PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

MAGNETISM

Very Short Answer Type Question

1. MAGNETIC FIELD AND FIELD LINES

Watch Video Solution

2. State Maxwell's right hand grip rule.

Watch Video Solution

3. A line joining places of zero declination is called

Watch Video Solution

4. Define :

(1) ferromagnetic

(2) paramagnetic

(3) diamagnetic substances

Watch Video Solution

5. Cobalt is a _____substance

Watch Video Solution

6. A straight conductor carrying current from north to south deflects magnets needle placed parallel and above it, towards_____

Watch Video Solution

7. Define terrestrial magnetism.

Watch Video Solution

8. State the nature of lines of force due to a circular coil carrying current.

Watch Video Solution

9. Magnetism is concentrated at the _____of a magnet.

Watch Video Solution

10. (a) What is a natural magnet?

(b) What is an artificial magnet?

Watch Video Solution

11. Define neutral point and state the locations of neutral points when the north pole of a bar magnet points towards the geographic north.

Watch Video Solution

12. Define neutral point and state the location of neutral points when the north pole of bar magneti points towards the geographic south.

Watch Video Solution

13. What is the use of a galvanoscope ?

Watch Video Solution

14. Define pole, axis, equator and magnetic meridian of a bar magnet

Watch Video Solution

15. What is a solenoid?

Watch Video Solution

16. The angle between resultant intensity of the Earth's magnetic field and its horizontal

component at a given place is called _____at that place.

Watch Video Solution

17. The branch of physics which deals with the study of magnets is called _____

Watch Video Solution

18. Name some magnetic and non-magnetic substances.

Watch Video Solution

19. Define an electromagnet.

Watch Video Solution

20. The direction of magnetic field due to a current carrying conductor can be determined by Ampere's _____rule.

Watch Video Solution

21. A solenoid with an iron core acts as _____

Watch Video Solution

22. What is magnetic induction ?

Watch Video Solution

23. Define an electromagnetic relay.

Watch Video Solution

24. Define angle of dip.

Watch Video Solution

25. Define angle of declination.

Watch Video Solution

26. Define geographic and magnetic meridian of the earth.

Watch Video Solution

27. The effective length of a bar magnet is equal to _____

Watch Video Solution

28. What is electromagnetism ?

Watch Video Solution

29. What is the angle of dip at a given place on the earth if both vertical and horizontal components of the earth's magnetic field are equal ?

Watch Video Solution

30. What is the nature of lines of force due to a straight current carrying conductors ?

Watch Video Solution

Short Answer Type Question

1. Magnetic induction precedes attraction. Explain

Watch Video Solution

2. Explain isogonic and agonic lines.

Watch Video Solution

3. State the factors which affect the strength of magnetic field around a circular current carrying coil.

Watch Video Solution

4. What are the different types of artificial magnets ?

Watch Video Solution

5. Repulsion is the sure test for magnetism. Explain ?

Watch Video Solution

6. What is horizontal component of the Earth's magnetic field ?

Watch Video Solution

7. Explain galvanoscope.

Watch Video Solution

8. Introduction to Magnetism and Matter | Bar Magnet | Magnetic Dipoles

Watch Video Solution

9. Explain working of an electromagnet.

Watch Video Solution

10. How will you determine the polarity of the ends of a solenoid ?

Watch Video Solution

11. State various methods of demagnetization.

Watch Video Solution

12. Explain isoclinic and aclinic lines.

Watch Video Solution

13. What determies the direction of lines of force due to a straight current carrying conductors ?

Watch Video Solution

14. State properties of magnetic lines of force.

Watch Video Solution

Essay Type Question

1. State and explain Ewing's molecular theory. Mention its merits and demerits.

Watch Video Solution

2. With you help of neat drawn diagrams, explain how will you locate the neutral points due to a bar manget when

(1) its north pole points towards geographic north?

(2) Its south pole points towards geographic north ?

