PHYSICS

BOOKS - PRADEEP PHYSICS (HINGLISH)

MAGNETIC EFFECTS OF ELECTRIC CURRENT

Ncert Questions

1. Why does a compass needle get deflected when brought near a bar magnet?

Watch Video Solution

2. Draw magnetic field lines around a bar magnet.

Watch Video Solution

3. What are the magnetic lines of force? Give their important properties.

Watch Video Solution

4. Why don't two magnetic field lines intersect each other?

Watch Video Solution

5. State right hand thumb rule to determine the direction of magnetic field around a current carrying conductor. Apply this rule to find the direction of magnetic field inside and outside a circular loop of wire lying in the plane of a table and current is flowing through it clockwise .

Watch Video Solution

6. The magnetic field in a given region is uniform. Draw a diagram to represent it.

Watch Video Solution

7. Choose the correct option:

The magnetic field inside a long straight solenoid carrying current:

A. is zero

B. decreases as we move towards its end

C. increases as we move towards its end

D. is same at all points.

Answer: B

Watch Video Solution

8. Which of the following properties of a proton can change while it moves freely in a mangetic field? (There may be more than one correct answer).

A. (a) mass

B. (b) speed

C. (c) velocity

D. (d) momentum

Answer: C::D

Watch Video Solution

9. In figure, how do we think the displacement of rod AB will be affected if (i) current in the rod AB is increased, (ii) a stronger horse-shoe

magnet is used, and (iii) length of the rod AB is increased?

Watch Video Solution

10. A positively-charged particle (alpha particle) projected towards west is deflected towards north by a magnetic field. The direction of magnetic field is:

A. (a) towards south

B. (b) towards east

C. (c) downward

D. (d) upward.

Answer: D

Watch Video Solution

11. Explain different ways to induce current in a coil.

Watch Video Solution

12. State Fleming's left-hand rule.

Watch Video Solution

13. What is the principle of an electric motor?

Watch Video Solution

14. What is the role of the split-ring in an electric motor?

Watch Video Solution

15. State the principle of an electric generator.

Watch Video Solution

16. Name some sources of direct current.

Watch Video Solution

17. Which sources produce alternating current?

Watch Video Solution

18. Choose the correct option:

A rectangular coil of copper wires is rotated in a magnetic field. The direction of the induced current changes once in each:

A. two revolution

B. one revolution

C. half revolution

D. one-fourth revolution

Answer: C

Watch Video Solution

19. Name two safety measures commonly used in electric circuits and appliances.

Watch Video Solution

20. An electric oven of a $2kW$ power rating is operated in a domestic circuit (220 V) that has

a current rating of 5A. What results do you expect? Explain.

Watch Video Solution

21. What precaution should be taken to avoid the overloading of domestic electric circuits?

Watch Video Solution

Ncert Exercises

1. Which of the following correctly describes the magnetic field near a long straight wire?

A. The field consists of straight lines perpendicular to the wire.

B. The field consists of straight lines parallel to the wire.

C. The field consists of radial lines originating from the wire.

D. The field consists of concentric circles centred on the wire.

Answer: D

Watch Video Solution

2. The phenomena of electromagnetic induction is:

A. (a) the process of charging a body,

B. (b) the process of generating magnetic field due to a current passing through a coil,

C. (c) producing induced current in a coil due to relative motion between a magnet and the coil,

D. (d) the process of rotating a coil of an electric motor.

Answer: C

Watch Video Solution

3. The device used for producing electric current is called a:

A. (a) generator

B. (b) galvanometer

C. (c) ammeter

D. (d) motor.

Answer: A

Watch Video Solution

4. The essential difference between an AC generator and a DC generator is that:

A. AC generator has an electromagnet while a DC generator has permanent magnet,

B. DC generator will generate a higher voltage,

C. AC generator will generate a higher voltage,

D. AC generator has slip rings while the DC generator has a commulator.

Answer: D

Watch Video Solution

5. At the time of short-circuit, the current in the circuit:

A. (a) reduces substantially

B. (b) does not change

C. (c) increases heavily

D. (d) varies continuously.

Answer: C

Watch Video Solution

6. State whether the following statements are true or false.

(a) An electric motor converts mechanical energy into electrical energy.

(b) An electric generator works on the

principle of electromagnetic induction.

(c) The field at the centre of a long circular coil carrying current will be parallel straight lines.

(d) A wire with a green insulation is usually the live wire.

Watch Video Solution

7. List three sources of magnetic fields.

Watch Video Solution

8. How does a solenoid behave like a magnet? Can you determine the north and south poles of a current carrying solenoid with a help of bar magnet? Explain.

Watch Video Solution

9. When is the force experienced by a current-carrying conductor placed in a magnetic field is largest?

Watch Video Solution

10. Imagine you are sitting in a chamber with your back to one wall. An electron beam, moving horizontally from back wall towards the from wall, is deflected by a strong magnetic field to your right side. What is the direction of the magnetic field?

A. Vertically downwards

B. Vertically Upwards

C. Towards Right

D. None of these

Answer: A

Watch Video Solution

11. Draw a labelled diagram of an electric motor. Explain its principle and working. What is the function of a split-ring in an electric motor?

