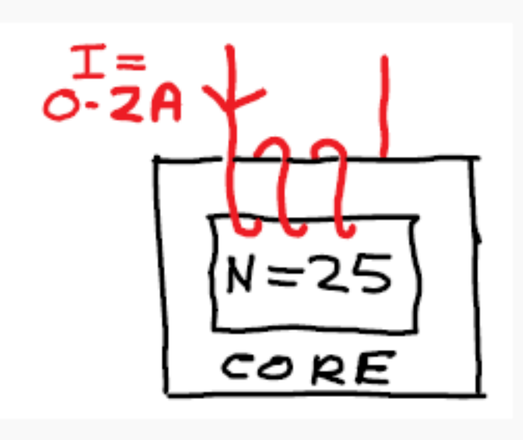
Unit 4 - Week 1

Week 1 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.

COMMON DATA FOR QUESTION 1 to 12
The mean length of the core L = 1 m
The mean cross sectional area A =0.02 m^2
Permeability of the core μ = 200 milli-Henry/meter
Number of turns N = 25
Current I = 0.2 A DC



1) Calculate the **MMF** in Ampere-turns (A-T)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 5

1 point

2) Calculate **magnetic field intensity (H)** inside the core in A-T/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 5

1 point

3) Calculate **flux density (B)** in the core in Tesla

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

1 point

4) Calculate **total flux** in the core in milli Wb

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 20

1 point

5) Calculate **flux-linage** of the coil in Wb-turns

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.5

1 point

6) Calculate the **inductance (L)** of the coil in Henry

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

1 point

7) Calculate **reluctance** of the core in A-turns/Wb

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

1 point

8) If we want to create 0.01 Wb flux in the above core then how much **DC current (in A)** should be passed through the above coil?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.1

1 point

9) If the flux in the above core is varying sinusoidally with frequency f = 50Hz and peak value $\Phi_{max} = 10\ milli\ Wb$, then how much **EMF** will be induced across the coil (RMS value in Volt)?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 54.5,56.5

1 point

10) If we apply 25 V (RMS), 50 Hz voltage across the above coil, then calculate the peak value of the flux (ϕ_{max}) in the core (in milli Wb)?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 4,5

1 point

11) If we apply 25 V (RMS), 50 Hz voltage across the above coil, then calculate the peak value of the flux-density (B_{max}) in the core (in Tesla)?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.2,0.25

1 point

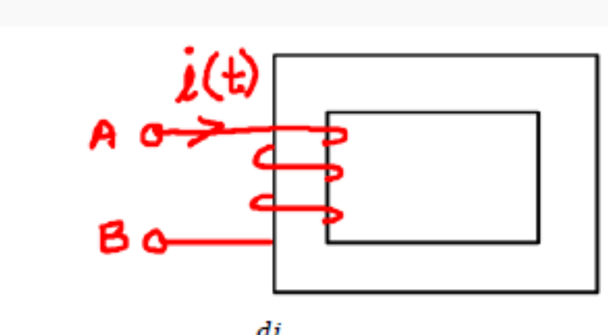
12) If we apply 25 V (RMS), 50 Hz voltage across the above coil, then calculate the RMS value of the coil current (in milli A).

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 28,36

1 point

1 point

13)



If current $i(t)$ is increasing with time, i.e. $\frac{di}{dt} > 0$, select the correct statement.

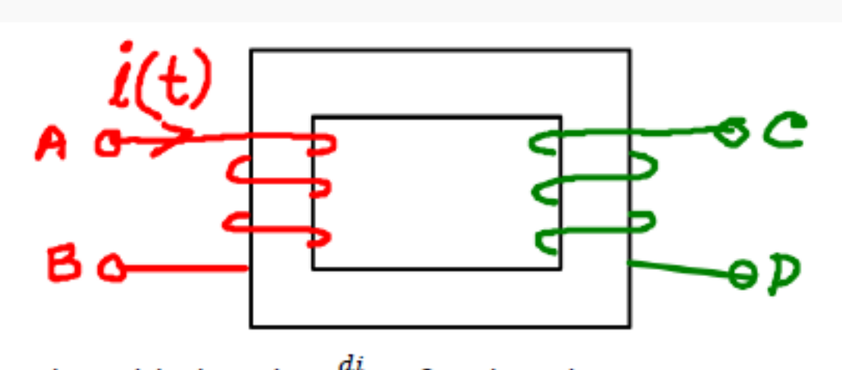
a. Terminal A is at a higher potential than terminal B
b. Terminal B is at a higher potential than terminal A
c. Terminal A and B are at the same potential
d. We do not have sufficient information to compare the potentials of terminal A and B

- a.
- b.
- c.
- d.

