PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

MAGNETISM

Very Short Answer Type Question

1. Define equatorial line of a bar magnet.

Watch Video Solution

2. What is meant by self induciton ?

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3. Unlike magnetic poles_____each other.

Watch Video Solution

4. What is geographical meridian?

Watch Video Solution

5. What is the difference between geographic axis and geographic meridian?

Watch Video Solution

6. Magnetic keepers are used to prevent the loss of magnetism due to _____

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7. What happens to the orientations of the molecules of a magnetised iron bar ?

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8. What is magnetic induction ?

Watch Video Solution

9. What is a lodestone ?

Watch Video Solution

10. What is a magnetic meridian?

Watch Video Solution

11. A substance placed near a strong magnet is attracted by it, substance can be _____.

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12. What is an artificial magnets?

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13. What is the effective length of a bar magnet ?

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14. Diamagnetic substances are feeby attracted by magnets.

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15. What is a magnetic pole ?

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16. When a magnet is broken into two parts, each part will have_____poles .

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17. What is magnetic compass ?

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18. Which is more powerful between a bar magnet and a horshoe magnet ?

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19. When an iron bar is placed nearer to the north pole of magnet, the south poles of the molecular magnets in the iron bar point towards_____

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

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21. Which is more powerful between a magnetic compass needle and a bar magnet ?

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22. The correct statements regarding the lines of force of the magnetic field B are

(1) Magnetic intensity is a measure of lines of force passing through unit area held normal to it

(2) Magnetic lines of force form a closed curve

(3) Due to a magnet magnetic lines of force never cut each other

(4) Inside a magnet, its magnetic lines of force

move from north pole of a magnet towards its south pole

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23. What is the difference between magnetic axis and magnetic meridian?

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24. In double touch method of magnetization what is the polarity of the end of an iron bar at which the magnetizing magnet leaves ?

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25. Which property of a magnet is used to determine the polarity of the magnet ?

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26. In the presence of a magnet, an iron bar acts as a magnet due to _____

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27. What is meant by saturation point?

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28. Define axial line of a bar magnet.

Watch Video Solution

29. What is the use of a dip circle?

Watch Video Solution

30. What is meant by demagnetization ?

Watch Video Solution

Short Answer Type Question

1. Write short notes on the earth's magnetic field.

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2. Define terrestrial magnetism.

Watch Video Solution

3. Give two properties of lines of force.

Watch Video Solution

4. How are the molecular magnets of a magnet affected, when the magnet is demagnetized ?

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5. Magnetic lines of force intersect each other .

Watch Video Solution

6. Draw the lines of force due to two bar magnets, north pole of one facing the south pole of the other.

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7. Why does north pole of a magnet points towards geographical north ?

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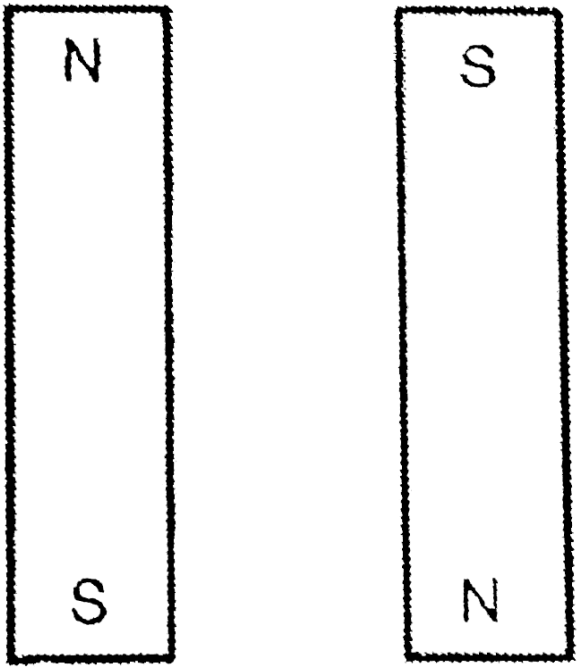
8. Draw a neat diagram of lines of force around two bar magnets placed as shown in the figure



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9. Give details regarding angle of inclination and declination.

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10. Explain why artificial magnets are preferred to natural magnets.

Watch Video Solution

11. How can a magnet be demagnetized ?

Watch Video Solution

12. Explain why ferromagnetic substances are used to make permanent magnets.

Watch Video Solution

13. The angle of dip increases as we move from

Watch Video Solution

14. Write short notes on magneic keepers.

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15. 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.

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16. What properties of magnetic substance are explained on the basis of molecular theory ?

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17. Draw the lines of force of a bar magnet neglecting the earth's magnetic field.

Watch Video Solution

18. In double touch method of magnetization what is the polarity of the end of an iron bar at which the magnetizing magnet leaves ?

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19. List the properties of magnetic lines of force.

Watch Video Solution

Watch Video Solution

20. Draw the lines of force due to two bar magnets, the north pole of one facing the north pole of the other.

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Concept Application Level 1

1. why earth can be considerd as a huge bar magnet.

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2. The magnetic compass is not useful for navigation near the magnetic poles because

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3. why in an electrical method of magnetisation, a direct current is used.

Watch Video Solution

4. The polarity of an electromagnet can be changed by changing the direction of electric current through the coil.

Watch Video Solution

5. Repulsion is a sure test for magnetism.

Watch Video Solution

6. Can we have a single north pole, or a single south pole?

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7. Natural magnets are stronger than artificial magnets.

