

\* Choose The Right Answer From The Given Options.

[21]

1. There are following number of poles of magnet

- (A) one                      (B) two                      (C) three                      (D) four

**Ans. :** (B) two

2. Like poles

- (A) repel each other  
(B) attract each other  
(C) sometimes repel and sometimes attract  
(D) no effect at all.

**Ans.:** (A) repel each other

3. Unlike poles

- (A) repel each other  
(B) attract each other  
(C) sometimes repel and sometimes attract  
(D) no effect at all.

**Ans. :** (B) attract each other

4. A magnet is also called lodestone because

- (A) it lifts load                      (B) it is a stone  
(C) it tells us direction                      (D) none of these.

**Ans. :** (C) it tells us direction

5. Which of the following combination is of nonmagnetic materials?

- (A) Plastic, wood, iron and paper                      (B) Iron, nickel and cobalt  
(C) Leather, iron, nickel and clothes                      (D) Plastic, leather, clothes and paper

**Ans. :** (D) Plastic, leather, clothes and paper

6. A freely suspended magnet always aligns in

- (A) north direction                      (B) south direction  
(C) east-west direction                      (D) north-south direction.

**Ans. :** (D) north-south direction.

7. A magnet attracts

- (A) iron, nickel, plastic                      (B) book, pen, pencil  
(C) bench, chair, cobalt                      (D) nickel, iron, cobalt.

**Ans. :** (D) nickel, iron, cobalt.



8. A magnet made by man is called  
(A) artificial magnet (B) natural magnet (C) either (a) or (b) (D) none of these.

**Ans.:** (A) artificial magnet

9. Which material is commonly used to demonstrate magnetic properties due to its strong attraction towards magnets?

(A) Aluminum (B) Copper (C) Iron (D) Silver

**Ans. :** (C) Iron

10. The strength of a magnet is maximum at

(A) north pole (B) south pole (C) both (a) and (b) (D) at the middle.

**Ans. :** (C) both (a) and (b)

11. A compass shows the direction of

(A) east (B) north (C) north-south (D) west

**Ans. :** (C) north-south

12. Which statement is true about non-magnetic materials?

- (A) They include iron, nickel, and cobalt.
- (B) They are attracted towards magnets.
- (C) They are usually metals.
- (D) They do not respond to magnets.

**Ans. :** (D) They do not respond to magnets.

13. Following are the evidences of pure magnet

- (A) attraction
- (B) repulsion
- (C) sometimes attraction sometimes repulsion
- (D) none of these.

**Ans. :** (B) repulsion

14. Which of the following is not a magnetic material ?

(A) stainless steel (B) steel (C) nickel (D) iron

**Ans.:** (A) stainless steel

15. Which of the following items cannot be picked up by a magnet ?

(A) iron nails (B) aluminium foils (C) paper clips (D) hair pins

**Ans. :** (B) aluminium foils

16. The poles of a magnet are located at its

(A) lower surface (B) upper surface (C) ends (D) middle point

**Ans. :** (C) ends



17. A compass shows the direction of  
(A) east (B) north (C) north-south (D) west

**Ans. :** (C) north-south

18. Magnetic can be protected against self-demagnetisation by keeping the two magnets  
(A) with their similar poles on the same side and soft iron keeper in between  
(B) with their opposite poles joined with soft iron keepers and a wooden piece in between the two  
(C) at angles to each other  
(D) over each other lengthwise.

**Ans. :** (B) with their opposite poles joined with soft iron keepers and a wooden piece in between the two

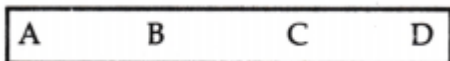
19. What will happen when the two magnets shown below are pushed towards each other?