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

1 point

14)



If current $i(t)$ is increasing with time, i.e. $\frac{di}{dt} > 0$, select the correct statement.

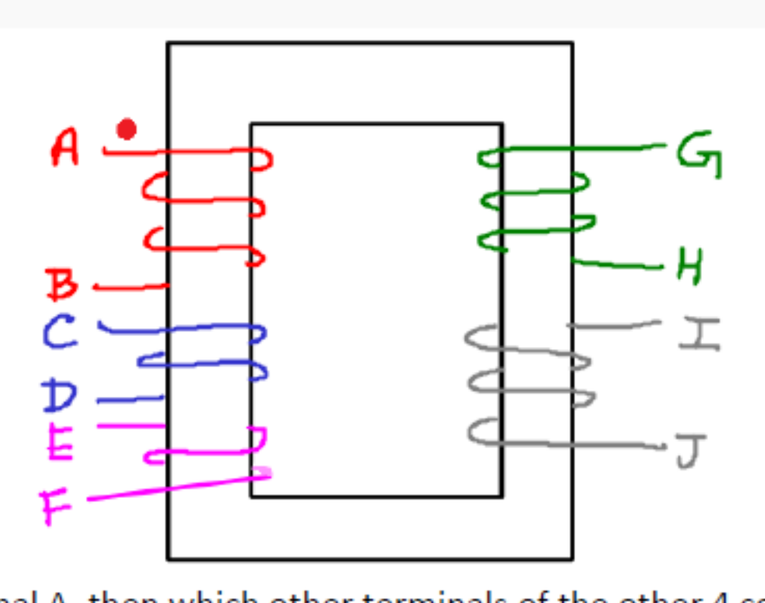
a. Terminal C is at a higher potential than terminal D
b. Terminal D is at a higher potential than terminal C
c. Terminal C and D are at the same potential
d. We do not have sufficient information to compare the potentials of terminal C and D

- a.
- b.
- c.
- d.

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

1 point

15)



If we put a dot at terminal A, then which other terminals of the other 4 coils should have dots?

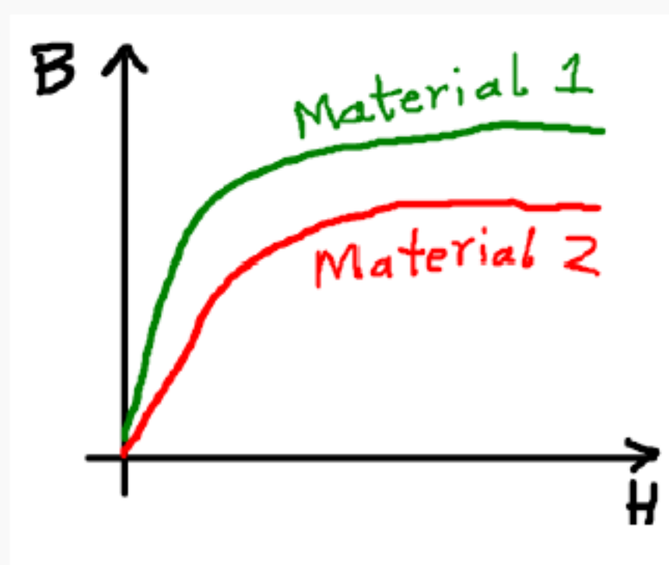
a. Terminal C
b. Terminal D
c. Terminal E
d. Terminal F
e. Terminal G
f. Terminal H
g. Terminal I
h. Terminal J

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

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

1 point

16)



If we make two similarly rated transformers one with material 1 and another with material 2 then.

a. Both transformers will draw same amount of no load current
b. Transformer with material 1 will draw more no-load current
c. Transformer with material 2 will draw more no-load current

- a.
- b.
- c.

