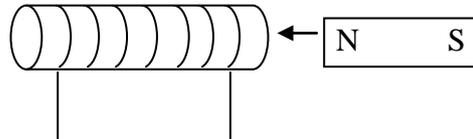




## ELECTROMAGNETISM AND ELECTROMAGNETIC INDUCTION

01)



The picture shows an iron core which is covered by a copper wire. In order to light an LED bulb which factor is not required.

- i) Increasing the strength of the magnetic field
- ii) Increasing the number of turns of the coil.
- iii) Provide an external electric supply.
- iv) Connecting a step down transformer.

02) Which depicts the correct electromagnetic field around a conductor when current is flowing.



03) The correct statement regarding Fleming's right hand rule.

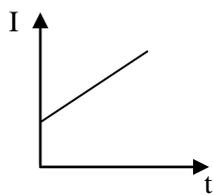
- i) Thumb shows the magnetic field.
- ii) Middle finger shows current.
- iii) Thumb shows the force.
- iv) Index finger shows magnetic field.

04) The following statements are explaining about the magnetic field of an electromagnet.

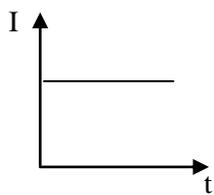
- A Increase of current flowing increases the magnetic field strength.
- B Increase of number of turns in the coil decreases the magnetic field strength.
- C Increase of the 50H iron core increases the magnetic field strength.
- D Magnetic field strength cannot be changed by any other factor.

- 1) A & B      2) B & C      3) A & C      4) B & C

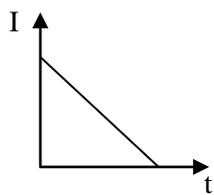
06) The current (I) – time (t) graph for DC current circuit.



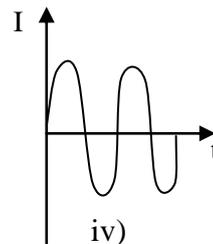
i)



ii)



iii)

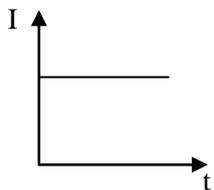


iv)

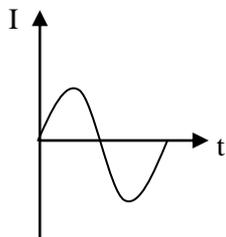
07) Which is not a factor for affecting the magnitude of the induced electromotive force.

- i) Number of turns in the coil.
- ii) Strength of the magnet.
- iii) Speed of motion of the coil.
- iv) Direction of motion of the coil.

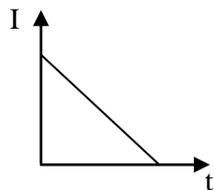
08) The current (I) – time (t) graph for AC current circuit.



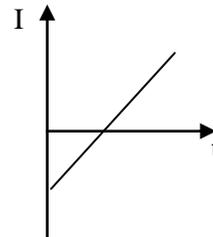
i)



ii)



iii)



iv)

09) The energy transmission in an electric motor.

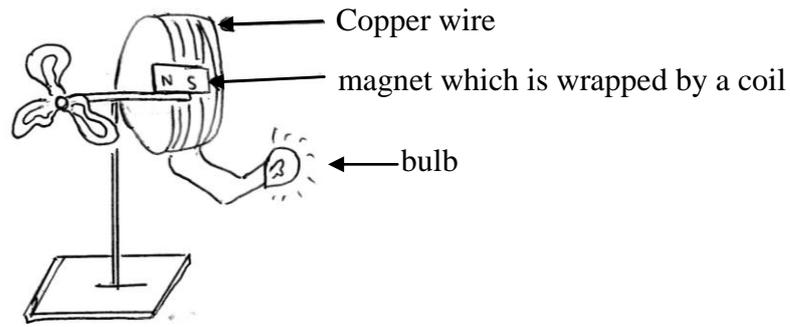
- i) Electric energy → Heat energy
- ii) Electric energy → Potential energy
- iii) Electric energy → mechanical energy
- iv) Electric energy → Kinetic energy

10) Which is not an incident related to practical use of electro magnetic induction.

- i) Dynamo
- ii) Transformer
- iii) Capacitor
- iv) Moving coil microphone

## STRUCTURED ESSAY

01)



The given above is a wind wheel prepared by Sunil.

i) When the wind is blowing the magnet which is attached to the axis is rotated. Also the magnet is wrapped with a copper coil.

a) What are observations when wind is blowing

.....

b) What are the types of currents made here.

.....

ii) What happens to the current when the power of the magnet is increased.

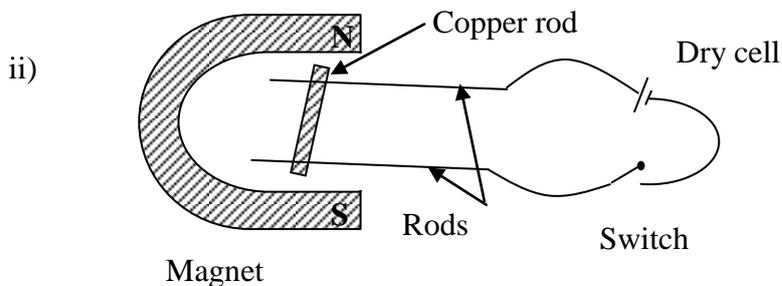
.....

iii) for the induction of the current, mention the reason for that

.....

02) i) Write Fleming's left hand rule.

.....



iii) a) To which direction does the copper rod move when the current is supplied and switch is closed.

.....

b) When the terminals of the dry cell are changed and then to which direction does the copper rod move when the current is supplied and switch is closed.

.....

c) When will happen to the force exerted on the copper rod when the power of the dry cell is increased.

.....

d) What will happen to the force exerted on the copper rod when the length of the rod is decreased.

.....

### ESSAY

01) The concept electromagnetic induction is used in the generation of electricity in Sri Lanka. Here a large turbine is rotated using this concept.

- i) Write the energy conversion in the process of generation of electricity.
- ii) Draw the pathway how the electricity is transmitted to the house from the power station by using transformers.
- iii) If the potential difference in a ratio transformer is  $IIV$  and the turns in the primary coil is 1000 turns. when it is connected to the household circuit (220V) Find the number of turns in secondary coil.
- iv) Write down 3 instances where electromagnetic induction is used practically.

02) The components of a bicycle dynamo is given here.

- i) Label P, Q, R, S
- ii) What is the principle used here
- iii) Is the output current of a dynamo, AC current or DC current.
- iv) Draw a rough sketch to show the variation of the voltage output and current with time.
- v) The brightness of a bicycle lamp depends on the speed at which the bicycle is being ridden. Explain how H happens.
- vi) Write down the energy transformation taken place when bicycle lamp is lit up using the bicycle dynamo.