Watch Video Solution

12. Name some devices in which electric motors are used.

Watch Video Solution

13. A coil of insulated copper wire is connected to galvanometer. What would happen if a bar magnet is

(i) pushed into the coil?

(ii) withdrawn from inside the coil?

(iii) held stationary inside the coil?

Watch Video Solution

14. Two circular coils A and B are placed close to each other. If the current in the coil A is changed, will some current be induced in the coil B? Give reason.

Watch Video Solution

15. State the rule to determine the direction of a

(i) magnetic field produced around a straight

conductor carrying current.

(ii) force experienced by a current-carrying straight conductor placed in a magnetic field which is perpendicular to it, and

(iii) current induced in a coil due to its rotation in a magnetic field.

Watch Video Solution

16. Explain the underlying principle and working of an electric generator by drawing a

labelled diagram. What is the function of brushes?

Watch Video Solution

17. When does an electric short-circuit occur?

Watch Video Solution

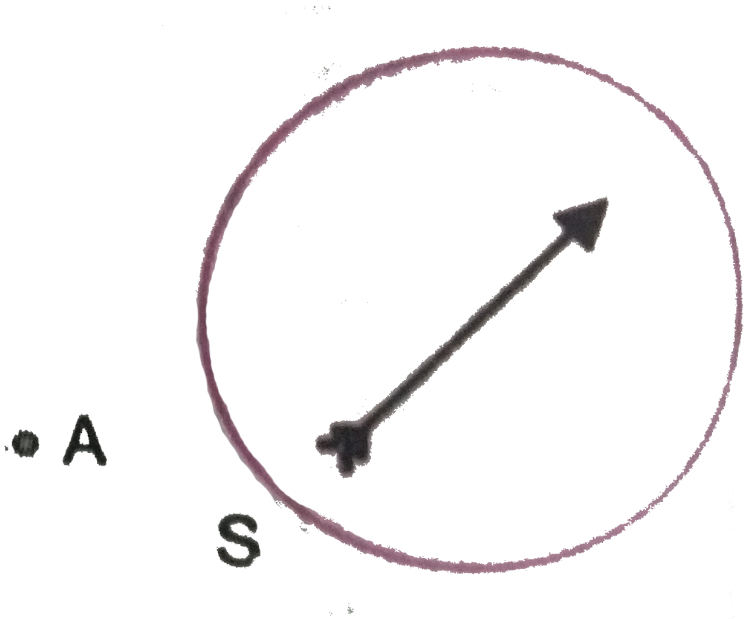
18. What is the function of an earth wire? Why is it necessary to earth metallic appliances?

Watch Video Solution

Short Answer Questions

1. A magnetic compass needle is placed in the plane of paper near point A as shown in figure. In which plane should a straight current carrying conductor be placed so that it passes through A and there is no change in the direction of the compass? Under what

condition is the deflection maximum and why?



Watch Video Solution

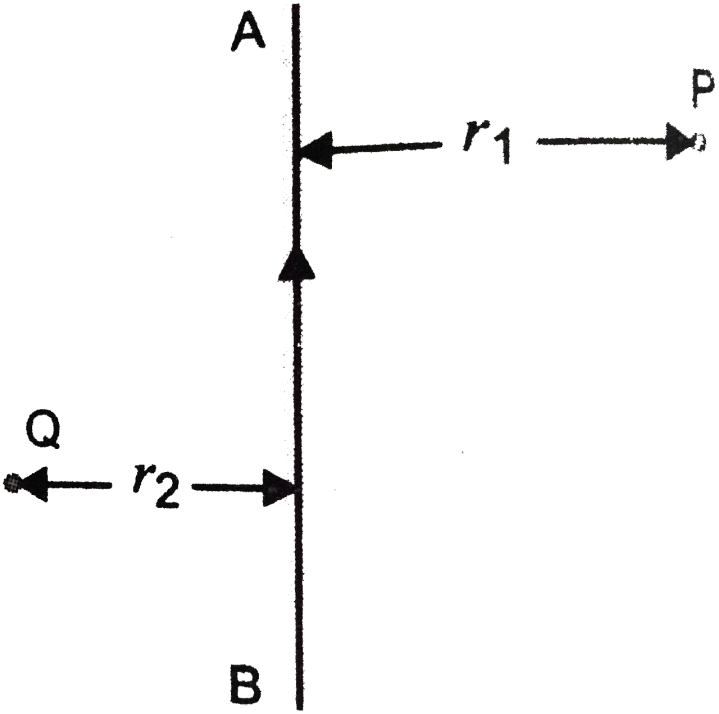
2. Under what conditions a permanent electormagnet is obtained if a current carrying

solenoid is used? Support your answer with the help of a labelled circuit diagram.

Watch Video Solution

3. AB is a current-carrying conductor in the plane of the paper as shown in figure. What are the directions of magnetic fields produced by it at point P and Q? Given $r_1 > r_2$, where will the strength of the magnetic field be

larger?



Watch Video Solution

4. A magnetic compass shows a deflection when placed near a current-carrying wire. How

will the deflection of the compass get affected if the current in the wire is increased? Support your answer with a reason.

Watch Video Solution

5. It is established that an electric current through a metallic conductor produces a magnetic field around it. Is there a similar magnetic field produced around a thin beam of moving (i) alpha particles, (ii) neutrons? Justify your answer.

