



# PHYSICS

## BOOKS - KUMAR PRAKASHAN

### MAGNETIC EFFECTS OF ELECTRIC CURRENT

#### Questions And Answers

1. What is a magnet ?



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2. Name the devices whose working is based on the magnetic effect of electric current .



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3. Write a short note on compass.



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4. What is a compass ? Give breif information about it .



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5. Which type of magnetic force acts between  
(i) like poles (ii) unlike pole of two magnets?



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



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7. (1) Define magnetic field . (2) What are magnetic field lines ?



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**8.** What kind a quantity is magnetic field ? How is the direction of magnetic field at point is determined ?



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**9.** State the characteristics of magnetic field lines.



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**10.** (1) State the factors on which the magnitude of the magnetic field (produced) due to a current through a straight conductor depend . (2) Draw the pattern of magnetic field lines due to a current through a straight conductor .



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**11.** A compass needle is placed near a current - carrying straight wire . State your observation

for the following case and give reason for the same in each case :

(1) Direction of electric current in the wire is increased .

(2) Magnitude of electric current in the wire is increased .

(3) The compass needle is displaced away from the straight wire .



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**12.** Name and state the rule which determine the direction of magnetic field around a straight current - carrying conductor . Also draw diagram .



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**13.** Draw magnetic field lines around a bar magnet .



**Watch Video Solution**



**14.** List the properties of magnetic field lines .



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



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**16.** Discuss the magnetic field due to a current-carrying circular loop.





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**17.** State the characteristics of the magnetic field produced by a current - carrying circular loop. Sketch its magnetic field lines.



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**18.** State how the strength of the magnetic field produced at the centre of a coil by a current through the circular coil can be increased.



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**19.** What is a solenoid ? Discuss the magnetic field due to a current - carrying solenoid .



[Watch Video Solution](#)

**20.** State the characteristics of the magnetic field produced by a current - carrying solenoid sketic its magnetic field .



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**21.** What is an electromagnet ? State the principle on which it works. Draw a circuit diagram to show how a soft iron piece can be transformed into an electromagnet . Write uses of electromagnet.



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**22.** Consider a circular loop of wire lying in the plane of the table . Let the current pass through the loop clockwise . Apply the Right-

hand thumb rule to find out the direction of the magnetic field inside and outside the loop.



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**23.** The magnetic field in a give region is unifrom . Draw a diagram to represent it .



**Watch Video Solution**

**24.** Choose the correct option :

The magnetic field inside a long strainght

solenoid carrying current ...

A. is zero.

B. decrease as we move towards its end .

C. increases as we move towards its end .

D. is the same at all points .

**Answer: d**



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**25.** Write a short note on the force acting on a current - carrying conductor placed in a external magnetic field .



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**26.** What are the factors on which the force acting on a give current - carrying conductor placed in a magnetic field depend ? State when is the magnitude of force highest .



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**27.** In which condition is the magnetic force acting on a given current - carrying rod placed in a magnetic field maximum and in which condition would the magnetic force not act on the rod ?

(Assume that the current through the rod and the strength of the magnetic field are not changed).



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**28.** A straight current - carrying conductor is placed in a magnetic field such that its length is perpendicular to the field .Name and state the rule used to find the direction of the force acting on the conductor .



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**29.** Name the devices which a current carrying conductor and magnetic field are used .



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**30.** Which of the following property of a proton can change while it moves freely in a magnetic field ? (There may be more than one correct answer).

A. mass

B. speed

C. velocity

D. momentum

**Answer: C**



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**31.** In Activity 13.7. how do we think the displacement of the rod AB will be affected if  
(i) the current in rod AB is increased : (ii) a stronger horse - shoe magnet is used , and (iii) the length of the rod AB is increased ?



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**32.** A positively charged particle (alpha particle) projected towards west is deflected

towards north by a magnetic field . The direction of magnetic field is .....

A. towards south

B. towards east

C. downward

D. upward

**Answer: D**



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**33.** What is an electric motor ? State some uses of electric motor.



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**34.** What is the principle of an electric motor ?



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**35.** Describe the construction and working of an electric motor (DC moto) with the help of a

diagram .



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**36.** What are the special features of a commercial electric motor ?



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**37.** State Fleming's left-hand rule.



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**38.** What is the principle of an electric motor ?



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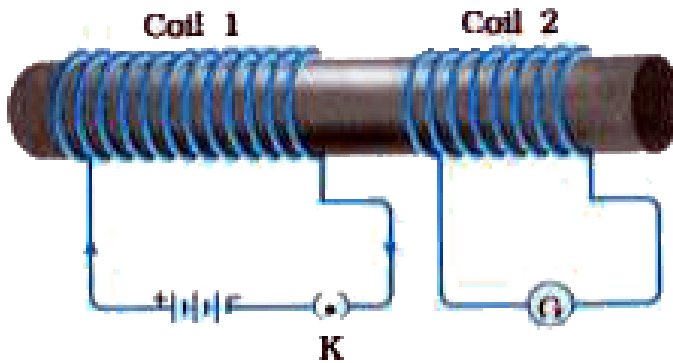
**39.** What is the role of the split rings in an electric motor ?



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**40.** Two coils of insulated copper wire are wound over a non - conducting cylinder as

shown in figure 13.28. Coil 1 has larger number of turns .



- (1) Write your observation when , (a) plug key k is closed and (b) plug key k is open .
- (2) Give reason for your observation .
- (3) Mention the name of the phenomenon involved and define it .
- (4) Write the names of two coils used in this experiment .



OR

What are these coils called ?



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**41.** Explain induced potential difference (or electromotive force) and induced electric current . On what factor does induced potential difference (or electromotive force) depend ?



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**42.** How is a large induced electric current obtained in a loop ?



**Watch Video Solution**

**43.** What is electromagnetic induction ?



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**44.** Write a method to induce a current in a coil .



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**45.** Write a method to produce an induced current in a coil .



[Watch Video Solution](#)

**46.** When is an induced current in a coil maximum ?



[Watch Video Solution](#)

**47.** Name and state the rule which gives the direction of induced current .



**Watch Video Solution**

**48.** Explain different ways to induce a current in a coil .



**Watch Video Solution**

**49.** What is an electric generator ?



**Watch Video Solution**

**50.** State the principle on which the working of an electric generator is based .



**Watch Video Solution**

**51.** Describe the construction and working of an AC generator ( an alternator).



**Watch Video Solution**

**52.** With a neat labelled diagram, describe the construction and working of an electric generator that give direct current DC .



**View Text Solution**

**53.** Explain the direction current (DC).



**Watch Video Solution**

**54.** Write a short note on direct current (DC).



**Watch Video Solution**

**55.** Explain the alternating current (AC).



**Watch Video Solution**

**56.** Write a short note on alternating current (AC).



**Watch Video Solution**

**57.** Give the advantages of using AC in daily life

.