Watch Video Solution

3. Explain important properties of a magnet.

Watch Video Solution

4. With the help of a labelled diagram, explain the working of hydraulic brakes.

Watch Video Solution

Concept Application Level 1

1. A steel bar can be magnetized by passing alternating current through a coil wound on the steel bar.

A. True

B. False

C.

D.

Answer: F

 Watch Video Solution

2. The angle of dip increases as we move from the Earth's magnetic equator to its magnetic poles.

 Watch Video Solution

3. Both the poles of a magnet have the same strength

A. True

B. False

C.

D.

Answer: T

Watch Video Solution

4. The angle of declination cannot be equal to zero.

Watch Video Solution

5. Diamagnetic substances are feeby attracted by magnets.

A. True

B. False

C.

D.

Answer: F

Watch Video Solution

6. In a single-touch method of magnetization, the end of the steel bar where the magnet leaves develops a polarity opposite to that of the magnet.

A. True

B. False

C.

D.

Answer: T

Watch Video Solution

7. Magnetic lines of force around a current carrying conductor are circular.

A. True

B. False

C.

D.

Answer: T

Watch Video Solution

8. The intensity of magnetic field due to a short bar magnet at a given point on its axis inversely proportional to_____

Watch Video Solution

9. The product of pole strength and the magnetic length of a magnetic is called _____

Watch Video Solution

10. Earth's geographic north pole is vary pole close to its magnetic _____

Watch Video Solution

11. During magnetization, the kinetic energy of the molecular magnets is converted to ____energy.

Watch Video Solution

12. The point at which the resultant magnetic effect is zero is called _____

Watch Video Solution

13. A freely suspended magnet lies in the horizontal plane at _____of earth.

Watch Video Solution

14.

Column A		Column B
A. Magnetic poles of earth	( )	a. magnetic effect of electric current
B. Sure test of magnetism	( )	b. horizontal component is equal to the total intensity of magnetic field
C. Galvanoscope	( )	c. diamagnetic substance
D. Vertical plane passing through magnetic axis	( )	d. to detect the flow of current
E. Steel	( )	e. temporary magnet
F. Oersted's experiment	( )	f. zero angle of dip
G. Magnetic equator of earth's magnetic field	( )	g. horizontal component of earth's magnetic field is zero
H. Copper	( )	h. repulsion
I. Aclinic line	( )	i. permanent magnet
J Soft iron	( )	j. magnetic meridian

Watch Video Solution

15. The magnetic field due to a bar magnet _____

A. has the same direction at any point

B. is uniform

C. is non-uniform

D. does not exist

Answer: C

Watch Video Solution

16. At the null point____

A. horizontal component of earth's magnetic field is zero

B. horizontal component of earth's magnetic field is equal to the magnetic field of the bar magnet.

C. intensity of earth's magnetic field is zero.

D. intensity of earth's magnetic field is equal to the magnetic field of the bar magnet.

Answer: B

Watch Video Solution

17. Which of the following is a property shown by a magnet ?

A. Attractive property

B. Directive property

C. Indcution

D. All the above

Answer: D

Watch Video Solution

18. The strength of a magnetic field increases as _____

A. the number of magnetic lines of force passing through a given area increases

B. strength of the magnetic poles increases

C. distance between the magnetic poles increases

D. Both (1) and (2)

Answer: D

Watch Video Solution

19. A conducting wire can give magnetic pole when it is _____

A. bent into the form of a circular ring

B. placed in an external magnetic field

C. suspended freely in air

D. All the above

Answer: A

Watch Video Solution

20. Which of the following is an artificial magnet ?

A. bar magnet

B. Horse-shoe magnet

C. magnetic needle

D. all the above

Answer: D

Watch Video Solution

21. The magnetic field near the centre of a current carrying coil is uniform and _____

A. parallel to the plane of coil.

B. perpendicular to the plane of coil

C. circular

D. both (b) and (c)

Answer: B

Watch Video Solution

22. Which of the following statements is false of a place closer to the north pole ?

A. VgtH

B. V is nearly equal to I

C. H is nearly equal to I

D. $V = \sqrt{I^2 - H^2}$

Answer: C

View Text Solution

23. The torque acting on a current carrying loop placed in an external uniform magnetic field does not depend on the _____

A. shape of the loop

B. strength of current through it

C. strength of the magnetic field

D. area of the loop

Answer: A

Watch Video Solution

24. The stability of a galvanoscope to detect weak current increases with _____

A. decreases in number of turns

B. increases in its diameter

C. decreases in its diameter.

D. increases in number of turns

Answer: C

Watch Video Solution

25. consider the following statement A and B , and select the correct choice

A: Repulsion is a sure test of magnetism.

