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1. The phenomenon due to which there is an induced current in one coil due to the current in a neighbouring coil is?

- a) Electromagnetism
- b) Susceptance
- c) Mutual inductance
- d) Steady current

View Answer

Answer: c

Explanation: When there is a current in a coil, due to the magnetic field caused by the current there is current induced in the neighbouring coil as well. This is known as mutual inductance.

2. If the current in one coil becomes steady, the current in neighbouring coil is?

- a) Zero
- b) Infinity
- c) Doubles
- d) Halves

View Answer

Answer: a

Explanation: A current is induced when there is changing magnetic flux. Hence the induced current in neighbouring coil is zero when the current is steady.

3. If the current in one coil is steady, what happens to the mutual inductance?

- a) Zero
- b) Infinity
- c) Doubles
- d) Halves

View Answer

Answer: a

Explanation: A current is induced when there is changing magnetic flux. The induced current in neighbouring coil is zero when the current is steady. So, mutual inductance is zero.

4. What is the SI unit of mutual inductance?

- a) Ohm
- b) Henry
- c) Volt
- d) Siemens

View Answer

Answer: b

Explanation: Mutual inductance is the inductance between the two neighbouring coils. Since it is a type of inductance, its unit is that of inductance, that is, henry.

5. Which, among the following, is the correct expression for mutual inductance?

- a)  $M = N_2 \phi_2 / I_2$
- b)  $M = N_2 \phi_2 / I_1$

c)  $M=N_1\phi_2/I_2$

d)  $M=N_1\phi_1/I_1$

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Answer: b

Explanation: Mutual inductance is the product of the number of turns in one coil and the flux linkages of that coil, divided by the current in the other coil. Hence  $M=N_2\phi_2/I_1$  is the correct expression.

6. If the flux linkage in coil 1 is 3Wb and it has 500 turns and the current in coil 2 is 2A, calculate the mutual inductance.

a) 750H

b) 500H

c) 450H

d) 900H

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Answer: a

Explanation: We know that mutual inductance is the product of the number of turns in one coil and the flux linkages of that coil, divided by the current in the other coil.

$$M=3*500/2=750H.$$

7. The flux linkage in coil 1 is 3Wb and it has x turns and the current in coil 2 is 2A, calculate the value of x if the mutual inductance is 750H.

a) 300

b) 400

c) 500

d) 700

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Answer: c

Explanation: We know that mutual inductance is the product of the number of turns in one coil and the flux linkages of that coil, divided by the current in the other coil.

$$N=750*2/3 = 500 \text{ turns.}$$

8. The flux linkage in coil 1 is x and it has 500 turns and the current in coil 2 is 2A, calculate the value of x if the mutual inductance is 750H.

a) 1Wb

b) 2Wb

c) 3Wb

d) 4Wb

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Answer: c

Explanation: We know that mutual inductance is the product of the number of turns in one coil and the flux linkages of that coil, divided by the current in the other coil.

$$\phi=750*2/500 = 3Wb.$$

9. The flux linkage in coil 1 is 3 Wb and it has 500 turns and the current in coil 2 is xA, calculate the value of x if the mutual inductance is 750H.

a) 1A

b) 2A

c) 3A

d) 4A

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Answer: b

Explanation: We know that mutual inductance is the product of the number of turns in one coil and the flux linkages of that coil, divided by the current in the other coil.

$$I = \frac{3 \times 500}{750} = 2A.$$

10. Practical application of mutual inductance is \_\_\_\_\_

a) DC generator

b) AC generator

c) Transformer

d) Capacitor

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Answer: c

Explanation: A transformer is a device made of two or more inductors, one of which is powered by AC, inducing an AC voltage across the second inductor.