**Watch Video Solution**

**58.** What are the disadvantages of DC ?



**Watch Video Solution**

**59.** State the principle of an electric generator

.





**Watch Video Solution**

**60.** Name some source of direct current .



**Watch Video Solution**

**61.** Which source produce alternating current ?



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**62.** 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 rotations

B. one rotation

C. half rotation

D. one - fourth rotation .

**Answer: C**



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**63.** Name the three types of wires used in household circuits with their respective colours of insulation are as follows :

(1) Live (Positive) wire has red insulation .

(2) Neutral (Negative) wire has black insulation cover.

(3) Earth wire has insulation of green colour .



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**64.** What are the potentials of the live and neutral wires used in our country ? What is the potential difference between these wires ?



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



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**66.** Discuss the main feature of a domestic wiring system with the help of a schematic diagram of one of the common domestic circuits .



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**67.** Write a short note on fuse .



**Watch Video Solution**

**68.** What is an electric fuse ? How does it function ?



**Watch Video Solution**

**69.** Differentiate between short -circuiting and overloading .



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**70.** List three factors which can cause overloading of domestic electric circuits .



**Watch Video Solution**

**71.** Name two safety measure commonly used in electric circuits and appliances .



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72. An electric oven of 2kW power rating is operated in a domestic electric circuit (220 V) that has a current rating of 5A. What result do you expect ? Explain.



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



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**74.** Solve the following example .

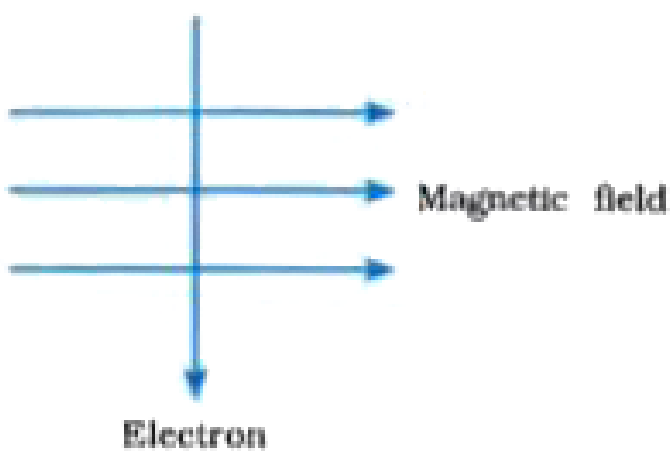
A current through a horizontal power line flows in east to west direction . What is the direction of magnetic field at a point directly below it and at a point directly above it ?



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**75.** Solve the following example .

An electron enters a magnetic field at right angles to , it as shown in figure 13.36



The direction of force acting on the electrons will be .....

- A. to the right
- B. to the left
- C. out of the page
- D. into the page .

**Answer: d**



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## Textual Exercise

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**



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2. The phenomenon of electromagnetic induction is.....

A. the process of charging a body

B. the process of generating magnetic field  
due to a current passing through a coil .

C. producing induced current in a coil due  
to relative motion between a magnetic  
and the coil

D. the process of rotating a coil of an electric motor.

**Answer: C**



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

A. generator

B. galvanometer

C. ammeter

D. motor

**Answer: A**



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

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

magnet.

B. a DC generator will generate a higher voltage

C. an AC generator will generate a higher voltage .

D. an AC generator has slip rings while the DC generator has a commutator .

**Answer: D**



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

A. reduces substantially

B. does not change

C. increases heavily

D. varies continuously.

**Answer: C**



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6. State whether the following statement are true or false :

An electric motor converts mechanical energy into electrical energy.



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7. State whether the following statement are true or false :

An electric generator works on the principle of electromagnetic induction .



**Watch Video Solution**

8. State whether the following statement are true or false :

The magnetic field lines at centre of a long circular coil carrying s current are parallel straight lines .



**Watch Video Solution**

9. State whether the following statement are true or false :

The wire with green insulation is usually the live wire of an electric supply .



**Watch Video Solution**

**10.** List two methods of producing magnetic fields .



**Watch Video Solution**

**11.** How does a solenoid behave like a magnet ?  
Can you determine the north and south poles

of a current - carrying solenoid with the help of a bar magnet ? Explain.



**Watch Video Solution**

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



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**13.** Imagine that you are sitting in a chamber with you back to one wall. An electron beam , moving horizontally from back wall towards the front wall , is deflected by a strong magnetic field to your right side.

What is the direction of magnetic field ?



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**14.** Draw a labelled diagram of an electric motor . Explain its principle and working . What

is the function of the split ring in an electric motor ?



**Watch Video Solution**

**15.** Name some devices in which electric motors are used .



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**16.** A coil of insulated copper wire is connected to a galvanometer . What will happen if a bar

magnet is (i) pushed into the coil , (ii) withdraw from inside the coil , (iii) held stationary inside the coil ?



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



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**18.** 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 .



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

labelled diagram. What is the function of the brushes ?



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**20.** When does an electric short circuit occur ?



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



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## Additional Questions And Answer

1. State at least three points of difference between the following terms/ quantities :

Electric motor and Electric genertor .



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2. State at least three points of difference between the following terms/ quantities :

Direct Current (DC) and Alternating Current (AC).



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**3.** State at least three points of difference between the following terms/ quantities :

Permanent magnet and Electromagnet.



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4. Give scientific reasons for the following statements :

It is improper to use a copper wire as a fuse wire .



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5. Give scientific reasons for the following statements :

We use power supply of two different current rating at our homes .





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6. Give scientific reasons for the following statements :

We use AC for electric power transmission over long distance , while most of the appliances use DC.



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**Objective Questions And Answers Answer The Following Questions In One Word Sentence**

1. Name the instrument used to determine the direction of magnetic field .



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2. At which position of a bar magnet is its magnetism maximum ?



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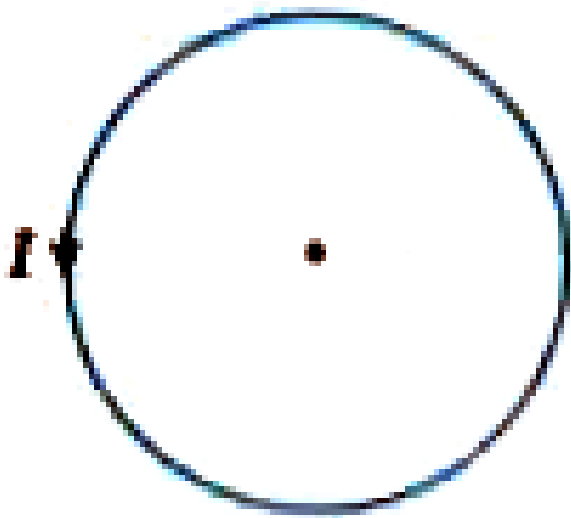
3. Is magnetic field a scalar or a vector ?