Watch Video Solution

6. What does the direction of thumb indicate in the right-hand thumb rule? In what way this rule is different from Freming's left-hand rule?

Watch Video Solution

7. Meena draws magnetic field lines of field close to the axis of a current-carrying circular loop. As she moves away from the centre of the circular loop, she observes that the lines

keep on diverging. How will you explain her observation?

Watch Video Solution

8. What does the divergence of magnetic field lines near the ends of a current carrying straight solenoid indicate?

Watch Video Solution

9. Name four appliances wherein an electric motor, a rotating device that converts electrical energy to mechanical energy, is used as an important component. In what respect motors are different from generators?

Watch Video Solution

10. What is the role of the two conducting stationary brushes in a simple electric motor?

Watch Video Solution

11. What is the difference between a direct current and an alternating current? How many times does AC used in India change direction in one second?

Watch Video Solution

12. What is the role of fuse, used in series with any electrical appliance? Why should a fuse with defined rating not be replaced by one with a larger rating?

Watch Video Solution

Long Answer Questions

1. Why does a magnetic compass needle pointing North and South in the absence of a nearby magnet get deflected when a bar magnet or a current-carrying loop is brought near it. Describe some silent features of magnetic lines of field concept.

Watch Video Solution

2. With the help of a labelled circuit diagram, illustrate the pattern of field lines of the magnetic field around a current-carrying straight long conducting wire. How is the right hand thumb rule useful to find direction of magnetic field associated with a current-carrying conductor?

Watch Video Solution

3. Explain with the help of a labelled diagram the distribution of magnetic field due to a current through a circular loop. Why is it that if a current carrying coil has n turns, the field produced at any point is n times as large as that produced by a single turn?

Watch Video Solution

4. Describe the activity that shows that a current-carrying conductor experiences a force

perpendicular to its length and the external magnetic field. How does Fleming's left-hand rule help us to find the direction of the force acting on the current carrying conductor?

Watch Video Solution

5. Draw a labelled circuit diagram of a simple electric motor and explain its working. In what way these simple electric motors are different from commercial motors?

Watch Video Solution

6. Explain the phenomenon of electromagnetic induction. Describe an experiment to show that a current is set up in a closed loop when an external magneic field passing through the loop increases or decreases.

Watch Video Solution

7. Describe the working of an AC generator with the help of a labelled circuit diagram.

What charges must be made in the arrangement to convert it to a DC generator?

Watch Video Solution

8. Draw an appropriate schematic diagram showing common domestic circuits and discuss the importance of fuse. Why is it that a burnt out fuse should be replaced by another fuse of identical ratting?

Watch Video Solution

Additional Questions A Very Short

1. What is magnetic filed?

Watch Video Solution

2. Name two important properties of a magnet.

Watch Video Solution

3. What is the direction of magnetic field lines inside a magnet?

Watch Video Solution

4. The magnetic field in a given region is uniform. Draw a diagram to represent it.

Watch Video Solution

5. What important observation did Oersted make in his experiment with current-carrying conductors?

Watch Video Solution

6. What is the form of magnetic field lines due to a straight current-carrying conductor?

Watch Video Solution

7. State the rule that is used to find the direction of magnetic field acting at a point near a current carrying straight conductor.

Watch Video Solution

8. How do you locate a current-carrying wire concealed in a wall?

Watch Video Solution

9. Name the unit used to measure magnetic field.

Watch Video Solution

10. What is a solenoid?

Watch Video Solution

11. What for do we apply clock-rule?

Watch Video Solution

12. What is the effect of inserting a soft iron core inside a current-carrying solenoid?

Watch Video Solution

13. What is the composition of the alloy Alnico?

Watch Video Solution

14. What is the composition of the alloy Nipermag?

Watch Video Solution

15. What type of core is used to make an electromagnet?

Watch Video Solution

16. What are permanent magnets made of?

Watch Video Solution

17. Why is soft-iron not used for making a permanent magnet?

Watch Video Solution

18. Name the rule to find the direction of force on a current-carrying conductor placed in direction perpendicular to the direction of magnetic field.

Watch Video Solution

19. What is the relation between a tesla, an ampere and a meter.

Watch Video Solution

20. What is the force acting on charge (q) moving in a direction perpendicular to a magnetic field (B) with velocity v?

Watch Video Solution

21. Which rule do we use to find the direction of this force?

Watch Video Solution

22. How are magnetic field lines related to the strength of a magnetic field?

Watch Video Solution

23. What is the relation between magnetic field (B), current (I) and distance (r) in case of a straight current-carrying conductor?