Watch Video Solution

8. Magnetic lines of force are

A. directed from the north pole to south pole in the magnetic field.

B. directed from the south pole to north pole inside a magnet.

C. closed loops

D. All the above

Answer: D

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9. In which of the following devices temporary magnets are used ?

A. Dynamo

B. Electric motors

C. Generators

D. Electric cranes

Answer: D

Watch Video Solution

10. Which of the following properties of a magnet is/are used in navigation ?

A. Pair property

B. Laws of magnetic poles

C. Directional property

D. Attractive property

Answer: C

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11. Choose the correct match.

(i) Primary succession	(a) Fast
(ii) secondary succession	(b) Cooled volcanic lava
	(c) Slow
	(d) Abandoned farm land

A. A-b,B-c,C-a

B. A-c,B-a,C-b

C. A-b,B-a,C-c

D. A-a,B-c,C-b

Answer: C

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12. The direction of magnetic field at any point inside the field is given by _____.

A. perpendicular to the line of force

B. tangent to the line of force

C. the line of force itself

D. none of the above

Answer: B

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13. Which of the following is a non- magnetic substance ?

A. cobalt

B. iron

C. Copper

D. Nickel

Answer: C

Watch Video Solution

14. When an iron bar is moved over a bar magnet along its length the attractive force_____

A. increases first and then decreases

B. decreases first and then increases

C. remains same

D. increases

Answer: B

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15. The attracting power of a magnet is

A. evenly distributed along its length.

B. maximum at its centre.

C. maximum at its poles

D. minimum at its poles.

Answer: C

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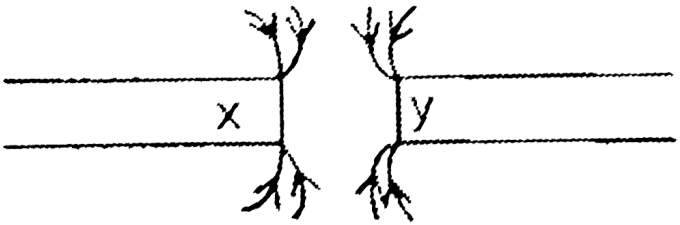
16. 

The above diagrame is the pattern of magnetic lines of force obtained when two magnets are placed with their magnetic axes coinciding. The magnetic poles x and y are_____and _____respectively.

A. north , south

B. south , north

C. north , north

D. south , south

Answer: D

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17. In the single touch method of magnetization , the north pole of a bar magnet is rubbed against a steel rod. Then the polarity of the end of the steel rod at which the magnet leaves

A. is the south .

B. is the north.

C. depends upon the material.

D. none of these

Answer: A

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18. Assertion: Magnetic lines of force never intersect.

Reason: The direction of magnetic lines of force in a magnetic field is from north to south.

A. Assertion and reason are correct and reason is the correct explanation

B. Assertion is correct and reason is wrong

C. Assertion and reason are correct but reason is not the correct explanation for the assertion

D. Assertion and reason are wrong.

Answer: C

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19. The vertical plane in which magnetic needle lies at a place is called_____

A. geographical meridian

B. magnetic equator

C. geographical equator

D. magnetic meridian

Answer: D

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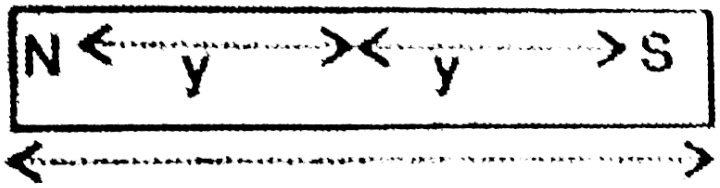

20.

The effective length of the magnet shown above is

_____.

A. y

B. 2y

C. x

D. x/2

Answer: B

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21. The equatorial meridian of a magnet_____

A. bisects the magnetic axis perpendicularly

B. is parallel to the magnetic axis

C. makes certain angle with the magnetic equator

D. contains both the poles of the magnet

Answer: A

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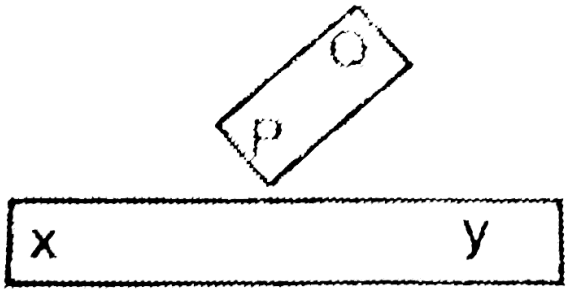
22. A bar magnet is moved over a steel bar as shown in the figure.

Choose the correct alternative from the following



A. The end x becomes north pole if 'p, is south pole whne moved from the end x to y.

B. the end y will become a south pole if p is south pole and moved from the end y to x.

C. the end x will be a south pole if 'p' is a south pole and moved from x to y

D. both (B) and (c)

Answer: D

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23. When a magnet is broken into two parts,

A. the bigger parts acts like the north pole.

B. the smaller part acts like the north pole.

C. both the parts will have both the poles.

D. polarity of each part depends upon the material.

Answer: C

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24. In the electrical method of magnetization, the polarity of the end in which current flows in clockwise direction

A. is the north pole

B. is the sourth pole

C. does not deped upon the direction of currrent flow

D. cannot be determined

Answer: B

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25. An electric bell works on the principle of _____

A. magnetic induction

B. attractive property of magnets

C. electromagntism

D. All the above

Answer: c

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26. Define angle of declination.