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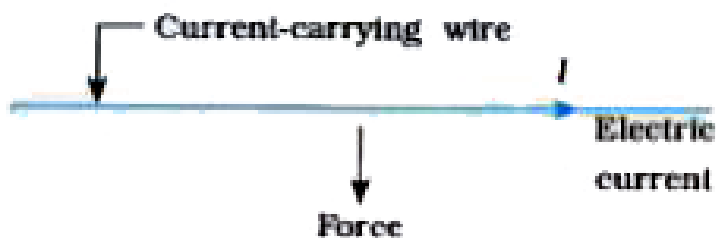
4. What is the direction of the magnetic field inside the current - carrying circular ring as shown in the following figure ?



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5. As shown in the following figure , the magnetic force is acting in the downward direction on the current - carrying wire placed in the magnetic field . What is the direction of the magnetic field ?



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6. Name the scientist who first suggested that a force would act on a current - carrying wire placed in a magnetic field .



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7. In given magnetic field , what should the direction of motion of the conductor so that the maximum induced current can be produced ?



**Watch Video Solution**

8. While a magnet is moved towards a coil , will the induced current decrease or increase ?  
Why ?



**Watch Video Solution**

9. Which type of current can be transmitted over long distance without much loss of electrical energy ?



**Watch Video Solution**

10. Which type of connection is done for electric appliances ?



**Watch Video Solution**

11. Whose magnetic field resembles the magnetic field of a current - carrying solenoid ?



**Watch Video Solution**

**12.** How much current would be induced in coil while a magnet and the coil both move along the same line with the same velocity ?



**Watch Video Solution**

**13.** What is the other name of Right- hand thumb rule ?



**Watch Video Solution**

**14.** When a wire is moved up and down in a magnetic field , a current is induced in the wire . What is this phenomenon known as ?



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## **Objective Questions And Answers Fill In The Blanks**

**1.** The magnetic field is .....in the region where the magnetic field lines are very close to each other .



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2. ....had discovered the magnetic effect of electric current .



**Watch Video Solution**

3. With the help of a.....the presence of electric current can be known.



**Watch Video Solution**

4. Electric moto converts .....energy into .....energy.



**Watch Video Solution**

5. Resistance of a fuse wire is .....and its melting points is .....



**Watch Video Solution**



6. The colour of the insulation of the earthing wire is.....



**Watch Video Solution**

7. Magnetic field at the centre of a current - carrying circular ring is inversely proportional to .  
..... .



**Watch Video Solution**

8. In Fleming's left - hand rule , the thumb denotes the direction of .....



**Watch Video Solution**

9. The appliance with the help of which electricity can be generated is known as ..... .



**Watch Video Solution**

**10.** The induced electromotive force produced in a coil is proportional to rate of change of .....



**Watch Video Solution**

**11.** Electromagnetic induction was discovered by ..... .



**Watch Video Solution**

**12.** Magnitude of the current induced in a circular loop depends on the speed of the magnet moving towards it .



**Watch Video Solution**

**13.** The direction of DC remains constant in time .



**Watch Video Solution**

**14.** Electromagnet consists of a current - carrying solenoid with Alnico rod (an alloy) put in it . true or false?



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**15.** Overloading is caused by connecting too many appliances in a single socket and using them at the same time, How ?



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**16.** A stationary charge is surrounded by a magnetic field .



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**17.** It is safe to touch a live wire .



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**Objective Questions And Answers Match The Following**

## 1. Match the following

Section 'A'	Section 'B'
1. Oersted	p. Force would act on a current-carrying conducting wire when it is placed in a magnetic field.
2. Faraday	q. The rule to find the direction of the force acting on a current-carrying conductor placed in a magnetic field.
3. Ampere	r. When an electric current is passed through a wire, a magnetic field is produced.
4. Fleming	s. Induced current is produced in the coil, while moving a magnet towards the stationary coil.



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2. Match the following

Section 'A'	Section 'B'
1. Right-hand thumb rule	p. Gives the direction of the current induced in a conductor.
2. Fleming's right-hand rule	q. Gives the direction of the force acting on a current-carrying conductor placed in a magnetic field.
3. Fleming's left-hand rule	r. Gives the direction of the magnetic field around a current-carrying straight conductor.



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3. Match the following

Section 'A'	Section 'B'
1. Current-carrying solenoid	p. Is used to lift heavy objects made of iron.
2. Fuse	q. Converts mechanical energy into electrical energy.
3. Electromagnet	r. Behaves like a bar magnet.
4. Electric motor	s. Converts electrical energy into mechanical energy.
5. Electric generator	t. Is used to prevent damage to the appliances and the circuit due to overloading.



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Choose The Correct Option From Those Given Below Each Questions

1. The direction of the magnetic field lines in a region outside a bar magnet is .....

A. from N-pole to S-pole of the magnet

B. from S-pole to N-pole of the magnet

C. coming out from both the poles of the magnet

D. entering into both the poles of the magnet.

**Answer: A**



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2. Which of the following statements is false ?

A. The direction of the magnetic line in a region outside a bar magnet is from N to S .

B. In the region where the magnetic field lines , are at a close distance from each other.

C. The magnetic field lines from closed loops

D. The magnetic field lines can cross each other .

**Answer: D**



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**3.** By which instrument can the presence of magnetic field be determined ?

A. Voltmeter

B. Ammeter

C. Galvanometer

D. Magnetic needle

**Answer: D**



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**4.** Who discovered the magnetic effect of an electric current ?

A. Faraday

B. Oersted

C. Volta

D. Ampere

**Answer: B**



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5. With the help of which law/rule can the direction of a magnetic field be decided ?

A. Faraday's law

B. Fleming's right - hand rule

C. Right - hand thumb rule

D. Fleming's left - hand rule

**Answer: C**



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**6.** According to the right - hand thumb rule ,  
whose direction is indicated by the thumb ?

A. Electric current

B. Magnetic field

C. Magnetic force

D. Motion of a conductor

**Answer: A**



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7. The magnetic field produced by a straight conducting wire on passing the current through it is .....



A. in the direction of the current

B. in the direction opposite to that of the  
current

C. circular around the wire

D. in the direction parallel to the wire .

**Answer: C**



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8. What is the shape of the field line of a magnetic field passing through the centre of a current - carrying ring ?

A. circular

B. straight line

C. Ellipse

D. Magnetic field is zero at the centre of the ring .

**Answer: B**





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9. Whose magnetic field is like the magnetic field of a bar magnet ?

- A. A current - carrying wire
- B. A current -carrying ring
- C. A current - carrying solenoid
- D. A horse-shoe magnet

**Answer: C**



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**10.** Who discovered electromagnetic induction ?

