

## 10. Electromagnetism: Previous year questions 2000-2017

2017

1. State two causes of energy loss in a transformer [2]
2. Draw a labelled diagram of an AC generator. Write the function of its two main parts [4]

2016

1. Which coil of a step-up transformer is made thicker and why? [2]

2014

1. Name a common device that uses electromagnet [1]
2. (i) Name two factors on which the magnitude of an induced EMF in the secondary coil depends  
(ii) In the following diagram an arrow shows the motion of the coil towards the bar magnet
  - a. State in which direction the current flows, A to B or B to A?
  - b. Name the law used to come in the conclusion

2013

1. (i) Draw a simple labelled diagram of a DC electric motor  
(ii) What is the function of the split rings in a DC motor  
(iii) State one advantage of AC over DC [4]
2. You have been provided with a solenoid AB
  - a. What is the polarity at end A
  - b. Give one advantage of an electromagnet over a permanent magnet [2]

2012

1. The diagram given shows a current carrying loop or a circular coil passing through a sheet of cardboard at the points M and N. the sheet of cardboard is sprinkled uniformly with iron fillings
  - a. Copy the diagram and draw an arrow on the circular coil to show the direction of current flowing through it
  - b. Draw the pattern of arrangement of iron fillings when current is passed through the loop [3]
2. (i) What is an AC generator or dynamo used for  
(ii) Name the principle on which it works [2]

2011

1. Draw a representative diagram of a DC motor. Label the following in your diagram
  - a. The field magnet
  - b. The armature
  - c. Commutator
  - d. Wire brushes

What is the energy change in this case [5]

2010

1. (i) State two ways by which the magnetic field of a solenoid can be made stronger

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(ii) What material is used for making the armature of an electric bell? Give reason for using this material [4]

2. (i) A straight wire conductor passes vertically through a piece of cardboard sprinkled with iron fillings as shown in the figure below. Copy the diagram and show the setting of iron fillings when a current is passed through the wire in the upward direction and the cardboard is tapped gently. Draw arrows to represent the direction of the magnetic field lines

(ii) Name the law which helped you to find the direction of the magnetic field line [3]

3. Give two differences between a DC motor and an AC generator [2]
4. A device is used to transform 12 V AC to 200 V AC
- What is the name of this device
  - Name the principle of which it works [2]

2009

1. The figure given alongside shows an electromagnet.
- What will be the polarity at the end X?
  - Suggest a way by which the strength of the electromagnet referred to in the question may be increased [2]
2. (i) Draw a neat and labelled diagram to show the structure of an AC generator  
(ii) State the energy conversion taking place in the AC generator when it is working [3]

2008

1. (i) Why does a magnetic needle show a deflection when brought close to a current carrying conductor  
(ii) A wire bent into circle carries current in an anticlockwise direction. What polarity does this face of the coil exhibit [3]
2. (i) What is the name given to a cylindrical coil, whose diameter is less in comparison to its length  
(ii) A piece of soft iron is placed inside the current carrying coil, what is the name given to the device  
(iii) Give one use of the device named by you in part (ii) above [3]
3. State one point of similarity and one point of difference between an AC generator and DC motor [2]
4. Draw a simple sketch of stepdown transformer. Label the different parts in diagram. [2]

2007

1. (i) State two factors on which the strength of an induced current depends  
(ii) When a solenoid that is carrying current is freely suspended it uses to rest along a particular direction. Why does this happen [3]

2006

1. What energy conversion take place during the working of a DC motor [1]
2. State two advantages of an electromagnet over a permanent magnet [2]
3. 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 a reason to justify your answer [2]

2005

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1. State the function of a split ring in a DC motor [2]
2. Draw a labelled diagram of an AC generator [2]
3. State the energy change which takes place when a magnet is moved inside a coil having a galvanometer at its end. Name this phenomenon. [2]
4. Mention any two reasons, why a soft iron core is used within the coil of a moving coil galvanometer [2]

2004

1. Explain briefly, how a magnet can be demagnetised using an AC current [3]
2. State two ways by which the EMF in an AC generator can be increased [2]
3. (i) Draw a labelled diagram to show the various components of a step down transformer  
(ii) State the main difference between a step-up and step-down transformer

2003

1. The diagram shows a coil connected to a galvanometer 'G'. the galvanometer shows a deflection to the right when the N-pole of a powerful magnet is moved to the right as shown
  - a. Explain, why the deflection occur in the galvanometer
  - b. Does the direction of the current in the coil appear clockwise or anticlockwise, when viewed from the end 'A'
  - c. State the observation in 'G' when the coil is moved away from 'N'
  - d. State the observation in 'G' when both the coil and the magnet are moved to the right at the same speed [5]

2002

1. State two advantages of an electromagnet over a permanent magnet [2]
2. Draw a sketch of an electric bell with electrical connections and label the main parts. Why is the armature made of soft iron and not of steel [4]
3. State two dissimilarities between a DC motor and an AC generator [2]