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

COMMON INFORMATION FOR ALL THE REMAINING QUESTIONS

Consider Ideal transformers only

17) An ideal transformer has 100 primary coil turns and 200 secondary coil turns. If 240 V (RMS), 50 Hz AC voltage is applied to the primary coil, then how much EMF (RMS value in Volt) will be induced in the secondary coil?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 480

1 point

18) An ideal transformer has 100 primary coil turns and 200 secondary coil turns. If 5 A (RMS), 50 Hz AC current is flowing in the secondary circuit, how much current will be drawn by the primary coil (RMS value in A)?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 10

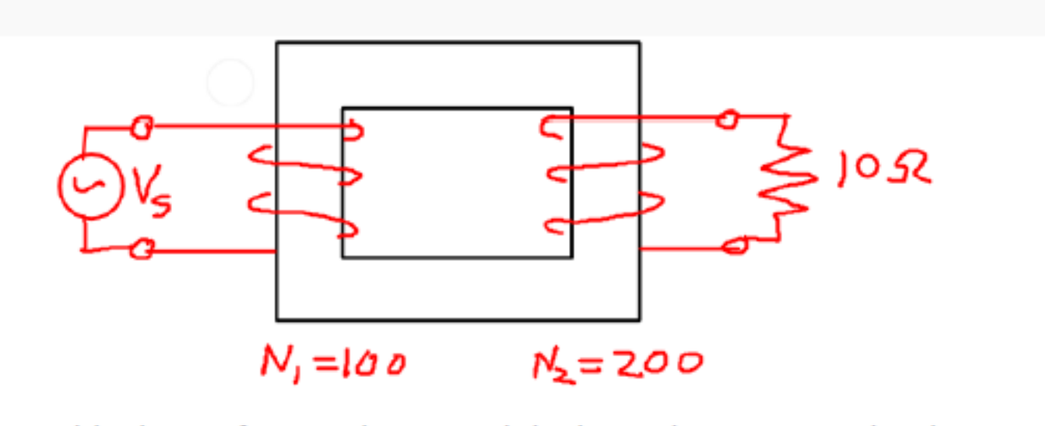
1 point

19) In an ideal transformer the primary voltage is 200 V 50 Hz and primary current is 2 A, If secondary current is 5 A, then how much is the secondary voltage (in Volt) ?

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

1 point

20)



In case of the above ideal transformer, how much is the resistance seen by the source V_s (in Ω)?

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

1 point

21) Find the rated HV side current (in A) of an 110KVA, 11KV:110V, 50 Hz transformer

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 10

1 point

22) Find the rated LV side current (in A) of a 110 KVA, 11 KV : 110 V, 50 Hz transformer

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 1000

1 point

23) If we use a 110 KVA, 11 KV : 110 V, 50 Hz transformer as a **step down** transformer then what is the minimum resistance (in Ω) that must be connected between the **LV** terminals

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0.11

1 point

24) If we use a 110 KVA, 11 KV : 110 V, 50 Hz transformer as a **step up** transformer then what is the minimum resistance (in Ω) that must be connected between the **HV** terminals

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 1100

1 point

25) If a 110 KVA, 11 KV : 110 V, 50 Hz **step up** transformer is operating at half load then calculate the magnitude of the impedance connected to the secondary side (in Ω).

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 2200

1 point

26) A 110 KVA, 11 KV : 110 V, 50 Hz transformer is being used with 5.5 KV supply voltage connected to the HV side. What is the maximum KVA that this transformer can deliver under this condition?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 55