A. Faraday

B. Oersted

C. Ampere

D. Volta

**Answer: A**



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**11.** What is the direction of the magnetic force acting on a current - carrying wire placed in a magnetic field ?

- A. Along the magnetic field
- B. Along the electric current
- C. Perpendicular to the magnetic field
- D. Opposite to that of the magnetic field

**Answer: C**



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12. How is a current - carrying wire placed in a magnetic field so that a magnetic field does not act on it ?

A. Parallel to the magnetic field

B. Perpendicular to the magnetic field .

C. At an angle of  $45^\circ$  with magnetic field

D. At an angle of  $120^\circ$  with magnetic field

**Answer: A**



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**13.** State in which of the following cases, the induced current in the loop will not be obtained .

A. The loop is moved towards the magnet .

B. The magnet is moved towards the loop

C. The loop and the magnet are moved in the opposite direction with the same speed

D. The loop and the magnet are moved in the same direction with the same speed .

**Answer: D**



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**14.** Which instrument is used to convert electrical energy into mechanical energy ?

A. Electric generator

B. Electric motor

C. Electric iron

D. Electric oven



**Answer: B**



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**15.** On which principle does the electric generator work ?

A. Electrical energy is converted into heat .

B. Electrical energy is converted into heat

C. Mechanical energy is converted into  
electrical energy

D. Electrical energy is converted into light.

**Answer: C**



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**16.** The magnitude of the AC voltage used in India is.....and its frequency is.....

A. 110V, 60 Hz

B. 110 v, 50 Hz

C. 220 V, 50Hz

D. 220 V, 60 Hz

**Answer: C**



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**17.** A wire with.....insulation is used for earthing,.

A. red

B. black

C. green

D. white

**Answer: C**



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**18.** Which type of current is obtained from a battery ?

A. DC

B. AC

C. AC and DC

D. Depends upon the type of the battery

**Answer: A**



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**19.** Which instrument is used to know the presence of an electric current ?

A. Fuse

B. Galvanometer

C. Voltmeter

D. Magnetic needle

**Answer: B**



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**20.** A fuse wire is a/an..... .

A. conductor having low melting point

B. insulator having low melting point

C. conductor having high melting point

D.

**Answer: A**



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21. ....is used to find the direction of a current induced in a circuit .

- A. Fleming.s left - hand rule
- B. Fleming.s right - hand rule
- C. Right - hand thumb rule
- D. Ampere.s rule

**Answer: B**



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**22.** How many times in one second does an AC with frequency 50Hz change its direction ?

A. 25

B. 50

C. 100

D. 200

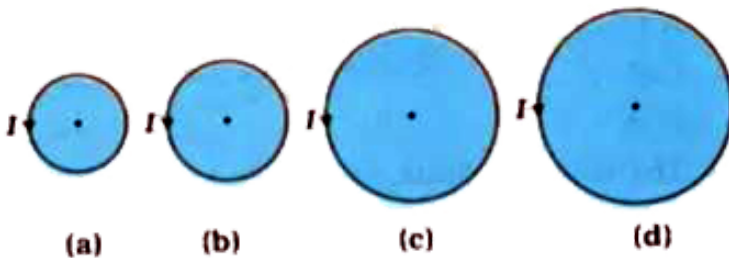


**Answer: C**



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**23.** At the centre of which of the following four circular rings is the magnetic field maximum while passing equal current through each of them ?



**A. (a)**

B. (b)

C. (c)

D. (d)

**Answer: A**



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**24.** Inside a bar magnet the direction of the magnetic field lines is..... .

A. from N-pole to S-pole of the magnet

B. from S-pole of the magnet

C. coming out from both the poles of the magnet

D. entering into both the pole of the magnet

**Answer: B**



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25. When the north poles of two different magnets are placed near each other, then the force and when the north pole and the south pole are placed near each other the force of .....results.

A. attraction and attraction

B. attraction and repulsion

C. repulsion and attraction

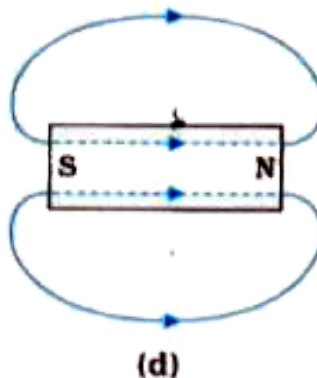
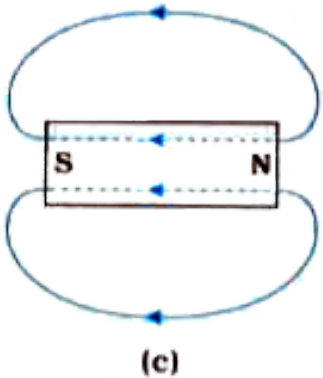
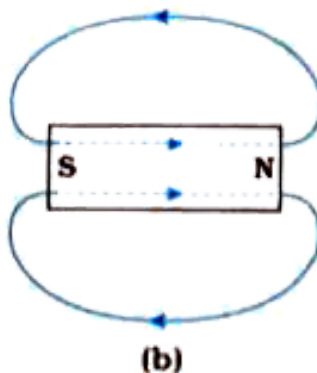
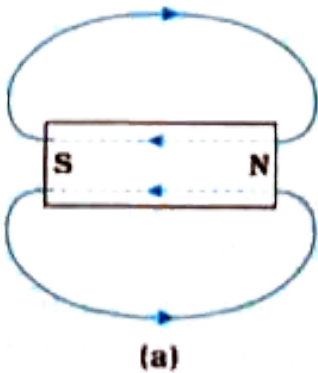
D. repulsion and repulsion .

**Answer: C**



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26. Which figure , out of the following, shows the magnetic field lines of a bar magnet ?



A. (a)

B. (b)

C. (c)

D. (d)

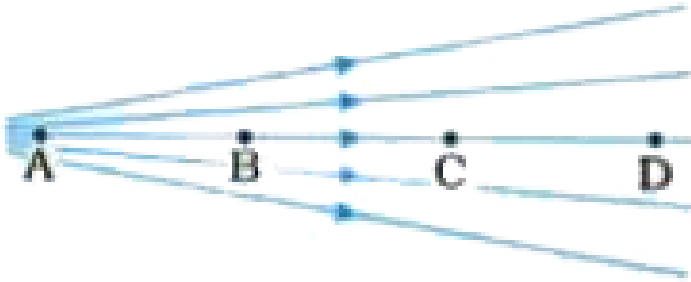
**Answer: B**



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**27.** The following figure shows the magnetic field of a magnet. At which point is the

intensity of the magnetic field more ?



