

Board – ICSE

Class – 10<sup>th</sup>

Topic – Electromagnetism

1. Explain:
  - (i) What will happen to a compass needle when the compass is placed below a wire and a current is made to flow through the wire ? Give reason to justify your answer.
  - (ii) What energy conversion takes place during the working of a d.c. motor?
2. State one point of similarity and one point of difference between an a.c. generator and a d.c. motor.
3. Explain:
  - (a) (i) Why does a magnetic needle show a deflection when brought close to a current carrying conductor?  
(ii) A wire bent into a circle carries current in an anti-clockwise direction. What polarity does this face of the coil exhibit?
  - (b) Draw a simple sketch of a step down transformer. Label the different parts in the diagram.
4. A device is used to transform 12V a.c. to 200V a.c.
  - (a) What is the name of this device?
  - (b) Name the principle on which it works.
5. (a) State two factors on which the strength of an induced current depends.  
(b) When a solenoid that is carrying current is freely suspended, it comes to rest along a particular direction. Why does this happen?
6. State two advantages of an electromagnet over a permanent magnet.
7. State the energy changes which takes place when a magnet is moved inside a coil having a galvanometer at its ends. Name this phenomenon.
8. A transformer is designed to work from a 240 V a.c. mains and to give a supply of 8 V to ring a house bell. The primary coil has 4800 turns. How many turns would you expect in the secondary?
9. What is the function of a transformer in an a.c. circuit? How does the input and output powers of a transformer compare? Name two causes of energy loss in a transformer.
10. How is e.m.f. in primary and secondary coils of a transformer related with the number of turns in these coils?

11. (a) What do you understand by the following terms :
- (i) Electromagnetic induction?
  - (ii) Induced e.m.f?
- (b) State two laws of electromagnetic induction.
12. State three characteristics of the magnetic field produced by a straight current carrying conductor.