Watch Video Solution

24. What is the magnitude of force acting on a current-carrying conductor placed in a magnetic field?

Watch Video Solution

25. What important observation did Oersted make in his experiment with current-carrying conductors?

Watch Video Solution

26. Why is magnetic field maximum at the centre of a current-carrying coil?

Watch Video Solution

27. What is electromagnetic induction?

Watch Video Solution

28. What do you mean by magnetic flux?

Watch Video Solution

29. Name the rule which gives the direction of induced current?

Watch Video Solution

30. Name the device which converts mechanical energy into electrical energy.

Watch Video Solution

31. What type of dynamo is used in a bicycle?

Watch Video Solution

32. What type of dynamo is used in industry?

Watch Video Solution

33. What type of current is given by a cell?

Watch Video Solution

34. What type of current is used in household supply?

Watch Video Solution

35. How is AC different from DC?

Watch Video Solution

36. Name the two types of wiring systems used in domestic circuits.

Watch Video Solution

37. Which effect of electric current is used in the working of an electric fuse?

A. Heating effect

B. Magnetic efffect

C. Both of these

D. None of these

Answer: A

Watch Video Solution

38. Of what substance is a fuse wire made of?

Watch Video Solution

39. What is the capacity of an electric fuse used in (i) lighting circuit (ii) power circuit in house hold supply?

Watch Video Solution

40. Why is a fuse wire made of tin-lead alloy?

Watch Video Solution

41. Where do we connect a fuse: with live or with neutral wire?

Watch Video Solution

42. What are the colours of live, neutral and earth wires?

Watch Video Solution

43. What should be done in case a person comes in contact with a live wire?

Watch Video Solution

44. What are the factors on which the magnitude of induced emf depends?

Watch Video Solution

45. Why do we use a transformer in AC circuits?

Watch Video Solution

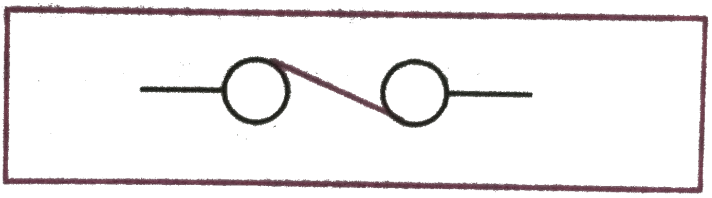
46. Give one reason for not using series arrangement for domestic circuits.

Watch Video Solution

47. How do we control AC without much loss of energy?

Watch Video Solution

48. What is represented by the symbol shown below?



Watch Video Solution

49. What job do the brushes perform in an AC generator?

Watch Video Solution

Short Answer Questions Additional

1. State Right-Hand Thumb Rule to find the direction of magnetic field around a straight conductor carrying current. How will this magnetic field be affected on:

(a) increasing the current through the conductor,

(b) changing the direction of flow of current through the conductor?

Watch Video Solution

2. Why does a current-carrying solenoid when suspended freely rests along a particular direction?

Watch Video Solution

3. State two ways by which the strength of an electromagnet can be increased.

Watch Video Solution

4. State three factors on which the magnitude of the force on a current-carrying conductor placed in a magnetic field depends. Can this force be zero for some position of the conductor?

Watch Video Solution

5. What is the role of the split-ring in an electric motor?

Watch Video Solution

6. A DC motor is rotating in clockwise direction. How can the direction of rotation be reversed?

Watch Video Solution

7. State two ways by which the speed of rotation of an electric motor can be increased.

Watch Video Solution

8. (a) What is a natural magnet?

(b) What is an artificial magnet?

Watch Video Solution

9. (a) What is the nature of the magnetic field inside a solenoid?

(b) What is the nature of the magnetic field due to a circular coil?

Watch Video Solution

10. (a) Which force is independent of the state of rest or of motion of a charged particle: electric or magnetic?

(b) Which of the two force is stronger: magnetic force or electric force?

Watch Video Solution

11. (a) How does the magnetic field (B) due to a straight conductor vary with distance (r) from it?

(b) How does the magnetic field (B) vary inside a solenoid?

Watch Video Solution

12. (a) Name a material of which permanent magnets are made?

(b) Which of the two is stronger: and electromagnet or a permanent magnet?

Watch Video Solution

13. What are the two main systems of wiring commonly used in household circuits? Which of the two is better and why?

Watch Video Solution

14. Explain the significance of the following in a house circuiting. (i) kWh Meter (ii) Main Switch.

Watch Video Solution

15. State the principle of an AC generator. What determines the frequency of AC produced in a generator?

Watch Video Solution

16. What is a switch and how is it connected?

Watch Video Solution

17. What is the role of each of the three pins in a power plug?

Watch Video Solution

18. State two serious hazards of electricity.

Watch Video Solution

19. What the two main precautions to be taken while using an electric supply?

Watch Video Solution

20. What is the role of magnetism in medical science?

Watch Video Solution

21. (a) What type of energy changes into electrical energy in electromagnetic induction?

(b) Can this energy be retrieved from electrical energy?

Watch Video Solution

22. (a) Which polarity is developed on the face of the solenoid when a north pole of a magnet is moving towards it?

(b) Which polarity is developed on the same face of the solenoid when the north pole of the magnet is moved away from it?

Watch Video Solution

23. (a) Which is more dangerous: AC or DC?

(b) Why so?

Watch Video Solution

24. (a) Can we use AC for electroplating?

(b) Can we operate an AC electric motor using DC?

Watch Video Solution

25. (a) On what factor does the current rating of a pole fuse depend?

(b) Does the function of a fuse-wire depend on it length?