A. 90° at the poles

B. 0° at the equator

C. variable

D. none of the above

Answer: C

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27. Which of the follwing molecular species does not exist?

A. saturaiton point of magnetisation.

B. existence of two poles in a magnet.

C. paramagnetism

D. none of the above

Answer: C

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28. Which of the following substance is repelled by strong magnet ?

A. Iron

B. Platinum

C. Gold

D. Aluminium

Answer: C

Watch Video Solution

29. In Which of the following devices is a permanent magnet not used ?

A. Electric motor

B. Telegraph

C. Generators

D. Particle accelerators.

Answer: B

Watch Video Solution

30. A substance placed near a strong magnet is attracted by it, substance can be _____.

A. a magnet

B. paramegnetic substance

C. ferromagnetic substance

D. All the above

Answer: D

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31. In an unmagnetised iron bar, the molecules form _____.

A. circular chains

B. long straight chains

C. closed chains

D. opposite, parallel chains

Answer: C

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32. Arrange the following statement in sequential order the process of plotting the lines of force around a bar magnet.

(a) Draw a line in the middle of a white paper fixed on a drawing board.

(b) Repeat the procedures described above, by shifting the compass and plot the points 2,3,4 , etc.

(c) Place a bar magnet NS on the line so that its axial line coincides with the line on the paper and mark its boundary.

(d) Join the points 0,1,2,3,....by a smooth curve.

(e) Take a plotting compass and place it such that its south pole is directed towards point 0 at the

edge of the bar magnet, and mark point 1 in the direction in which the north pole of the plotting compass points.

A. acebd

B. abced

C. ebcad

D. eabcd

Answer: A

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33. A bar magnet has a pole strength of 15 Am. If the distance from its centre of either of the poles is 15 cm, arrange the following steps in sequential order to find its magnetic moment in SI unit.

(a) Write the given value of pole strength (m) of the magnet.

(b) Substitute the value in the above formula to get the value of M.

(c) Find the value of length (l) of the magnet from the problem and convert it into SI unit.

(d) Write the required formula, i.e., magnetic moment (M)=mx 2l

A. acbd

B. cabd

C. adcb

D. dbac

Answer: C

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34. Arrange the following statement is sequential order to magnetize a steel bar using single touch method.

(a) Once, it has reached the other end, lift the

magnet away from the steel bar and again bring it to the starting point.

(b) Keep a steel bar to be magnetized on a wooden table.

(c) Take a strong magnet and bring one of the poles of the magnet near one end of the steel bar and gently rub from one end to the other end.

(d) Repeat this process several times.

A. bcad

B. bacd

C. cbda

D. cabd

Answer: A

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35. The magnetic moment of a bar magnet 'A' and its length are twice that of another bar magnet 'B'. Arrange the following steps in sequential order to find the ratio of their pole strengths.

(a) Write the given values of magnet moment (M) and magnetic length (2l) of the bar magnets A and B as $M_B = 2M_A$ and $2l_B = 2(2l_A)$

(b) Write the expression for pole strength (m) for each magnet using $m = \frac{M}{2l}$

(c) Divide the two expression to get the ratio of m_A to m_B

A. bac

B. acb

C. bca

D. abc

Answer: D

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Fill In The Blanks

1. Effective length of a magnet is_____than its actual length.

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2. In order to prevent loss of magnetism, _____are used.

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3. Magnetic lines of force are directed from_____pole to ___pole, in the magnetic field

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

Watch Video Solution

5. The point beyond which a magnet cannnot be magnetised any further is called____.

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6. Assertion : When a bar magnet is freely suspended, it points in the north-south direction.

Reason : The earth behaves as a magnet with the magnetic field pointing approximately from the geographic south to north.

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7. The north pole of a magnet is brought near a stationary negatively charged conductor. Will the pole experience any force?

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Matching

1. Match the entries in column A with the appropriate ones in Column B

Column A		Column B
A. Directive property	( )	a. Horseshoe magnet
B. Attractive property	( )	b. Magnetic flux
C. Natural magnet	( )	c. Resultant magnetic field is zero
D. Artificial magnet	( )	d. Study of earth's magnetic field
E. Permanent magnet	( )	e. Repulsion
F. Temporary magnet	( )	f. Lodestone
G. Sure test of magnetism	( )	g. Mariner's compass
H. Magnetic lines of force passing perpendicular to a given area	( )	h. Steel
I. Null points	( )	i. Magnetic separation
J. Terrestrial magnetism	( )	j. Soft iron

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Level 2

1. In the figure shown below if 'D' isa diamanetic substance placed between two strong magnetic poles, map the magnetic lines of force.

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

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3. Using a compass needle low would you distinguish between three bars similar in shape and appearance if one is brass, the second is an unmagnetised iron and the third is a permanent magnet ?

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4. 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.

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5. When an iron bar is magnetised, there will be a slight increases in its length. Explain.