A. D

B. C

C. B

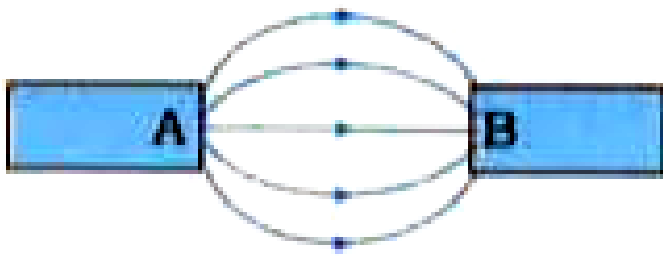
D. A horse-shoe magnet

**Answer: A**



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28. The following figure shows the magnetic field between two magnets . Which magnetic poles are there at points A and B respectively ?



- A. South pole, north pole
- B. North pole , south pole
- C. North pole , north pole
- D. South pole , south pole



**Answer: B**



**Watch Video Solution**

**29.** On what factor does the direction of the magnetic field produced by a current - carrying straight wire depend ?

- A. The magnitude of the electric current
- B. The direction of the electric current
- C. The length of the straight wire
- D. The material of the straight wire .

**Answer: B**



**Watch Video Solution**

**30.** The magnetic field at the centre of a current -carrying circular loop is .....to the current and .....to the loop.s radius .

A. inversely proportional , directly proportional

B. directly proportional , directly proportional

C. directly proportional , inversely proportional

D. inversely proportional , inversely proportional

**Answer: C**



**Watch Video Solution**

**31.** As we move away from a current -carrying straight wire , the magnetic field of wire varies

as.....(Where,  $r$  is the distance between a given point and the wire ).

A.  $r^2$

B.  $\frac{1}{r}$

C.  $\frac{1}{r^2}$

D.  $r$

**Answer: B**



**Watch Video Solution**

**32.** Out of the following , which statement is wrong for a current - carrying solenoid ?

A. The magnetic field inside the solenoid is the same at each point .

B. Placing an iron object inside the solenoid increases the magnetic field .

C. The pattern of the magnetic field lines of the solenoid is different from that of the magnetic field lines of a bar magnet.

D. On reversing the direction of the current the solenoid is different from that of the magnetic field lines of a bar magnet.

**Answer: C**



**Watch Video Solution**

**33.** When an iron piece is introduced inside a current - carrying solenoid the magnetic field of the solenoid ..... .

A. increases

B. decreases

C. first increases then decreases

D. does not change

**Answer: A**



**Watch Video Solution**

**34.** The magnetic force acting on a current - carrying wire placed in a magnetic field is directly proportional to .

A. the electric current

B. the magnetic field

C. the length fo the wire in the magnetic  
field

D. all the given

**Answer: D**



**Watch Video Solution**



**35.** When electric current  $I$  flows through a straight wire of length  $l$  placed in a magnetic field, a magnetic force of  $1\text{ N}$  acts on it. If the magnitude of the electric current is halved and the magnetic field is doubled, what will be the magnetic force acting on the wire?

A.  $0.5\text{ N}$

B.  $1\text{ N}$

C.  $2\text{ N}$

D.  $4\text{ N}$

**Answer: B**



**Watch Video Solution**

**36.** As shown in the following figure , a current - carrying coil ABCD is placed in a magnetic field . Which portion of the coil does not experience any magnetic force ?



A. Portion AB

B. Portion BC

C. Portion CD

D. Both A and B

**Answer: B**



**View Text Solution**

**37.** What happens when a bar magnet is quickly moved towards a coil ?

A. The resistance of the coil increases .

B. The magnetic field linked with the coil decreases .

C. The magnetic field linked with the coil increases .

D. The coil moves towards the magnet

**Answer: C**



**Watch Video Solution**

**38.** In Which of the following cases will the electric current induced in the loop be maximum ?

A. The magnetic field linked with the loop changes rapidly .

B. The magnetic field linked with the loop changes slowly .

C. The magnetic field linked with the loop remains constant

D. The loop is placed in an electric field.

**Answer: A**



**Watch Video Solution**

**39.** What is the frequency of 220 V DC voltage ?

A. 50Hz

B. 60 Hz

C. 220 Hz

D. Zero

**Answer: D**



**Watch Video Solution**

**40.** What is the colour of insulation on the neutral wire coming from the electric board ?

A. Red

B. Black

C. Green

D. White

**Answer: B**



**Watch Video Solution**

**41.** What is the red coloured wire coming from the electric main board called ?

- A. The earthing wire
- B. The neutral wire
- C. The live wire
- D. The fuse wire



**Answer: C**



**Watch Video Solution**

**42.** On which effect of electric current does the fuse work ?

- A. Magnetic effect of electric current
- B. Chemical effect of electric current
- C. Heating effect of electric current
- D. Electric effect of electric current

**Answer: C**



**Watch Video Solution**

**43.** At the time of short circuit, the electric current .....

- A. suddenly decreases
- B. suddenly increases
- C. instantaneously becomes zero
- D. does not change

**Answer: B**



**Watch Video Solution**

**44.** The direction of the current in the coil of an electric motor changes per.....rotation .

A. two

B. one

C. half

D. one - fourth

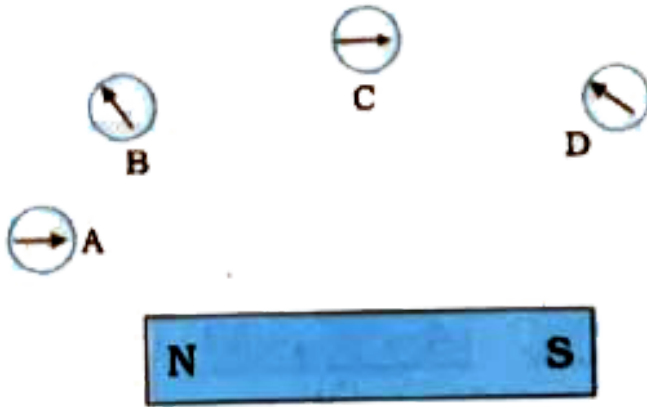
**Answer: C**



**Watch Video Solution**

**45.** In the following figure , a magnetic needle is placed at different positions near a bar magnet . Which position of the magnetic needle represents the correct direction of the

magnetic field ?



A. A

B. B

C. C

D. D

**Answer: C**





[Watch Video Solution](#)

**46.** On which metallic piece is the conducting wire wound to prepare an electromagnet ?

A. Copper

B. Soft iron

C. Aluminium

D. Nichrome

**Answer: B**



[Watch Video Solution](#)

47. To double the voltage generated in a generator.....

A. the rotational speed of the coil should be halvened .

B. the number of turns of the coil should be doubled

C. the cross- sectional area of the coil should be halvened .

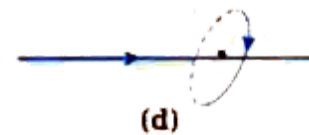
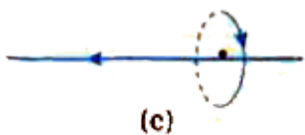
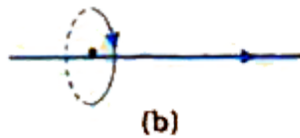
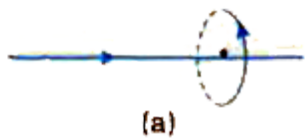
D. none of the given

**Answer: B**



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**48.** In the following figure , magnetic field of different current - carrying wires is shown . Which figure represents the correct direction of the magnetic field ?