Watch Video Solution

C Short Answer

1. What is a magnetic field? Describe a method of mapping magnetic field due to a bar magnet.

Watch Video Solution

2. What are the magnetic lines of force? Give their important properties.

Watch Video Solution

3. Describe briefly the Oersted experiment. What conclusion do we draw from this experiment. State Ampere Swimming Rule.

Watch Video Solution

4. Draw the magnetic field lines around a straight conductor carrying current. Name and state the rule to find the direction of magnetic field.

Watch Video Solution

5. Draw the magnetic field due to a current-carrying circular coil. State the clock rule to find the polarities of the faces of the coil.

Watch Video Solution

6. What is a solenoid? Draw magnetic field lines due to a current carrying solenoid.

Watch Video Solution

7. What is an electromagnet and a permanent magnet? State any two points of difference between the two.

Watch Video Solution

8. What conclusions do we draw from the kicking wire experiment? What are the factors on which the force acting on a current-carrying conductor placed in a magnetic field depends?

Watch Video Solution

9. What is the force acting on a charge moving in a magnetic field? Briefly describe two important consequences of this force.

Watch Video Solution

10. What is electromagnetic induction? State Faraday's laws of electromagnetic induction.

Watch Video Solution

11. What rule do we use to find the direction of induced current in a conductor moving in a magnetic field?

Watch Video Solution

12. How does AC differ from DC? What are the advantages and disadvantages of AC over DC?

Watch Video Solution

13. Name the electrical device that converts mechanical energy into electrical energy. Draw the labelled diagram and explain the principle involved in this device.

Watch Video Solution

14. Describe the salient features of tree system of wiring.

Watch Video Solution

15. What are the disadvantages of tree system of wiring.

Watch Video Solution

16. Name two types of commonly used electric fuses. Sketch their various parts.

Watch Video Solution

17. What is an electric fuse? How does it function?

Watch Video Solution

18. (i) What is the function of earth wire in electrical instruments?

(ii) Explain what is short circuiting an electric supply.

(iii) What is the usual current rating of the fuse wire in the line to feed:

(a) Lights and fans? (b) Appliances of $2kW$ or more power?

Watch Video Solution

Aditional

1. Write the help of a labelled circuit diagram, describe an activity to illustrate the patterns of the magnetic field lines around a straight current carrying long conducting wire.

(i) Name the rule that is used to find the

direction of magnetic field associated with a current carrying conductor.

(ii) Is there a similar magnetic field produced around a thin beam of moving: (a) alpha particles (b) neutrons? Justify your answer.

Watch Video Solution

2. Sketch the magnetic field due to (i) a circular coil and (ii) a solenoid. What are important characteristics of the field produced by each?

Watch Video Solution

3. Describe the principle, construction and working of a DC motor with the help of a diagram.

Watch Video Solution

4. Describe Faraday's experiments. What conclusions do we draw from these experiments? What explanation did Faraday provide to these conclusions?

Watch Video Solution

5. Describe the principle, construction and working of an AC generator.

Watch Video Solution

6. Describe the principle, construction and working of a DC generator.

Watch Video Solution

7. Discuss the main features of a domestic wiring system with the help of a diagram.

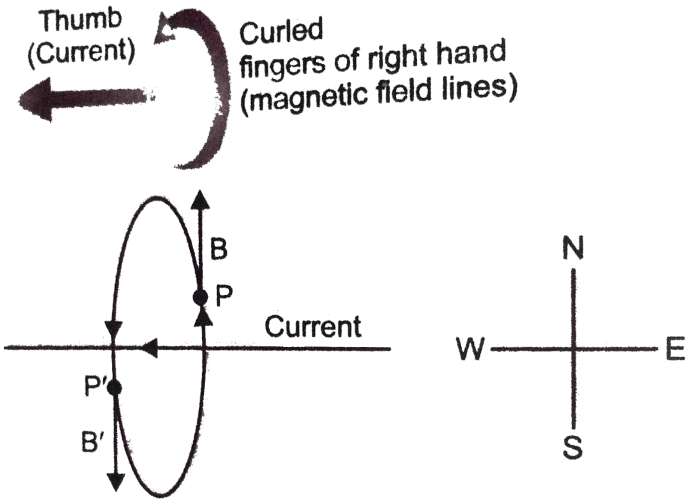
Watch Video Solution

Higher Order Thinking Skills

1. Why do iron filings arrange themselves in a definite pattern when sprinkled around a magnet?

Watch Video Solution

2. A current through a horizontal powerline flows in east to west direction. What is the direction of magnetic field at a point directly below it and a point directly above it?



Watch Video Solution

3. A current-carrying straight conductor is placed in the east-west direction. What will be the direction of the force experienced by this conductor due to the Earth's magnetic field? How will this force get affected on:

(a) reversing the direction of flow of current,

(b) doubling the magnitude of current?

Watch Video Solution

4. What is the direction field at the centre of a circular coil carrying current in (i)

anticlockwise direction (ii) clockwise direction?

Watch Video Solution

5. Explain the meaning of the word 'electromagnetic' and 'induction' in the term electromagnetic induction. On what factors does the value of the induced current produced in a circuit depend? Name and state the rule used for determination of direction of induced current. State one practical

application of this phenomenon in everyday life.

Watch Video Solution

Value Based Questions

1. We use electromagnetic induction in many ways in our daily lives, in most cases without realizing it. One recent invention is a flashlight that works without a battery. Further, in air travel safety, electromagnetic induction is

used to prevent dangerous metallic objects (such as knives and guns) from being carried on the planes.