(B) : Magnetic induction precedes attration.

A. Only A is true

B. Only B is true

C. Both are true

D. Both are false

Answer: C

Watch Video Solution

26. Retentivity is high in the case of _____

A. steel

B. copper

C. soft iron

D. aluminium

Answer: A

 Watch Video Solution

27. A solenoid is _____

A. an electromagnet

B. a temporary magnet

C. a permanent magnet

D. Both a and (b)

Answer: D

 Watch Video Solution

28. Consider the statement A and B given below and select the correct choice

(A) : an EM relay operates on high voltage

(b) : An EM relay cantrols high voltage circuit.

A. Only A is true

B. Only A is false

C. Both are true

D. Both are false

Answer: B

Watch Video Solution

Watch Video Solution

29. When a magnet is bent into the form of 'L' , its magnetic moment _____

A. increases

B. decreases

C. remain same

D. cannot be determined

Answer: B

Watch Video Solution

30. The effective length of a bar magnet is equal to _____

A. the distance between its poles

B. the distance between any one pole and its centre

C. the distance between its geometric ends

D. the distance between any one geometic end and its centre

Answer: A

Watch Video Solution

31. The space surrounding a magnet within which its magnetic effect is felt is called

A. magnetic field

B. intensity of magnetic field

C. magnetic meridian

D. magnetic field lines

Answer: A

Watch Video Solution

32. What is the angle of dip at the magnetic south of earth is ?

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

Watch Video Solution

33. Given below are two statements. Which of the state meants is/are true ?

Statement-A : when the south pole of a bar magnet points towards the geographic north pole, the neutral points are along the equatorial line

Statement B: At the neutral point, the Earth's magnetic field is zero .

A. A is true, B is false

B. Both A and B are false

C. A is false, B is true

D. Both A and B are true

Answer: B

Watch Video Solution

34. A conductor carrying current from south to north deflects the magnetic needle placed parallel and above it towards _____

A. east

B. west

C. north

D. south

Answer: A

Watch Video Solution

35. If the lines of force due to a current carrying straight conductor are in anti-clockwise direction and lie in the plane of paper, the current is flowing _____

A. parallel to the plane of paper.

B. perpendicular to and directed into the paper

C. perpendicular to and directed out of the paper

D. parallel to the conductor

Answer: C

Watch Video Solution

36. Magnetization can be done by _____

A. heating

B. self induction

C. single-touch method

D. All of the above

Answer: C

Watch Video Solution

37. Cobalt is a _____substance

A. ferromagnetic

B. paramagnetic

C. diamagnetic

D. all of these

Answer: A

 Watch Video Solution

38. The angle of dip increases as we move from

A. poles to equator

B. equator to poles

C. dip is equal at all places

D. all of these

Answer: B

Watch Video Solution

39. Which of the following statement is true ?

A. magnetic equator is also called clinic line

B. on an agonic line, the angle of declination is zero

C. two places on an isoclinic line have the same angle of inclination

D. All the above

Answer: D

 Watch Video Solution

40. The direction of magnetic field at the two diametrically opposite points on a circular magnetic lines of force around a current caryying conductor is ____

A. tangent to the magnetic line of force and opposite in direction

B. tangent to the magnetic line of force and in the same direction

C. along the length of the wire and in opposite direction

D. along the length of the wire and in the same direction

Answer: A

Watch Video Solution

41. Write the following steps in a sequential order involved in the working of a relay switch for a car starter.

(a) The soft iron core attached to a spring is drawn towards the motor circuit.