A. (a)

B. (b)

C. (c)

D. (d)

**Answer: B**



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**49.** A current - carrying conducting wire kept in a magnetic field should experience a force .  
This was suggested by ..... .

A. Oersted

B. Faraday

C. Ampere

D. Ohm

**Answer: C**



**Watch Video Solution**

**50.** The magnitude of the induced current in electromagnetic induction depends on ..... .

A. the motion of the coil only

B. the motion of the magnet only

C. the relative speed of the coil and  
magnet

D. the deflection of the pointer in the  
galvanometer

**Answer: C**



**Watch Video Solution**

51. In Fleming's left-hand rule, .....denotes the direction of the magnetic force .

A. the thumb

B. the forefinger

C. the middle finger

D. the palm

**Answer: A**



**Watch Video Solution**

52. In the following figure , there bar magnets are shown. Magnets (1) and (3) are fixed . In which direction will the magnet (2) moves ?



- A. Towards magnet (1)
- B. Towards magnet (3)
- C. Upwards
- D. Magnet (2) will remain at rest

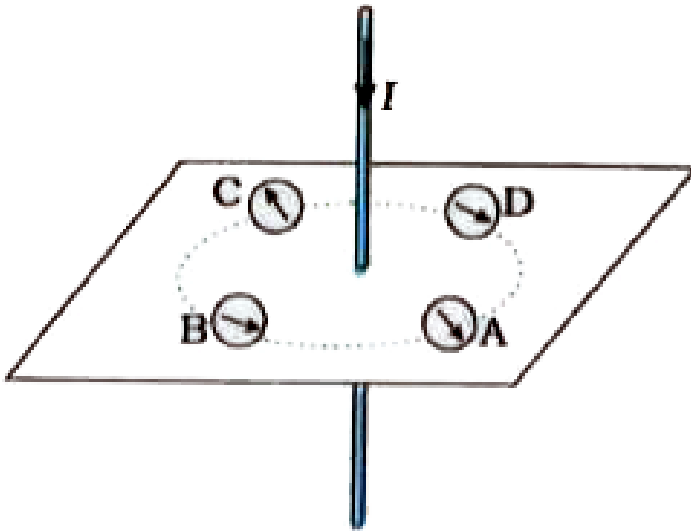
**Answer: B**



**Watch Video Solution**

**53.** To find the direction of the magnetic field produced by a current -carrying wire, a magnetic needle is placed at different positions as shown in the following figure . Which position of the magnetic needle corresponds to the correct direction of the

magnetic field ?



A. Position A

B. Position B

C. Position C

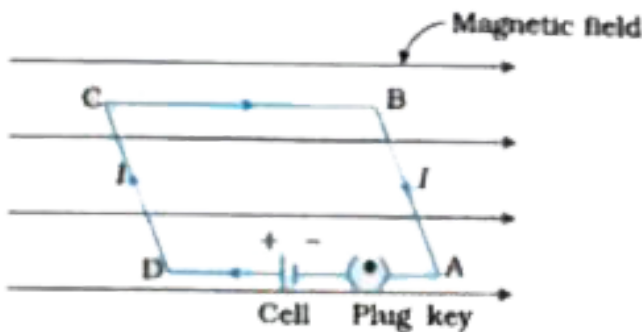
D. Position D

**Answer: D**



**Watch Video Solution**

**54.** In the following figure , current - carrying loop ABCD is placed in a uniform magnetic field. The magnetic forces acting on wires AB and CD are in.....and .....direction respectively .





- A. Downward , upward
- B. Downward , downward
- C. Upwards , upwards
- D. Upward , downward

**Answer: D**



**Watch Video Solution**

**Answer The Following Questions In Very Short As  
Directed Miscellaneous**

1. Name the physical quantities which are indicated by the direction of the thumb and forefinger in Fleming's right-hand rule.



**Watch Video Solution**

2. State the effect on the strength of the magnetic field produced at a point near a straight conductor if the electric current flowing through it increases.



**Watch Video Solution**

3. Mention the angle between a current - carrying straight conductor and magnetic field for which the force experienced by the conductor placed in a magnetic field is maximum .



**Watch Video Solution**

4. List two sources of magnetic fields .



**Watch Video Solution**

5. There are two wires. One of them carries a current . How will you find out which one carries a current ?



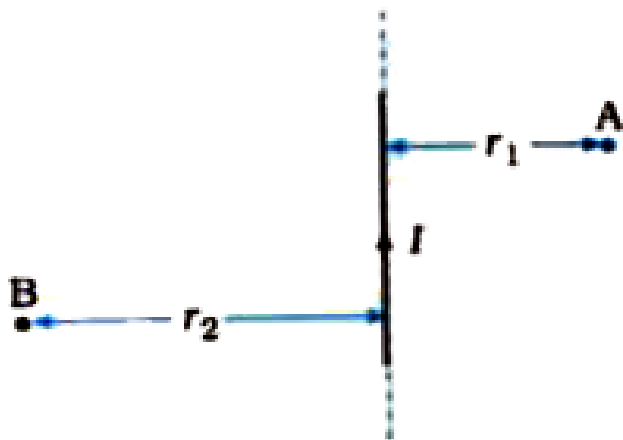
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6. How will the magnetic field intensity  $B$  at the centre of a circular coil carrying current change, If the current through the coil is doubled and the radius of the coil is halved ?



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7. PQ is a current - carrying long straight conductor in the plane of the paper as shown in the following figure. A and B are two points at distances  $r_1$  and  $r_2$  from it .

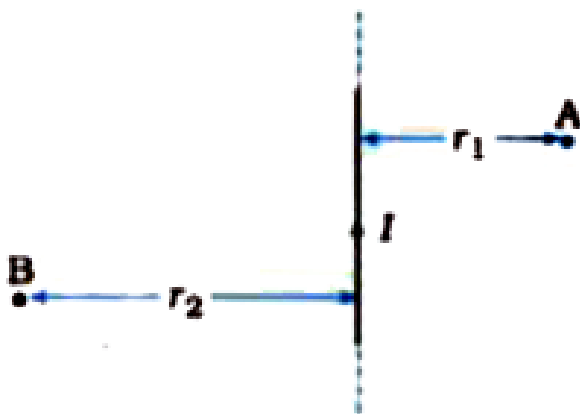


If  $r_2 > r_1$  at which point will the strength of the magnetic field be greater ? Justify your answer .