(i) When was electromagnetic induction discovered? To which human quality do you attribute this discovery? Visualize the scenario prior to this discovery.

(ii) How does a batteryless flashlight work?

(iii) How are passengers screened at the airport?

Watch Video Solution

2. People rely on magnets for industrial and commercial use. Since scientists began creating very strong magnets using electricity, magnets have become essential to the medical and electronic sectors. People even rely heavily on magnets in their homes. Briefly discuss three uses of magnets in different fields.

Watch Video Solution

3. Electromagnetic induction plays an important part in many of our leisure and

transportation activities. In the light of this statement, answer the following.

(i) Can you convert the up and down hip movements to operate a cellphone?

(ii) How can you hunt a 'burried treasure' of a metallic kind?

(iii) The prices of gasoline are increasing sharply. Can electromagnetic induction help us in some way?

(iv) What lesson do you learn from the answers to these questions?

Watch Video Solution

4. The use of magnetic therapy for pain relief has become increasingly popular in the last few years. Traditional physicians are very skeptical of the benefits of magnetic therapy because of the lack of valid scientific evidence to support its use.

(i) What is the theory behind magnetic therapy?

(ii) Is there any side effect is one goes for this therapy?

(iii) Do we need to take any precaution in case we wish to undergo magnetic therapy?

Watch Video Solution

Multiple Choice Questions

1. Choose the incorrect statement from the following regarding magnetic lines of field:

A. (a) The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points.

B. (b) Magnetic field lines are closed curves.

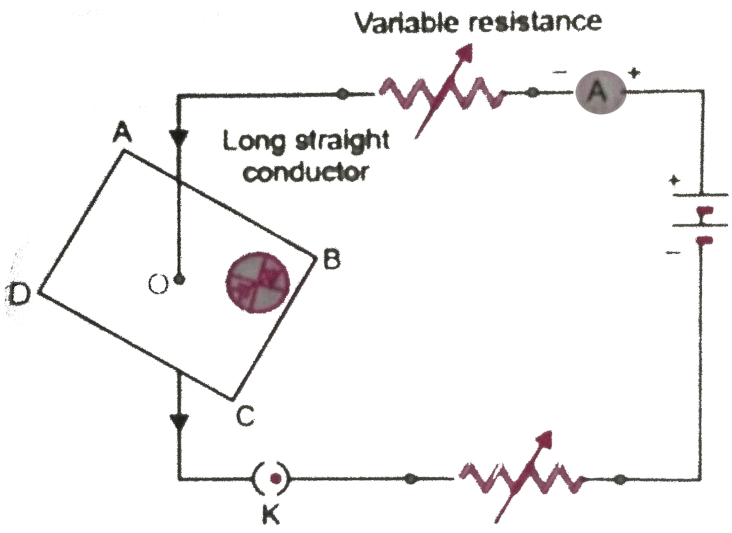
C. (c) If magnetic field lines are parallel and equidistant, they represent zero field strength.

D. (d) Relative strength of magnetic field is shown by the degree of closeness of the field lines.

Answer: C

Watch Video Solution

2. If the key in the arrangement, [figure] is taken out (the circuit is made open) and magnetic field lines are drawn over the horizontal plane ABCD, the lines are:



A. concentric circles

B. elliptical in shape

C. straight lines parallel to each other

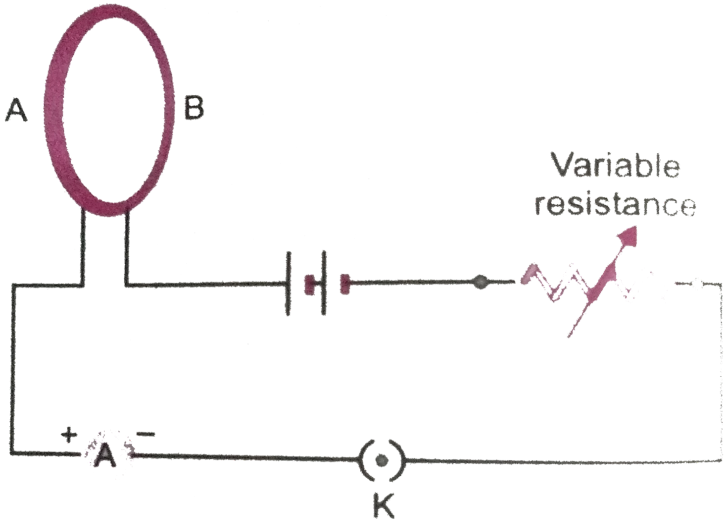
D. concentric circles near the point O but of elliptical shapes as we go away from it

Answer: C

Watch Video Solution

3. A circular loop placed in a plane perpendicular to the plane of paper carries a current when the key in ON, [figure]. The current as seen from points A and B (in the

plane of paper and on the axis of the coil) is anticlockwise and clockwise respectively. The magnetic field lines point from B to A. The N-pole of the resultant magnet is on the face close to:



A. A

B. B

C. A if the current is small, and B if the current is large

D. B if the current is small and A if the current is large

Answer: A

Watch Video Solution

4. For a current in a long straight solenoid, $N\cdot$ and $S-\text{poles}$ are created at the two

ends. Among the following statements, the incorrect statement is:

A. the field lines inside the solenoid are in the form of straight lines which indicate that the magnetic field is the same at all points inside the solenoid

B. the strong magnetic field produced inside the solenoid can be used to magnetized a piece of magnetic material like soft iron, when placed inside the coil

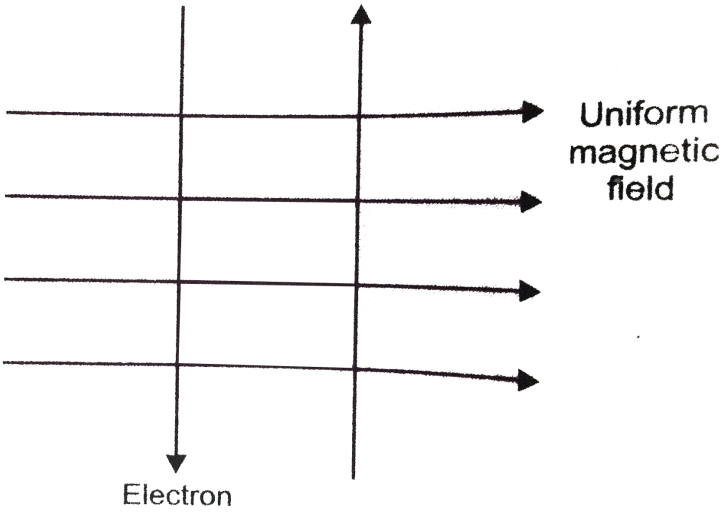
C. the pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet

D. the $N-$ and $S-\text{poles}$ exchange positions when the direction of current through the solenoid is reversed

Answer: C

Watch Video Solution

5. A uniform magnetic field exists in the plane of paper pointing from left to right as shown in figure. In the field, an electron and a proton move as shown. The electron and the proton experience:



A. (a) forces both pointing into the plane of paper

B. (b) forces both pointing out of the plane of paper

C. (c) forces poiting into the plane of paper and out of the plane of paper, respectively.

D. (d) forces pointing opposite and along the direction of the uniform magnetic field respectively

Answer: A

Watch Video Solution

6. Commercial electric motors do not use:

A. (a) an electromagnet to rotate the armature

B. (b) effectively large number of turns of conducting wire in the current-carrying coil

C. (c) a permanent magnet to rotate the armature

D. (d) a soft iron core on which the coil is wound

Answer: C

Watch Video Solution

7. In the arrangement shown in figure, there are two coils wound on a non-conducting cylindrical rod. Initially the key is not inserted.

Then the key is inserted and later removed. Then:

A. the deflection in the galvanometer remains zero throughout

B. there is a momentary deflection in the galvanometer but it dies out shortly and there is no effect when the key is removed

C. there are momentary galvanometer deflections that die out shortly, the

deflections are in same direction

D. there are momentary galvanometer deflections that die out shortly, the deflections are in opposite directions

Answer: D

Watch Video Solution

8. Choose the incorrect statement:

A. (a) Fleming's right-hand rule is a simple rule to know the diretion of induced current.

B. (b) The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors.

C. (c) The difference between the direct and alternating currents is that the direct current always flows in one

direction, whereas the alternating current reverse its direction periodically.

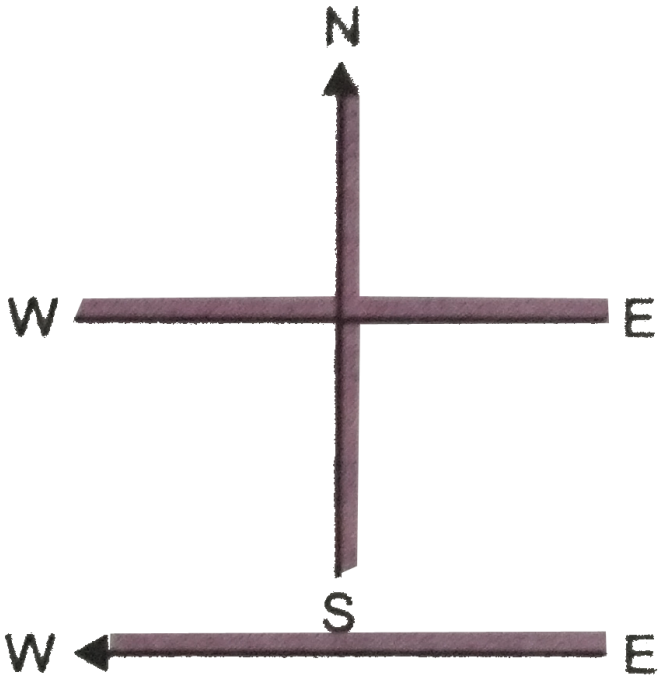
D. (d) In india, the AC changes direction after every $(1/50)$ second.