(b) When key is removed, the current flowing through the relay is stopped and the circuit breaks

(c) When the car key is switched ON, the current flows through the electromagnet.

(d) The soft iron core comes in contact with the starter circuit.

A. CDAB

B. ABCD

C. ACBD

D. ADCB

Answer: A

Watch Video Solution

42. Write the following steps in a sequential order involved in the working of an electric bell.

(A) the armature is pulled towards the electromagnet

(B) The soft iron behave as an electromegnet.

(c) The circuit breaks and the electromagnet loses the magnetic property.

(D) The hammer hits the gong.

(E) Armature goes back and the circuit gets closed.

(F) The process is repeated and the bell rings continuously

(G) The circuit is closed

A. ABGDECF

B. GBADCEF

C. GBACDEF

D. BACDEFG

Answer: B

Watch Video Solution

43. Write the following steps in a sequence to locate the neutral points when south pole of a bar magnet is placed towards geographical north.

(A) Draw the magnetic lines of force due to the bar magnet by using a magnetic compass

(B) locate the north the south poles of a bar magnet by using a magnetic compass

(C) placea bar magnet on the white paper such that the south pole of the bar magnet point towards geographic north

(D) Note the points the magnetic field where the magnetic compass does not show any particular direction

A. CBAD

B. ACBD

C. CABD

D. BCAD

Answer: D

Watch Video Solution

44. Write the following steps in a sequential order to map the magnetic lines of force due to a current carrying straight conductor

(A) Pass a wire through the centre of a rectangular shaped card board

(B) Close the circuit.

(C) Tap the card board

(d) Sprinkle some iron filings on the card board

(E) connect the wire to a battery and a key

(F) Observe that the iron filings are arranged in concentric circular path with wire at the centre.

A. AEDBCF

B. AEDCBF

C. ADECBF

D. AEBDFC

Answer: A

Watch Video Solution

Level 2

1. In spite of deflecting a magnetic needle kept near it, a straight current carrying wire does't possess magnetic poles. Explain

Watch Video Solution

2. Explain why it is not possible to magnetise an iron rod beyond a certain limit ?

Watch Video Solution

3. A current carrying wire can deflect a magnetic needle. What is its effect on another current carrying wire kept near it ?

Watch Video Solution

4. Explain the nature of force between two adjacent turns of a solenoid. How does this force affect its length ?

Watch Video Solution

5. A magnet is cut into two parts by cutting it along its length. Is the crowding of the magnetic lines of force at the poles of the new magnet the same as it was in the old magnet ? Explain your answer.

Watch Video Solution

6. The value of horizontal component, vertical component and the intensity of magnetic field in SI unit at three different places A,B and C are tabulated as follows. Complete the tabular column and arrange the place in the increasing order of their angle of dip.

Place	H	V	I
A	4×10^{-5}	3×10^{-5}	—
B	8×10^{-5}	—	10×10^{-5}
C	—	5×10^{-5}	13×10^{-5}