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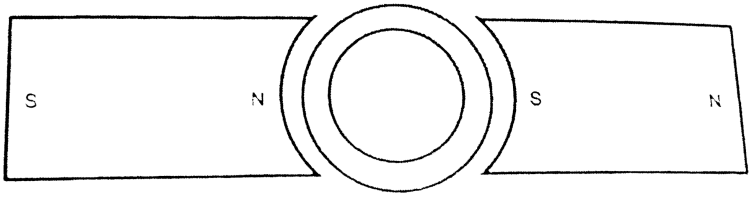
6. In which direction would a compass needle point when placed at the centre of the soft iron ring shown in the figure below ? Substantiate your answer with reason



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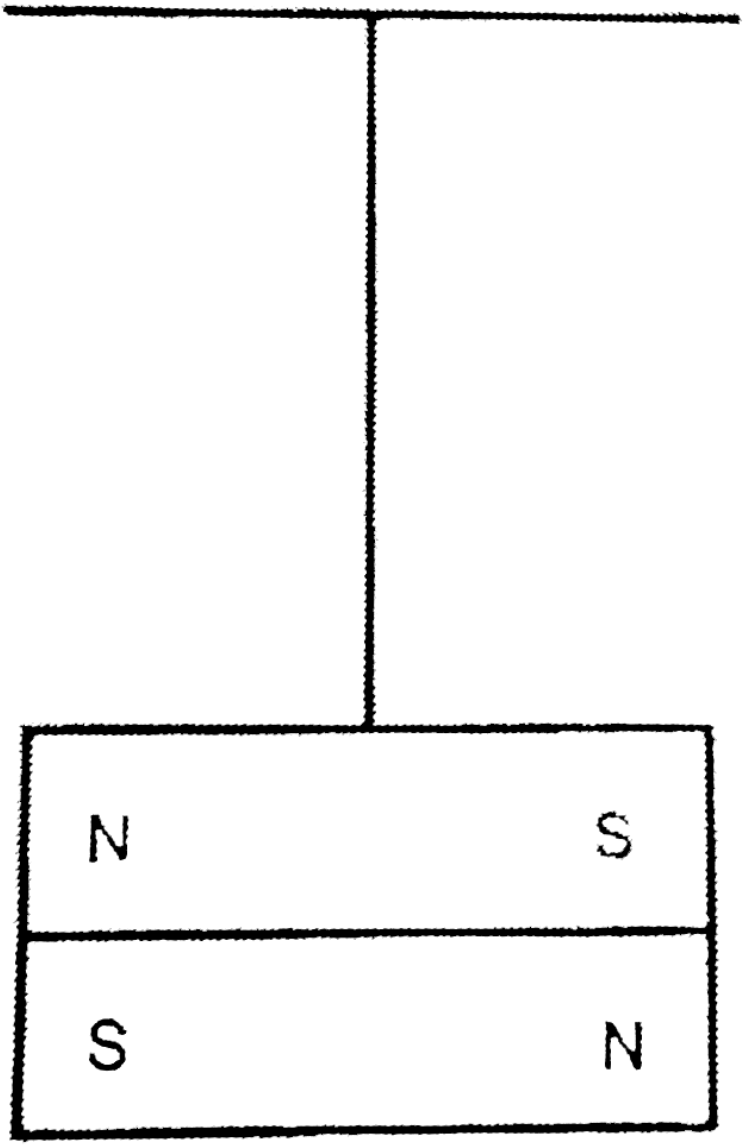
7. There are two identical bar magnets attached together as shown in the figure and suspended with the help of a thread. On being disturbed slightly, in which direction would the magnets

point ? Explain your answer.



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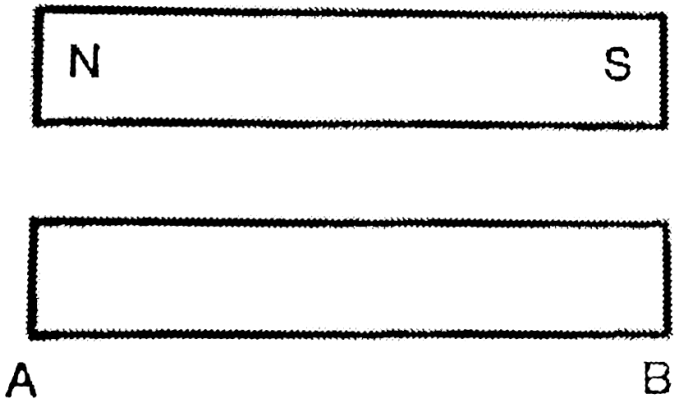
8. A bar magnet and a soft iron bar AB are placed close to each other as shown below



Mark the polarity of induced magnetism in the soft iron bar with the help of lines of force. Explain by giving reasons for the polarity marked by you.

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9. The angle between the geographical axis and the magnetic axis is 17°, then why does the value of angle of declination change from place to place ?

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10. If a traveller using a compass needle follows the direction of the magnetic needle, would be able to reach the geographic north pole ? Explain in detail.

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11. Explain why isolated magnetic pole do not exist ?

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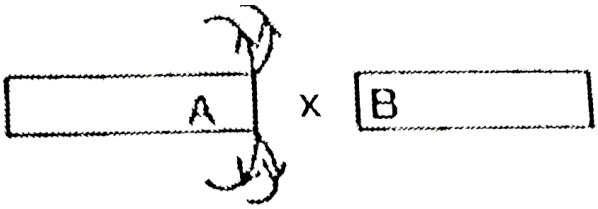
12. In the following diagram if 'x' is a neutral point, identify the magnetic poles A and B. explain your answer.