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8. PQ is a current - carrying long straight conductor in the plane of the paper as shown in the following figure . A and B are two points at distance  $r_1$  and  $r_2$  from it .



Mention the direction of the magnetic field produced by it at point A and B .



**Watch Video Solution**

9. In the experiment to show that a current - carrying conductor (rod) when placed in a uniform magnetic field experiences a force .What will happen if you experiences a force . What will happen if you interchange the terminals of the battery connected in the circuit ?



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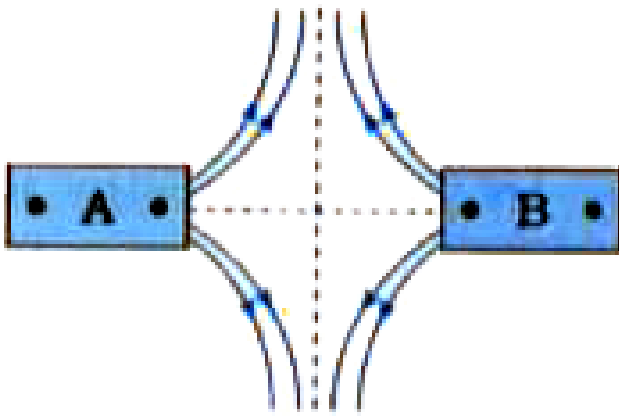
**10.** A compass needle is placed near a current - carrying straight wire . State your observation when the current in the wire is increased . Give reason .



**Watch Video Solution**

**11.** The magnetic field lines of two bar magnets A and B are shown below :





Name the poles of the magnets facing each other .



**Watch Video Solution**

**12.** Name any two source of direct current .



**Watch Video Solution**

**13.** Name the device used to prevent damage to the electrical appliance and domestic circuit due to overloading or short -circuiting .



**Watch Video Solution**

**14.** State value of potential difference between the live wire and neutral wire of power supply in our country .



**Watch Video Solution**

**15.** State one difference between the wires used in the element of an electric heater and in a fuse .



**Watch Video Solution**

**16.** In a domestic electric circuit -wiring , with which wire do we connect a fuse ?



**Watch Video Solution**

**17.** Mention two ways to increase the strength of the magnetic field of a current-carrying solenoid.



**Watch Video Solution**

**18.** Give the significance of the electric meter in a domestic circuit.



**Watch Video Solution**

**19.** A domestic circuit has a line of 5A rating. How many lamps of rating 40w, 220 V can be run simultaneously on this line safely ?



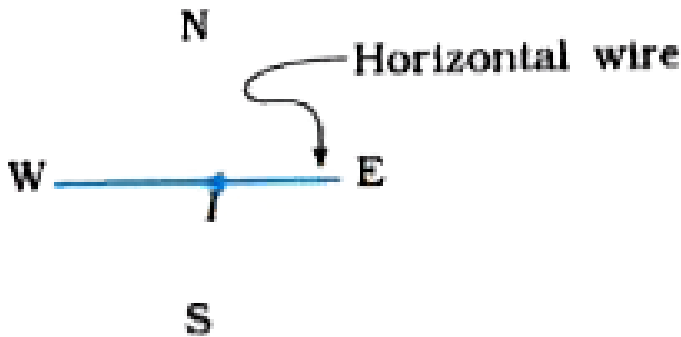
**Watch Video Solution**

**20.** Give any two uses of an electromagnet .



**Watch Video Solution**

21. A constant current  $I$  flows in a horizontal wire in the plane of paper from east to west as shown in the following figure :



At which point will the direction of the magnetic field be from north to south ?



**Watch Video Solution**

**22.** How do you magnetise a piece of magnetic material ?



**Watch Video Solution**

**23.** How does the current in a domestic circuit differ from that used to run a clock ?



**Watch Video Solution**

**24.** State what would happen to the direction of rotation of the cell current flowing through the coil is reversed .



**Watch Video Solution**

**25.** State the use of Maxwell's corkscrew rule .



**Watch Video Solution**



**26.** What type of dynamo (a machine for changing other power into electric power or a machine to produce electric current ) is used in (i) a bicycle (ii) industry ?



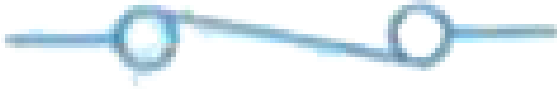
**Watch Video Solution**

**27.** Give one reason for not using a series arrangement for domestic circuits.



**Watch Video Solution**

**28.** What does the following symbol indicate/represent?



**Watch Video Solution**

**29.** What is the function of the brushes in an AC generator ?



**Watch Video Solution**

**30.** What determined the frequency of AC produced by a generator ?



**Watch Video Solution**

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



**Watch Video Solution**

**32.** State two serious hazards of electricity .



**Watch Video Solution**

**33.** Name an instrument used in navigation.



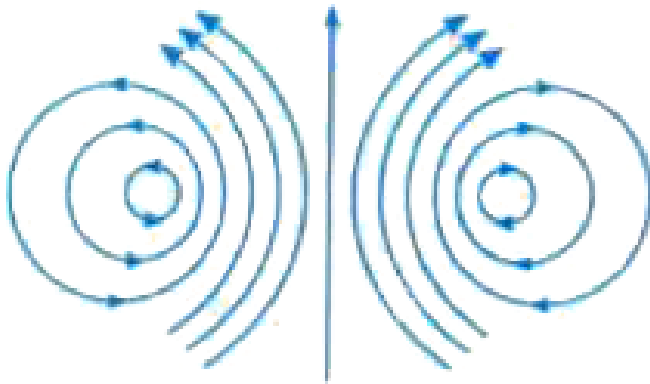
**Watch Video Solution**

**34.** What is the effect the resistance in the circuit at the time of short - circuit ?



**Watch Video Solution**

**35.** Name the current -carrying conductor ,  
whose magnetic field is represented by the  
following diagram .



**Watch Video Solution**

**36.** What is a commutator ?



[Watch Video Solution](#)

**37.** In an electric motor , which of the following remains fixed and which rotates with the coil ?

(i) Commutator (ii) Brush.



[Watch Video Solution](#)

**38.** What change should be made in an AC generator , so that it may become a DC generator ?



[Watch Video Solution](#)

**39.** If fuses of 250 mA, 5A and 10 A were available , which one would be the most suitable for protecting an amplifier rated as 240 V, 180 W ?



**Watch Video Solution**

**40.** What is a galvanometer ?



**Watch Video Solution**

**41.** What are the two most commonly used domestic circuits ?



**Watch Video Solution**

**42.** What do you mean by earthing ?



**Watch Video Solution**

**Value Based Questions With Answers**



1. Shalini and his brother Amey observed a water-pump working , Shalini inquired how an electric motor works . Amey collected different parts of an electric motor e.g., field - magnets , carbon- brushes , armature , battery , switch, connecting wire , split - rings , etc, and showed them to Shalini . Amey then explained how an armature could rotate.