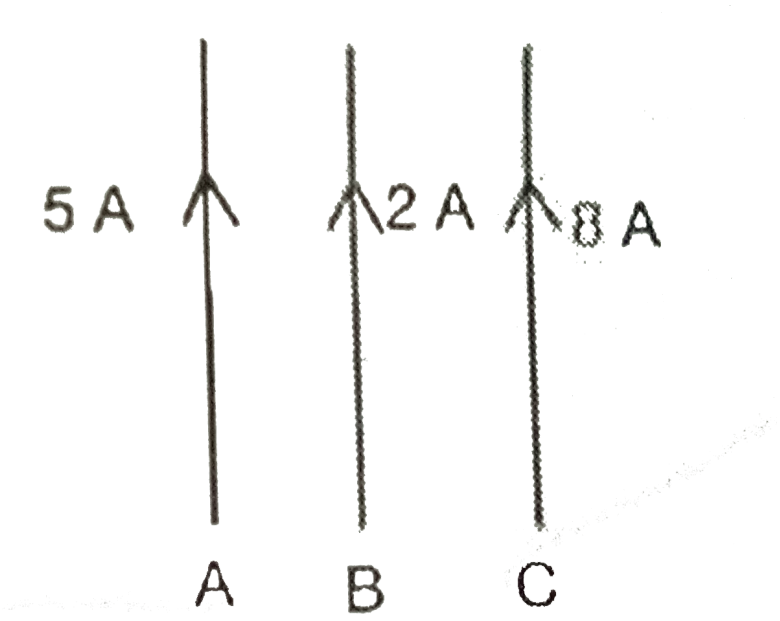
Watch Video Solution

7. What is the working principle of a galvanoscope ? How can its sensitivity be increased ?

Watch Video Solution

8. Three straight wires A,B and C are placed in a plane parallel to each other and separated by equal distance, carrying currents as shown in the figure. Determine the direction of force

on B



Watch Video Solution

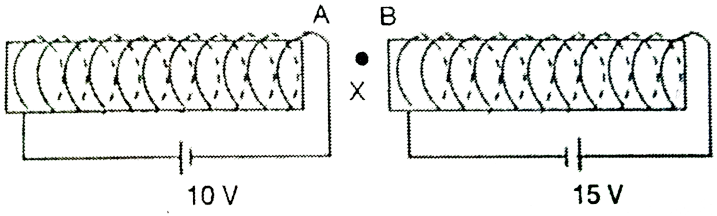
9. Why are the magnetic poles of a bar magnet not situated at the ends, but located slightly

inside ? (or) why is the effective length of a bar magnet different from its actual length

Watch Video Solution

10. A magnet compass is placed at the point 'X' , the mid point of the line segment joining AB along the axis of the coil of the electromagnetis in a horizontal plane . What would be the direction of the magnetic

compass ? Explain.



Watch Video Solution

11. Which among the following dimension of a bar magnet affect its pole strength and the magnetic moment ? Explain.

(1) length

(2) Breadth

(3) Thickness

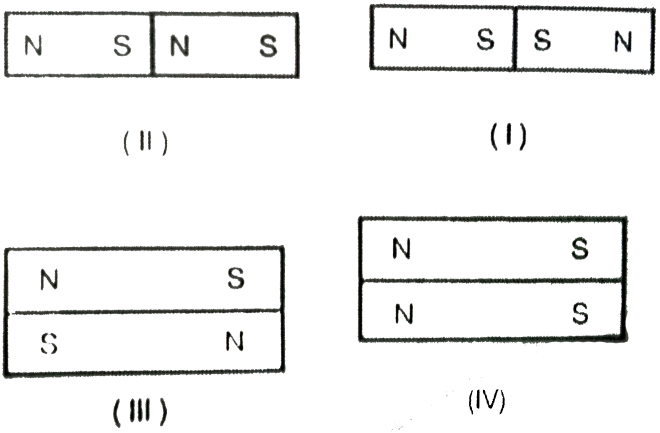
Watch Video Solution

12. We know that a current carrying conductor placed in a magnetic field experiences a force. What happens if we place a rectangular coil in an external magnetic field ?

Watch Video Solution

13. Two bar magnets are kept so that each magnet is in contact with another magnet as

shown in the figure below. In which of the arrangements do the magnets lose magnetism faster ? Why ?



Watch Video Solution

14. Will the angle of dip in Russia be greater or lesser than that in India ? Explain.

Watch Video Solution

15. IF a magnetic compass and a dip circle are taken to the magnetic poles of the Earth, what would be the directions of their needle ? Explain giving reasons.

Watch Video Solution

16. Compare the magnetic lines of force around a bar magnet and a solenoid.

Watch Video Solution

17. What effect is seen on a current carrying coil when it is placed between two powerful unlike magnetic poles ? How can this effect be increased further ?

Watch Video Solution

18. A steel bar is magnetized by keeping it inside a long coil of insulated copper wire and passing a current through the coil. Discuss

what happen to the pole strength of the magnet as the time for which the electric current passes through the coil increases.

Watch Video Solution

19. The magnetic moment of a bar magnet is 2A m2. if the magnetic length of the bar magnet is 5 cm, determine the force acting on it an external magnetic field of strength 0.6 T.