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13. Energy used by maglev trains:

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14. Two similar bar magnets P and Q each of magnetic moment M, are taken,. If P is cut along its axial line and Q is cut along its equatorial line, all the four pieces obtained have

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15. Explain why ' magnetic field lines never intersect with each other'.

Watch Video Solution

Level 3

1. How can a magnet be demagnetized ?

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2. why earth can be considerd as a huge bar magnet.

Watch Video Solution

3. An unmagnetized steel bar buried in earth in the north -south direction would, after a few days, exhibit magnetic properties, making it a weak magnet. Explain by giving reasons how this is possible. In what way will the effect be different if the steel bar is to be placed above the surface of earth ?

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4. How would mapping of the lines of force differ in two bar magnets of unequal pole strength ? On the basis of this concept , explain the statement 'magnetic induction is directly proportional to the strength of the induced magnet'.

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Test Your Concepts Very Short Answer Type Questions

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2. What is meant by self induction ?

Watch Video Solution

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Watch Video Solution

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Watch Video Solution

12. What is an artificial magnets?

Watch Video Solution

13. What is the effective length of a bar magnet ?

Watch Video Solution

14. Assertion : Diamagnetic substances are not attracted by magnetic field.

Reason : Diamagnetic substances have no unpaired electrons.

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15. What is a magnetic pole ?

Watch Video Solution

16. When a magnet is broken into two parts, each part will have_____poles .

Watch Video Solution

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18. Which is more powerful between a bar magnet and a horshoe magnet ?

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19. When an iron bar is placed nearer to the north pole of magnet, the south poles of the molecular magnets in the iron bar point towards_____

Watch Video Solution

20. A freely suspended magnet comes to rest in the ____ direction.

Watch Video Solution

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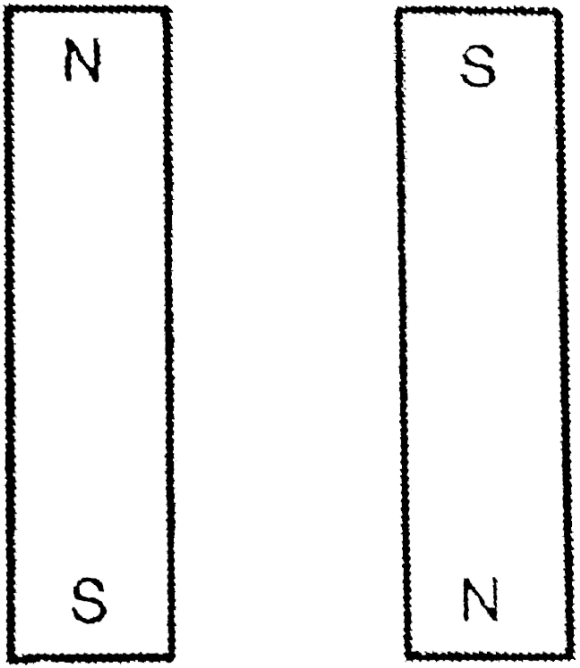
36. Draw the lines of force due to two bar magnets, north pole of one facing the south pole of the other.

Watch Video Solution

37. Why does north pole of a magnet points towards geographical north ?

Watch Video Solution

38. Draw a neat diagram of lines of force around two bar magnets placed as shown in the figure



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39. Give details regarding angle of inclination and declination.

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42. Explain why ferromagnetic substances are used to make permanent magnets.

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43. Write short notes on magneic keepers.

Watch Video Solution

44. Magnetic induction precedes attraction. Explain

Watch Video Solution

45. What properties of magnetic substance are explained on the basis of molecular theory ?

Watch Video Solution

46. Draw the lines of force of a bar magnet neglecting the earth's magnetic field.

Watch Video Solution

47. Give two properties of lines of force.

Watch Video Solution

48. Draw the lines of force due to two bar magnets, the north pole of one facing the north pole of the other.

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Concept Application Level 1

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Watch Video Solution

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Watch Video Solution

6. Isolated north pole can be produced.

Watch Video Solution

7. Natural magnets are stronger than artificial magnets.

Watch Video Solution

8. Effective length of a magnet is_____than its actual length.

Watch Video Solution

9. In order to prevent loss of magnetism, _____are used.

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10. PASSAGE-I : A magnetic field is described by drawing the magnetic field lines. The magnetic field lines always begin from the north pole of magnet and end on the soth pole of the magnet. They do not intersect each other. They come closer to one another near the poles but they are widely separated at other places.

The magnetic field lines

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

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12. The point beyond which a magnet cannnot be magnetised any further is called_____.

Watch Video Solution

13. The end of a freely suspended magnet which points to the magnetic north of earth is _____

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14. When a bar magnet is brought near an iron rod _____ precedes _____

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15.