Answer: D

Watch Video Solution

9. A constant current flows in a horizontal wire in the plane of the paper from east to west as shown in figure. The direction of magnetic

field at a point will be North to South:



A. (a) directly above the wire.

B. (b) directly below the wire.

C. (c) at a point located in the plane of the paper, on the north side of the wire

D. (d) at a point located in the plane of the paper, on the south side of the wire

Answer: B

Watch Video Solution

10. The strength of magnetic field inside a long current-carrying straight solenoid is:

A. more at the ends than at the centre

B. minimum in the middle

C. same at all points

D. found to increase from one end to the other

Answer: C

Watch Video Solution

11. The convert an AC generator into DC generator:

A. (a) split-ring type commutator must be used

B. (b) slip rings and brushes must be used

C.

D. (d) a rectangular wire loop has to be used

Answer: A

Watch Video Solution

12. The most important safety method used for protecting home appliances from short-circulating or overloading is:

A. (a) earthing

B. (b) use of fuse

C. (c) use of stabilizers

D. (d) use of electric meter

Answer: B

Watch Video Solution

Mock Test

1. How can it be shown that a magnetic field exists around a wire through which a direct current is passing?

Watch Video Solution

2. What is the advantage of the third wire of each connection in domestic appliances?

Watch Video Solution

3. On what factors does the force experienced by a current-carrying conductor placed in a uniform magnetic field depend?

Watch Video Solution

4. State two ways by which the strength of an electromagnet can be increased.

Watch Video Solution

5. What is the difference between an electromagnet and a permanent magnet?

Watch Video Solution

6. What are the functions of: (i) kWh meter (ii) distribution board and (iii) main switch in a domestic electrical circuit?

or

What would you do to increase the induced emf in a generator?

Watch Video Solution

7. How can a soft iron piece be transformed into an electromagnet? Draw an illustrative circuit diagram.

Watch Video Solution

8. Why does a compass needle get deflected when brought near a bar magnet?

Watch Video Solution

9. The flow of a current in a circular loop of a wire creates a magnetic field at its center. How can existence of this field be detected? State the rule which helps to predict the direction of this magnetic field.

Watch Video Solution

10. What are magnetic field lines? How is the direction of magnetic field at a point

determined? Mention two important properties of magnetic field lines.

Watch Video Solution

11. Why is series arrangement not used for domestic circuits?

Watch Video Solution

12. State the characteristics of magnetic force.

Watch Video Solution

13. Though currently there is little scientific evidence to suggest that magnetic therapy is an effective treatement of any medical condition, yet one of your friends is wearing a magnetic bracelet for pain relief. What symptoms should warrant your friend to discontinue its use?

or

A coil of copper wire is connected to a galvanometer. What would happen if a bar magnet is : (i) pushed into the coil with north

pole entering first (ii) pulled out of the coil (iii) held stationary inside the coil.

Watch Video Solution

14. What is the difference between the terms overloading and short-circuiting? Why are coils of electric heaters made of an alloy rather than a pure metal?

Watch Video Solution

15. The use of magnetic therapy for pain relief has become increasingly popular in the last few years. Traditional physicians are very skeptical of the benefits of magnetic therapy because of the lack of valid scientific evidence to support its use.

(i) What is the theory behind magnetic therapy?

(ii) Is there any side effect if one goes for this therapy?

(iii) Do we need to take any precaution in case we wish to undergo magnetic therapy?

Watch Video Solution

16. A student performs an experiment to study the magnetic effect of current around a current-carrying straight conductor. He reports that:

(i) the direction of deflection of the north pole of a compass needle kept at a given point near the conductor remains unaffected even when the terminals of the battery sending the current in the wire are interchanged.

(ii) For a given battery current, the degree of

deflection of a N-pole decreases when the compass is kept at a point farther away from the conductor.

Which of the above observations is correct and why?

Watch Video Solution

17. (i) What is the meaning of the term 'frequency' of an alternating current?

(ii) Why is alternating current considered to

be advantageous over direct current for long range transmission of electric energy?

Watch Video Solution

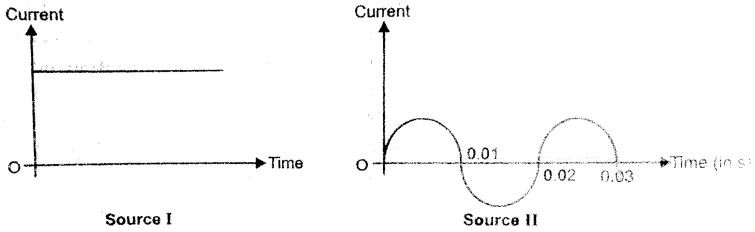
18. Explain with a labelled diagram, the principle, construction and working of an electric generator.

Watch Video Solution

19. Write the characteristics of magnetic field lines. Draw the magnetic field lines due to a current flowing in a circular coil.

Watch Video Solution

20. You are given following current-time graph from two different sources,



(i) Name the type of current in two cases.

(ii) Identify any one source for each type of these currents.

(iii) What is the frequency of current in case source II in India?

(iv) Use above graph to write two differences between the currents in the two cases.

Watch Video Solution

21. Draw an appropriate schematic diagram showing common domestic circuits and discuss the importance of fuse. Why is it that a

burnt out fuse should be replaced by another fuse of identical ratting?

or

Why is pure iron not used for making permanent magnets? Name one material used for making permanent magnets. Describe how permanent magnets are made electrically. State two examples of electrical instruments made by using permanent magnets.

Watch Video Solution