Watch Video Solution

20. Determine the magnetic moment of a bar magnet of magnetic length 5 cm and pole strength 2A m.

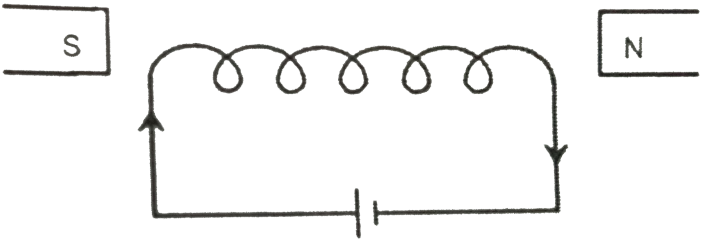
Watch Video Solution

Level 3

1. Can the combination of a current carrying wire and a solenoid produce neutral points ?

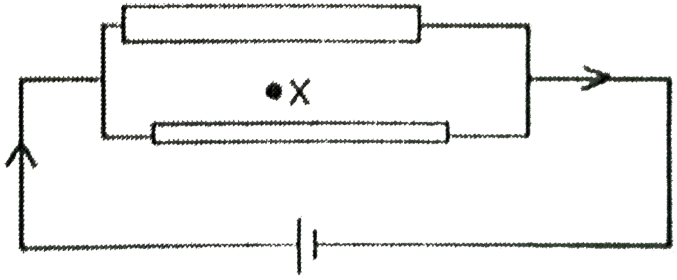
Watch Video Solution

2. A coil is made of an insulated copper wire and current is passed through the coil. Now, two magnets are kept at each end of the coil with the polarity as shown in the figure below. If the magnets do not move, will there be any change in the length of the coil ? what will happen on reversing the direction of current ?



Watch Video Solution

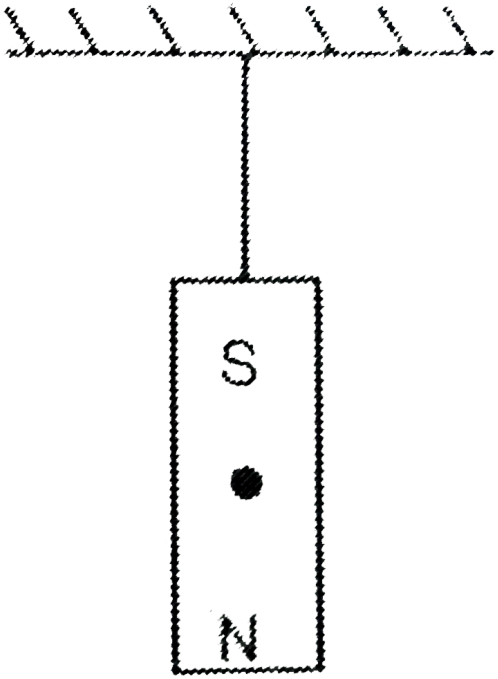
3. Two wires of equal length and different areas of cross section are kept parallel to each other and are connected to a battery as shown in the figure. A magnetic compass is placed exactly at the centre of the line joining the two wires in a plane perpendicular to the length of the two wires. what would be the direction of the north pole of the magnetic compass ?



View Text Solution

4. A bar magnet is suspended vertically from a rigid support at earth's magnetic south pole such that its north pole points downwards, as shown in the figure. What would be the geometrical shape obtained if we join all the null points along a horizontal plane passing through the centre of the magnet. how is the size of this geometric shape related to the

pole strength of the magnet.



View Text Solution

5. To detect electric current using a galvanoscope, the plane of the coil is placed along magnetic meridian. What happens if the plane of coil is along east-west direction ?

Watch Video Solution

6. How many neutral points can be obtained in a given plane perpendicular to the length of the two parallel wires conducting current in

the same direction ? Explain, neglect earth's magnetic field of a bar magnet NS.