Column A		Column B
A. Directive property	( )	a. Horseshoe magnet
B. Attractive property	( )	b. Magnetic flux
C. Natural magnet	( )	c. Resultant magnetic field is zero
D. Artificial magnet	( )	d. Study of earth's magnetic field
E. Permanent magnet	( )	e. Repulsion
F. Temporary magnet	( )	f. Lodestone
G. Sure test of magnetism	( )	g. Mariner's compass
H. Magnetic lines of force passing perpendicular to a given area	( )	h. Steel
I. Null points	( )	i. Magnetic separation
J. Terrestrial magnetism	( )	j. Soft iron

View Text Solution

16. Magnetic lines of force are

A. directed from the north pole to south pole in the magnetic field

B. directed from the south pole to north pole inside a magnet.

C. closed loops

D. All the above

Answer: D

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17. In which of the following devices temporary magnets are used ?

A. Dynamo

B. Electric motors

C. Generators

D. Electric cranes

Answer: D

Watch Video Solution

18. Which of the following properties of a magnet is/are used in navigation ?

A. Pair property

B. Laws of magnetic poles

C. Directional property

D. Attractive property

Answer: C

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19. Choose the correct match

A Ferromagnetic (a) water

B. Diamagnetic (b) cobalt

C. Paramagnetic (c) chroomium

A. A-b, B-c,C-a

B. A-c,B-a,C-b

C. A-b,B-a,C-c

D. A-a,B-c,C-b

Answer: C

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20. The direction of magnetic field at any point inside the field is given by _____.

A. perpendicular to the line of force

B. tangent to the line of force

C. the line of force itself

D. None of the above

Answer: B

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21. Which of the following is a non- magnetic substance ?

A. Cobalt

B. Iron

C. Copper

D. Nickel

Answer: C

Watch Video Solution

22. When an iron bar is moved over a bar magnet along its length the attractive force_____

A. increases first and then decreases

B. decreases first and then increases

C. remains same

D. increase

Answer: B

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23. The attracting power of a magnet is

A. evenly distributed along its length.

B. maximum at its centre.

C. maximum at its poles.

D. minimum at its poles.

Answer: C

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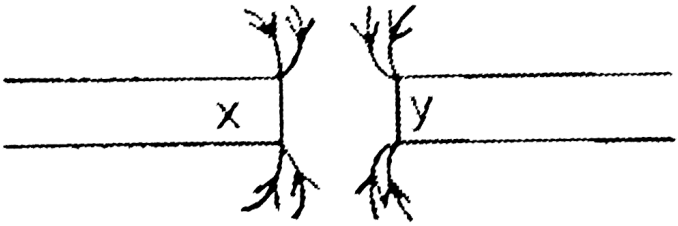
24. 

The above diagrame is the pattern of magnetic lines of force obtained when two magnets are placed with their magnetic axes coinciding. The magnetic poles x and y are_____and _____respectively.

A. north, south

B. south, north

C. north, north

D. south, south

Answer: D

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25. In the single touch method of magnetization , the north pole of a bar magnet is rubbed against a steel rod. Then the polarity of the end of the steel rod at which the magnet leaves

A. is the south.

B. is the north.

C. depends upon the material.

D. None of these

Answer: A

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26. Assertion: Magnetic lines of force never intersect.

Reason: The direction of magnetic lines of force in a magnetic field is from north to south.

A. Assertion and reason are correct and reason is the correct explanation.

B. Assertion is correct and reason is wrong

C. Assertion and reason are correct but reason is not the correct explanation for the assertion

D. Assertion and reason are wrong.

Answer: C

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27. The vertical plane in which magnetic needle lies at a place is called_____

A. geographical meridian

B. magnetic equator

C. geographical equator

D. magnetic meridian

Answer: D

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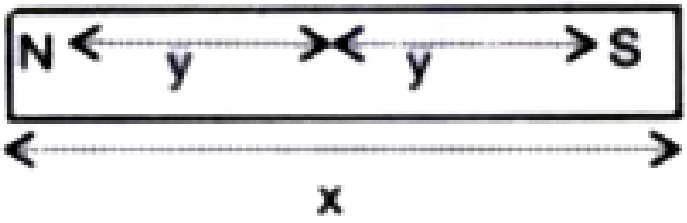

28.

The effective length of the magnet shown above is

A. x

B. 2y

C. x

D. x/2

Answer: B

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29. The equatorial meridian of a magnet_____

A. bisects the magnetic axis perpendicularly

B. is parallel to the magnetic axis

C. makes certain angle with the magnetic equator

D. contains both the poles of the magnet

Answer: A

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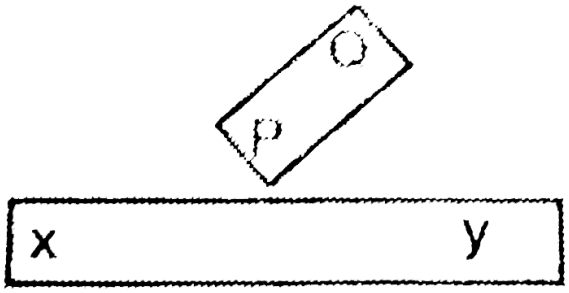
30. A bar magnet is moved over a steel bar as shown in the figure.