- (A) They will repel each other (B) They will heat up  
(C) They will attract each other (D) Nothing will happen

**Ans.:** (A) They will repel each other

20. Which part of the following bar magnet has the weakest pull?



- (A) A (B) B (C) C (D) D

**Ans. :** (B) B

21. Which of these materials can be used to make a temporary magnet ?

- (A) a piece of iron (B) a piece of paper (C) a piece of wood (D) a piece of plastic

**Ans.:** (A) a piece of iron

\* a statement of Assertion (A) is followed by a statement of Reason (R). Choose [10]  
the correct option.

22. Assertion (A): Magnet that attracts materials like iron (Fe), nickel (Ni), cobalt (Co) are called magnetic materials.

Reason (R): Materials that are not attracted towards magnet are called non-magnetic materials.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).  
(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

23. Assertion (A): There is only one pole of bar magnet.

Reason (R): A magnet has North (N) and South (S) pole.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (D) (A) is false but (R) is true.

24. Assertion (A): Opposite poles of two magnets attract each other whereas similar poles repel one another.

Reason (R): A freely suspended magnet always aligns in North-South direction.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

25. Assertion (A): The process of making magnet from iron is natural method.

Reason (R): There are different shapes of magnet like bar magnet, horse-shoe magnet, ball or cylindrical ended magnet.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (D) (A) is false but (R) is true.

26. Assertion (A): Substances having the property of attracting pieces of iron or some other magnetic substances are called magnets.

Reason (R): Magnetite is called natural magnet.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (B) Both (A) and (R) are true and (R) is not the correct explanation of (A).



27. Assertion (A) : Bar magnets are kept in pairs with their unlike poles on the same side.

Reason : Magnets become weak if they are not stored properly.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans.:** (A) Both (A) and (R) are true and (R) is the correct explanation of (A).

28. Assertion (A) : Materials that are not attracted towards magnet are called nonmagnetic.

Reason: Non-magnetic materials cannot be converted into magnets.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

29. Assertion (A) : Every magnet, has a north pole and a south pole.

Reason : It is possible to have a magnet having only one pole.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (C) (A) is true but (R) is false.

30. Assertion (A) : A freely suspended magnet always points in the east-west direction.

Reason : Like magnetic poles repel each other, unlike magnetic poles attract each other.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans. :** (D) (A) is false but (R) is true.

31. Assertion (A):The door of a refrigerator remains tightly closed.

Reason : magnet used in refrigerator door keep it tightly closed.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A).



(B) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(C) (A) is true but (R) is false.

(D) (A) is false but (R) is true.

**Ans.:** (A) Both (A) and (R) are true and (R) is the correct explanation of (A).

**\* Fill In The Blanks With Correct Alternative.**

**[33]**

32. When a suspended magnet comes to rest, one pole always points towards the \_\_\_\_\_

**Ans. :** North

33. And the other pole always points towards the \_\_\_\_\_

**Ans. :** South

34. Unlike poles of two magnets \_\_\_\_\_ each other, whereas like poles \_\_\_\_\_ each other.

**Ans. :** (1)attract, (2)repel

35. The materials that are attracted towards a magnet are called \_\_\_\_\_.

**Ans. :** magnetic materials

36. The needle of a magnetic compass rests along the \_\_\_\_\_ direction.

**Ans. :** North - South

37. A magnet always has \_\_\_\_\_ poles.

**Ans. :** two

38. Artificial magnets are made in different shapes such as \_\_\_\_\_, and \_\_\_\_\_.

**Ans. :** bar magnet, horseshoe magnet

39. The red end of a magnetic compass needle always points towards \_\_\_\_\_

**Ans. :** North

40. The Earth's magnetic field is rather like that of a \_\_\_\_\_ magnet with its \_\_\_\_\_ pole in the northern hemisphere.

**Ans. :** bar, south

41. If a N -pole is used in the stroking method of magnetisation the end where the stroking begins is a \_\_\_\_\_ pole.

**Ans. :** north

42. The needle of a magnetic compass always points towards the \_\_\_\_\_ magnetic pole.

**Ans. :** Earth's

43. If you move a magnet around a magnetic compass, the needle may \_\_\_\_\_ because of the magnet's influence.



**Ans. :** deflect

44. \_\_\_\_\_ is used by Indians for navigation at sea.