1 point

1 point

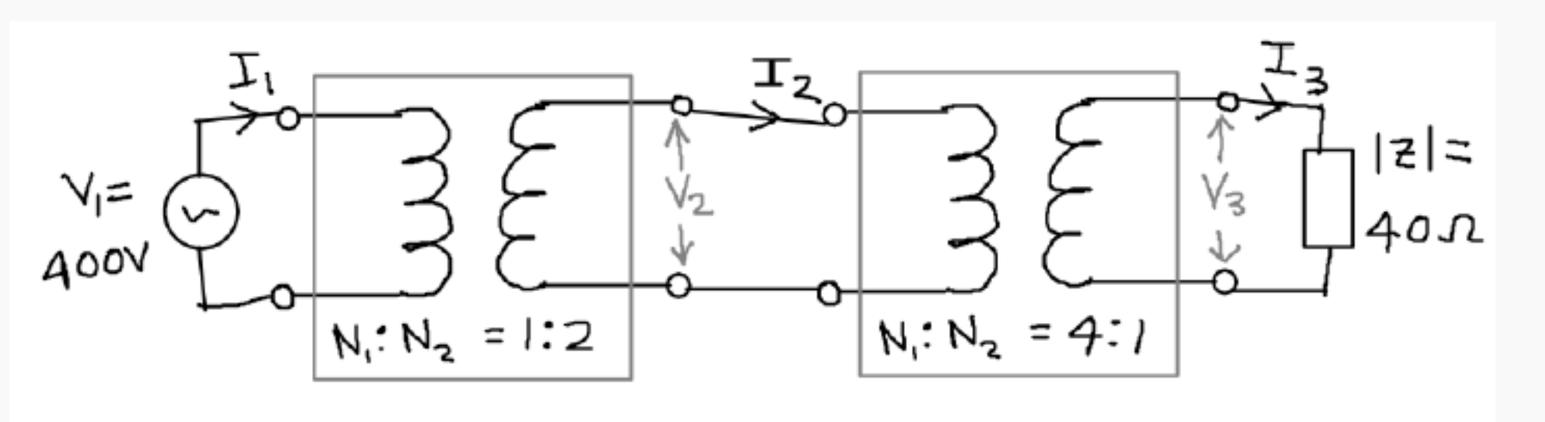
27) Select the correct statements

a. The HV coil of a transformer has **thicker** conductors then the LV coil
b. The HV coil of a transformer has **thinner** conductors then the LV coil
c. Both the coils in a transformer should have same thickness

- a.
- b.
- c.

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

28)



Find the magnitude of I_3 (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 5

1 point

29) In the previous question (QUESTION 28), find the magnitude of I_2 (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 1.25

1 point

30) In the previous question (QUESTION 28), find the magnitude of I_1 (in A)

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

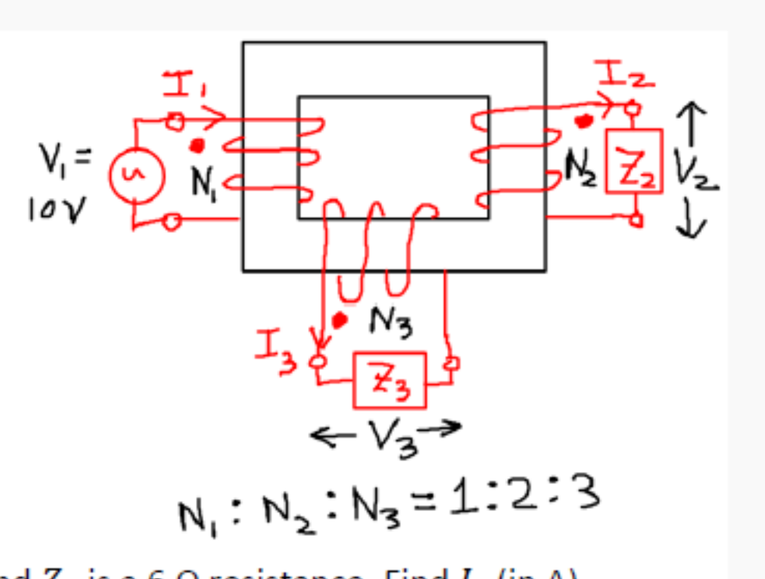
1 point

31) In the previous question (QUESTION 28), find the magnitude of the impedance seen by the source V_1 (in Ω)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 160

1 point

32)



Z_2 is a 5 Ω resistance and Z_3 is a 6 Ω resistance. Find I_2 (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 4

1 point

33) In the previous question (QUESTION 32), find I_3 (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 5

1 point

34) In the previous question (QUESTION 32), find I_1 (in A)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 23

1 point

35) In the previous question (QUESTION 32), find the impedance seen by the voltage source (in Ω)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.42,0.45

1 point