Choose the correct alternative from the following



A. The end x becomes north pole if 'p' is south pole when moved from the end x to y

B. the end y will become a south pole if p is a south pole and moved from the end y tox

C. the end x will be a south pole if 'p' is a south pole and moved from x to y

D. Both (b) and (c)

Answer: D

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31. When a magnet is broken into two parts,

A. the bigger part acts like the north pole

B. the smaller part acts like the north pole.

C. both the parts will have both the poles.

D. polarity of each part depends upon the material

Answer: C

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32. In the electrical method of magnetization, the polarity of the end in which current flows in clockwise direction

A. is the north pole

B. is the south pole

C. does not depend upon the direction of current flow

D. Cannot be determined.

Answer: B

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33. An electric bell works on the principle of _____

A. magnetic induction

B. attractive property of magnets

C. ttractive property of magnets

D. All the above

Answer: D

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34. The angle of declination is

A. 90° at the poles

B. 0° at the equator

C. variable

D. None of the above.

Answer: C

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35. Ewing's molecular theory does not explain

A. saturation point of magnetization.

B. existence of two poles in a magnet.

C. paramagnetism

D. None of the above

Answer: C

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36. Which of the following substance is repelled by strong magnet ?

A. Iron

B. Platinum

C. Gold

D. Aluminium

Answer: C

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37. In Which of the following devices is a permanent magnet not used ?

A. Electric motor

B. Telegraph

C. Generators

D. Particle accelerators

Answer: B

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38. A substance placed near a strong magnet is attracted by it, substance can be _____.

A. a magnet

B. paramagnetic substance

C. Ferromagnetic substance

D. All the above.

Answer: D

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39. In an unmagnetised iron bar, the molecules form _____.

A. circular chains

B. long straight chains

C. closed chains

D. opposite, parallel chains

Answer: C

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40. Arrange the following statement in sequential order the process of plotting the lines of force around a bar magnet.

(a) Draw a line in the middle of a white paper fixed on a drawing board.

(b) Repeat the procedures described above, by shifting the compass and plot the points 2,3,4 , etc.

(c) Place a bar magnet NS on the line so that its axial line coincides with the line on the paper and mark its boundary.

(d) Join the points 0,1,2,3,....by a smooth curve.

(e) Take a plotting compass and place it such that its south pole is directed towards point 0 at the

edge of the bar magnet, and mark point 1 in the direction in which the north pole of the plotting compass points.

A. A C E B D

B. A B C E D

C. E B C A D

D. E A B C D

Answer: A

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41. A bar magnet has a pole strength of 15 Am. If the distance from its centre of either of the poles is 15 cm, arrange the following steps in sequential order to find its magnetic moment in SI unit.

(a) Write the given value of pole strength (m) of the magnet.

(b) Substitute the value in the above formula to get the value of M.

(c) Find the value of length (l) of the magnet from the problem and convert it into SI unit.

(d) Write the required formula, i.e., magnetic moment (M)=mx 2l

A. A C B D

B. C A B D

C. A D C B

D. D B A C

Answer: C

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42. Arrange the following statement is sequential order to magnetize a steel bar using single touch method.

(a) Once, it has reached the other end, lift the

magnet away from the steel bar and again bring it to the starting point.

(b) Keep a steel bar to be magnetized on a wooden table.

(c) Take a strong magnet and bring one of the poles of the magnet near one end of the steel bar and gently rub from one end to the other end.

(d) Repeat this process several times.

A. B C A D

B. B A C D

C. C B D A

D. C A B D

Answer: A

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43. The magnetic moment of a bar magnet 'A' and its length are twice that of another bar magnet 'B'. Arrange the following steps in sequential order to find the ratio of their pole strengths.

(a) Write the given values of magnet moment (M) and magnetic length (2l) of the bar magnets A and B as $M_B = 2M_A$ and $2l_B = 2(2l_A)$

(b) Write the expression for pole strength (m) for each magnet using $m = \frac{M}{2l}$

(c) Divide the two expression to get the ratio of m_A to m_B

A. B A C

B. A C B

C. B C A

D. A B C

Answer: D

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Concept Application Level 2

1. In the figure shown below if 'D' isa diamanetic substance placed between two strong magnetic poles, map the magnetic lines of force.

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

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3. Using a compass needle low would you distinguish between three bars similar in shape and appearance if one is brass, the second is an unmagnetised iron and the third is a permanent magnet ?

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4. Can we use a dip cricle to identify the magnetic meridian of earth?

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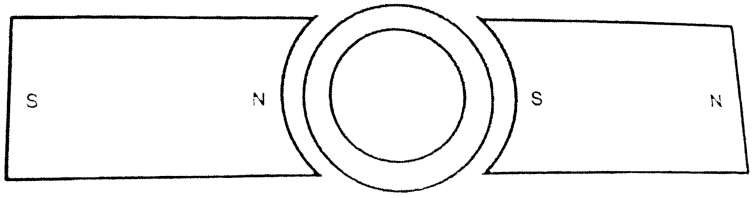
5. In which direction would a compass needle point when placed at the centre of the soft iron ring shown in the figure below ? Substantiate your answer with reason