**Ans. :** Matsya-yantra

45. A magnetic compass is usually a \_\_\_\_\_ box.

**Ans. :** small circular

46. A magnet has \_\_\_\_\_ poles.

**Ans. :** two

47. The substances having the property of attracting iron are known as \_\_\_\_\_ .

**Ans. :** magnets

48. Artificial magnets have \_\_\_\_\_ shapes.

**Ans. :** different

49. The materials which are non attractive towards a magnet are called \_\_\_\_\_ .

**Ans. :** non-magnetic

50. A compass shows the \_\_\_\_\_ .

**Ans. :** directions

51. \_\_\_\_\_ is the evidence of a magnet.

**Ans. :** Repulsion

52. The compass needle is also a \_\_\_\_\_.

**Ans. :** magnet

53. Crane that picks up iron from the junk yard uses \_\_\_\_\_.

**Ans. :** electrical magnet

54. Stickers, pin holders and pencil boxes have \_\_\_\_\_ fitted inside.

**Ans. :** magnets

55. The attraction of a magnet is strongest at its \_\_\_\_\_.

**Ans. :** poles

56. A \_\_\_\_\_ is an object that attracts other objects made of iron, cobalt or nickel.

**Ans. :** magnet

57. If a N -pole is used in the stroking method of magnetisation, the end where the stroking begins is a \_\_\_\_\_ pole.