State the principle how an electric motor to works .



**Watch Video Solution**

2. Shalini and his brother Amey observed a water-pump working , Shalini inquired how an electric motor works . Amey collected different parts of an electric motor e.g., field - magnets , carbon- brushes , armature , battery , switch, connecting wire , split - rings , etc, and showed them to Shalini . Amey then explained how an armature could rotate.

Is an electric motor needed for water - pump to work ?



**Watch Video Solution**

3. Shalini and his brother Amey observed a water-pump working , Shalini inquired how an electric motor works . Amey collected different parts of an electric motor e.g., field - magnets , carbon- brushes , armature , battery , switch, connecting wire , split - rings , etc, and showed them to Shalini . Amey then explained how an armature could rotate.

What values do you learn from Amey's activities ?



**Watch Video Solution**

4. Jay's friend Dev was playing and that too with a magnet . Jay asked him not to play with a magnet . Even then Dev continued playing and brought the magnet very near to the TV screen . That TV, then got damaged and there was a dark patch on that area of TV due to effect of magnetism . Jay informed all of his friends to be aware of such things in future .

How was TV damaged to get dark patch .



**Watch Video Solution**

5. Jay's friend Dev was playing and that too with a magnet . Jay asked him not to play with a magnet . Even then Dev continued playing and brought the magnet very near to the TV screen . That TV, then got damaged and there was a dark patch on that area of TV due to effect of magnetism . Jay informed all of his friends to be aware of such things in future .

Name any two domestic device having electromagnetic effect .



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6. Jay's friend Dev was playing and that too with a magnet . Jay asked him not to play with a magnet . Even then Dev continued playing and brought the magnet very near to the TV screen . That TV, then got damaged and there was a dark patch on that area of TV due to effect of magnetism . Jay informed all of his friends to be aware of such things in future .

What values do you learn from Jay ?



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7. Dharmendra is a welder , working at Amit.s house . After electric welding done with naked eyes , he used a grinder to smoothen the welding joints . Accidentally , some particle fell into his eye . He was then crying due to pain . Amit took him to an eye hosptial by a taxi. Amit took him to an eye hospital by a taxi . The doctor used a device connected to two electric wires to remove the particle from his eye . Dharmendra inquired what happened to his eye and what device did the doctor use to remove the particle from his eye . Amit as a

science students of class X explained to Dharmendra and advised him to be careful in future as he had a responsible risky job of welding .

Which particle fell into Dharmendra's eye while welding ? What precautions should Dharmendra take while doing electric welding and grinding work ?



**Watch Video Solution**



**8.** Dharmendra is a welder , working at Amit.s house . After electric welding done with naked eyes , he used a grinder to smoothen the welding joints . Accidentally , some particle fell into his eye . He was then crying due to pain . Amit took him to an eye hosptial by a taxi. Amit took him to an eye hospital by a taxi . The doctor used a device connected to two electric wires to remove the particle from his eye . Dharmendra inquired what happened to his eye and what device did the doctor use to remove the particle from his eye . Amit as a

science students of class X explained to Dharmendra and advised him to be careful in future as he had a responsible risky job of welding .

What device was used by the doctor to remove the particle ?



**Watch Video Solution**

**9.** Dharmendra is a welder , working at Amit.s house . After electric welding done with naked eyes , he used a grinder to smoothen the

welding joints . Accidentally , some particle fell into his eye . He was then crying due to pain .

Amit took him to an eye hospital by a taxi.

Amit took him to an eye hospital by a taxi . The doctor used a device connected to two electric wires to remove the particle from his eye .

Dharmendra inquired what happened to his eye and what device did the doctor use to remove the particle from his eye . Amit as a science student of class X explained to Dharmendra and advised him to be careful in future as he had a responsible risky job of welding .

What value do you learn from Amit during this episode ?



**Watch Video Solution**

**10.** Bharat had an electric iron . He connected it into two - pin plug . Obviously the green wire was left unconnected .

After a few days , once his sister got a severe electric shock while ironing the clothes .

Bharat called the electrician . He told that this situation could have been avoided if she

would have connected the green wire also by using a three - pin plug . Bharat learnt a lesson .

Which terminal gets connected by using a green wire ?



**Watch Video Solution**

**11.** Bharat had an electric iron . He connected it into two - pin plug . Obviously the green wire was left unconnected .

After a few days , once his sister got a severe

electric shock while ironing the clothes .

Bharat called the electrician . He told that this situation could have been avoided if she would have connected the green wire also by using a three - pin plug . Bharat learnt a lesson .

What care should Bharat take to avoid such mistakes ?



**Watch Video Solution**

**12.** Bharat had an electric iron . He connected it into two - pin plug . Obviously the green wire was left unconnected .

After a few days , once his sister got a severe electric shock while ironing the clothes .

Bharat called the electrician . He told that this situation could have been avoided if she would have connected the green wire also by using a three - pin plug . Bharat learnt a lesson .

If you were the electrician , what else would you do apart from merely explaining to Bharat?



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**13.** Atul built a small house . He used well - insulated copper wires of good quality for wiring and switches, sockets and plugs too . He however , had a room - heater of poor quality . Once on a winter night he was sleeping with his family in a closed room with the heater On. During sleep he was suffocated . Hence he woke up and found flames of heater on fire . His son Raghav got up quickly and switched off the main switch . He made a call



to the fire brigade . The fire crew of fire brigade reached quickly and put off fire . Atul and his family thanked the firement .

How Atul.s heater was on fire ?



**Watch Video Solution**

**14.** Atul buit a small house . He used well - insulated copper wires of good quality for wiring and switches, sockets and plugs too . He however , had a room - heater of poor quality . Once on a winter night he was

sleeping with his family in a closed room with the heater On. During sleep he was suffocated . Hence he woke up and found flames of heater on fire . His son Raghav got up quickly and switched off the main switch . He made a call to the fire brigade . The fire crew of fire brigade reached quickly and put off fire . Atul and his family thanked the firement .

Name the safety device missing in the electric wiring of Atul.s house.



**Watch Video Solution**

15. Atul built a small house . He used well - insulated copper wires of good quality for wiring and switches, sockets and plugs too . He however , had a room - heater of poor quality . Once on a winter night he was sleeping with his family in a closed room with the heater On. During sleep he was suffocated . Hence he woke up and found flames of heater on fire . His son Raghav got up quickly and switched off the main switch . He made a call to the fire brigade . The fire crew of fire brigade reached quickly and put off fire . Atul and his family thanked the firement .

What values do you learn from Raghav in this episode ?



**Watch Video Solution**