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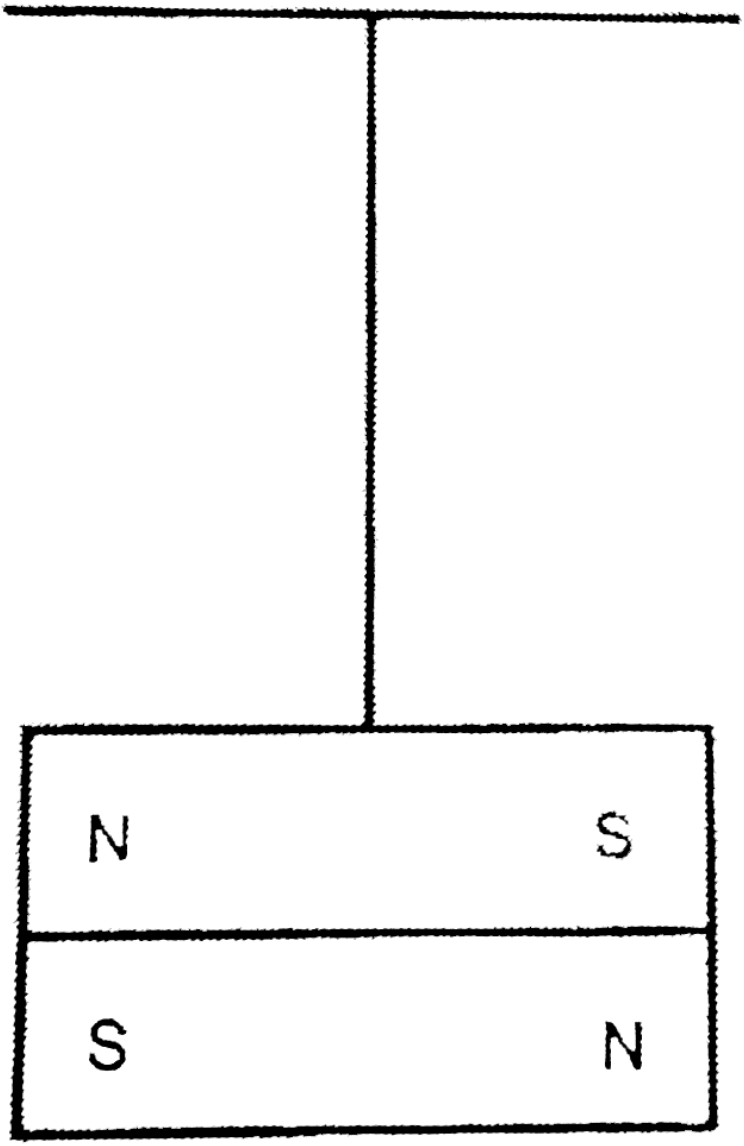
6. There are two identical bar magnets attached together as shown in the figure and suspended with the help of a thread. On being disturbed slightly, in which direction would the magnets

point ? Explain your answer.



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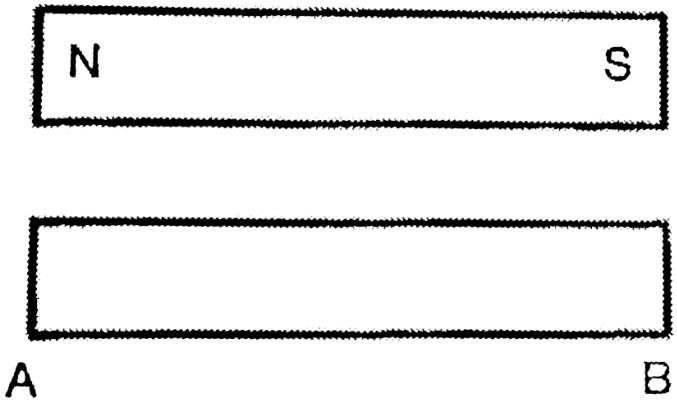
7. A bar magnet and a soft iron bar AB are placed close to each other as shown below



Mark the polarity of induced magnetism in the soft iron bar with the help of lines of force. Explain by giving reasons for the polarity marked by you.

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8. The angle between the geographical axis and the magnetic axis is 17°, then why does the value of angle of declination change from place to place ?

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9. If a traveller using a compass needle follows the direction of the magnetic needle, would be able to reach the geographic north pole ? Explain in detail.

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10. Explain why isolated magnetic pole do not exist ?

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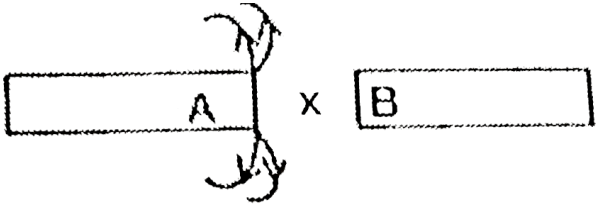
11. In the following diagram if 'x' is a neutral point, identify the magnetic poles A and B. explain your answer.



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12. Explain the principle behind maglev trains

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13. Two identical bar magnets are taken and one is cut along the axial line and another is cut along the equatorial line. Will there be any difference in the number of iron filings attracted by each piece of the magnets. Explain.

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14. Explain why ' magnetic field lines never intersect with each other'.

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Concept Application Level 3

1. Explain how a magnet gets demagnetized when an alternative current is passed through a coil in which the magnet is placed.

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2. How can the earth be considered a magnet when the exact cause for its magnetism cannot be ascertained?

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3. An unmagnetized steel bar buried in earth in the north -south direction would, after a few days, exhibit magnetic properties, making it a weak magnet. Explain by giving reasons how this is possible. In what way will the effect be different if the steel bar is to be placed above the surface of earth ?

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4. How would mapping of the lines of force differ in two bar magnets of unequal pole strength? On the basis of this concept, explain the statement Magnetic induction is directly proportional to the strength of the inducing magnet'.

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