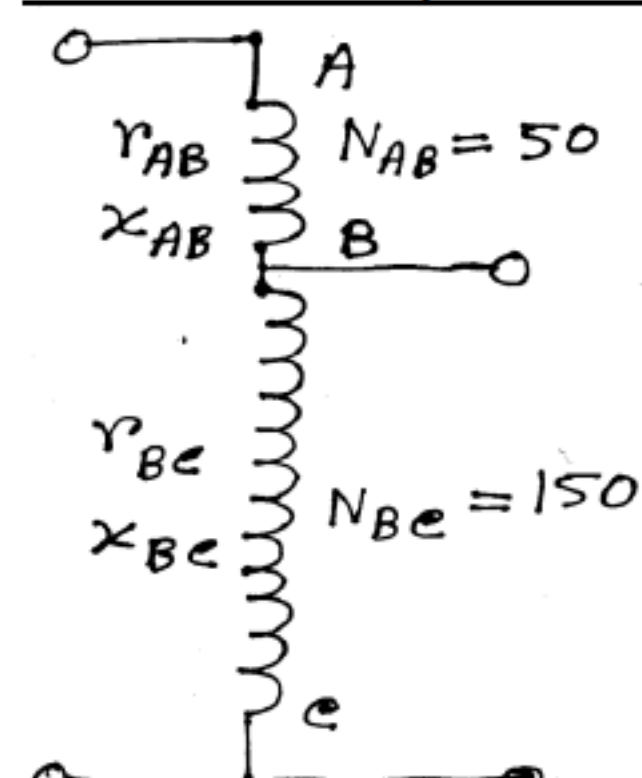
14) Estimate the kVA rating of these transformers for maximum efficiency

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 8.44,9.44

15) Finding the percentage efficiency of a 150kVA transformer at 25% load at a power factor of 0.8 lagging, if the copper loss is 1600W at full load and the iron loss is 1400W. Ignore the effects of temperature rise and magnetizing current.

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 94.74,95.74

Common data for question 16 to 18



The figure shows a 400V/300V, 4kVA, 50 Hz auto transformer where $r_{AB} = 1\Omega$, $r_{Be} = 3\Omega$, $x_{AB} = 2\Omega$, $x_{Be} = 6\Omega$.

16) Find the total resistance referred to the primary (HV) side (in Ω)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 1.3,1.4

17) Find the total leakage reactance referred to the primary (HV) side (in Ω)

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 2.6,2.7

18) Find the percentage regulation at full load and 0.8 power factor

No, the answer is incorrect.
Score: 0
Accepted Answers: (Type: Range) 6.7