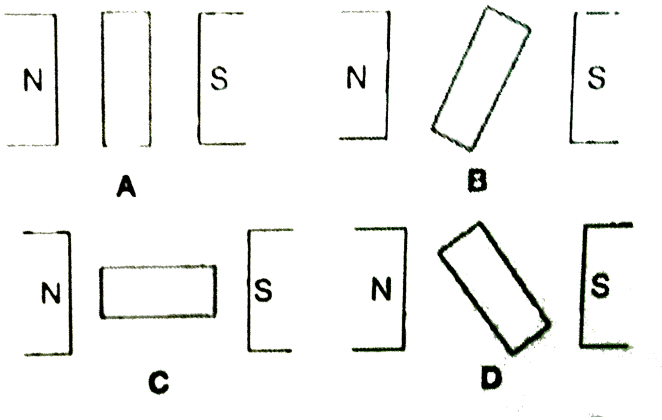
View Text Solution

7. When a student of physics placed four different pieces of a substance, in a magnetic field, they arranged themselves as shown in figure. Which of the following figures represents the orientation of a thin bar magnet of

(A) diamagnetic substance

(b) paramagnetic substance.

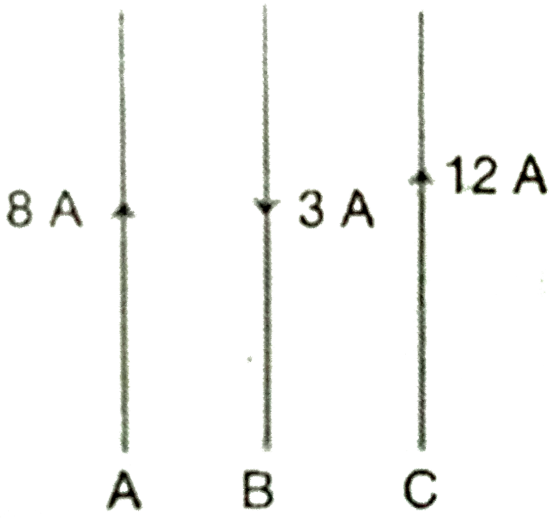
(c) ferromagnetic substance.



Watch Video Solution

8. There straight current carrying conductors A,B and C are placed parallel and adjacent to each other by an electrician as shown in the

figure. Then determine the direction of resultant force acting on the wire B .



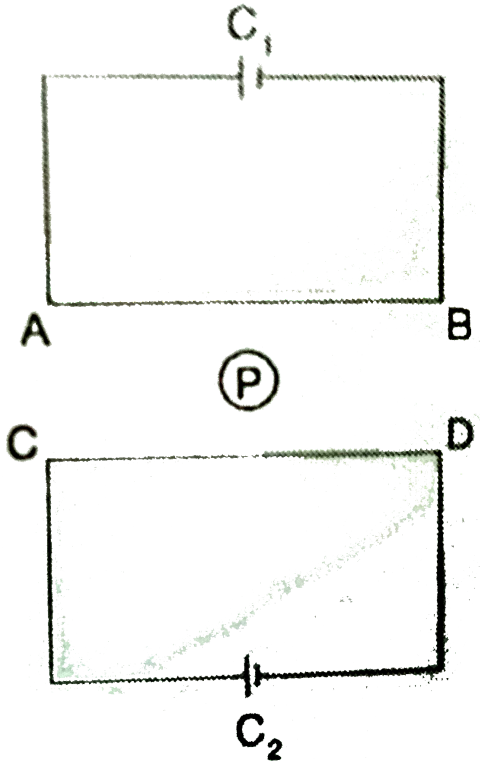
Watch Video Solution

9. A student read from his physics book that a piece of soft iron placed in uniform magnetic field behaves as a magnet. Draw the magnetic line of force in the region of space around the soft iron.

Watch Video Solution

10. Two current carrying straight wires AB and CD are kept one above the other, and a magnetic needle is kept between and at the

same distance from both wires at P as shown in the figure. Discuss the direction of magnetic field at point P. what happens if the polarity of the cell $'C_1'$ is reversed. (Assume that same amount of current passes through the two wires).



Watch Video Solution