**Ans. :** north

58. The south pole one magnet \_\_\_\_\_ the south pole of another magnet.

EXPLORING MAGNETS

**Ans. :** repels

59. The materials which are attracted towards a magnet are called \_\_\_\_\_. materials.

**Ans. :** magnetic

60. Strong magnets can be demagnetised by \_\_\_\_\_ .

**Ans. :** Hammerings

61. The end of a freely suspended magnet, which points towards the geographical south pole is \_\_\_\_\_.

**Ans. :** South pole

62. The materials which are non-attractive towards a magnet are called \_\_\_\_\_.

**Ans. :** non-magnetic

63. Crane picks up iron from the junk food uses \_\_\_\_\_.

**Ans. :** electro-magnet

64. Stickers, pin holders and pencil boxes have \_\_\_\_\_ fixed inside

**Ans. :** magnets

**\* State Whether The Sentences Are True Or False.[1 Marks Each]**

**[31]**

65. A magnet can be broken into pieces to obtain a single pole.

**Ans. :** false

66. Similar poles of a magnet repel each other.

**Ans. :** true

67. Iron filings mostly stick in the middle of a bar magnet when it is brought near them.

**Ans. :** false

68. A freely suspended bar magnet always aligns with the north-south direction.

**Ans. :** true

69. Repulsion is a sure test of magnetism.

**Ans. :** True

70. It is possible to obtain an isolated north pole of a magnet.

**Ans. :** False

71. Copper cannot be magnetised.

**Ans. :** True

72. A magnet loses its magnetism when heated strongly and kept it in the east-west direction.

**Ans. :** True

73. A compass is used to find direction.

**Ans. :** True

74. A wooden material can be magnetised.

**Ans. :** False

75. Poles of a bar magnet are located in the middle.

**Ans. :** False

76. Two poles of a magnet can be separated from each other.

**Ans. :** False

77. Lodestone is a natural magnet.

**Ans. :** True

78. Each magnet has two magnetic poles.

**Ans. :** True

79. Opposite poles of two magnets repel each other whereas similar poles attract one another.

**Ans. :** False

80. The compass has a dial with directions marked on it.

**Ans. :** True

81. A bar magnet has maximum strength in the middle.

**Ans. :** False

82. A bar magnet has three poles.

**Ans. :** True

83. The substances having the property of attracting iron are known as magnets.

**Ans. :** True

84. A non-magnetic substance is attracted by magnet.

**Ans. :** False

85. A freely suspended magnet always aligns in East-south direction.

**Ans. :** False

86. It is possible to obtain an isolated north pole of a magnet.

**Ans. :** False

87. Copper cannot be magnetised.

**Ans. :** True

88. A nickel wire is attracted by a magnet.

**Ans. :** False

89. Maximum iron filings stick in the middle of a bar magnet when it is brought near them.

**Ans. :** False

90. Gold is a non-magnetic material.

**Ans. :** True

91. A compass can be used to find EastWest direction at any place.

**Ans. :** True

92. Rubber is a magnetic material.

**Ans. :** False

93. Repulsion is a sure test of magnetism.

**Ans. :** True

94. A magnet loses its magnetism when heated strongly and kept in the eastwest direction.

**Ans. :** True

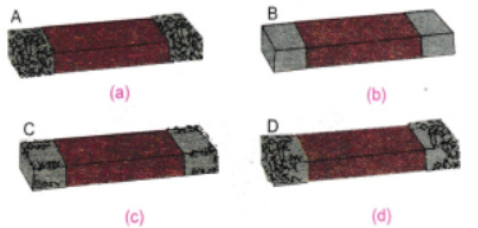
95. A compass needle is a magnet.

**Ans. :** True

**\* Answer The Following Questions In One Sentence.[1 Marks Each]**

**[39]**

96. Four identical iron bars were dipped in a heap of iron filings one-by-one. Fig. shows the amount of iron filings sticking to each of them.



(a) Which of the iron bar is likely to be the strongest magnet?

(b) Which of the iron bar is not a magnet? Justify your answer.

**Ans. :** (a) Iron bar (i) seems to be the strongest magnet because it has maximum amount of iron filings attracted.

(b) Iron bar (ii) is not a magnet because no iron filings have been attracted by it.

97. What are magnetic materials (substances)?

**Ans. :** Materials which get attracted by the magnet are called magnetic materials (substances).

98. What are non magnetic substances?

**Ans. :** Substances which are not attracted by magnet are called non-magnetic substances.



99. Write the names of some non magnetic substances.  
**Ans. :** Rubber, Cotton, Plastic, Wood, Button, Cloth, etc.
100. Name the first magnet.  
**Ans. :** Lodestone.
101. What is lodestone?  
**Ans. :** Lodestone is a type of iron. It bears the properties of magnet.
102. What are the properties of a magnet?  
**Ans. :** (1). It attracts iron pieces towards itself.  
(2). It always aligns itself in the same direction, if left to rotate freely.  
(3). It is composed of oxides of iron ( $\text{Fe}_3\text{O}_4$ ).
103. How will you test that 'tea dust' is not adulterated with iron powder?  
**Ans. :** We will test that 'tea dust' is not adulterated with iron powder by using magnet. If it has iron powder they will stick onto the magnet.
104. How many poles are there in a magnet?  
**Ans. :** There are two poles in a magnet, north-pole and south-pole.
105. To which part of the magnet do the most of the iron filings (or pins) stick?  
**Ans. :** Most of the iron filings (or pins) stick to the poles, i.e., north and south poles. At these poles of magnet, magnetic effect is maximum.
106. To which part of the magnet do none or only a few iron filings (or pins) stick?  
**Ans. :** Minimum number of iron filings stick to the middle part of the magnet. Magnet has its magnetic effect least in this part (middle part).
107. Are both poles of a magnet similar?  
**Ans. :** No, the two poles of a magnet are not similar (alike). Both have different tendency. The pole that points towards the north is called north-pole while the pole pointing always towards the south is called south-pole
108. Which is the north-pole of a bar magnet?  
**Ans. :** It is the tip of a bar magnet which points towards the north direction.
109. Which is the south-pole of a bar magnet?  
**Ans. :** It is the tip of a bar magnet that points towards the south direction.
110. Can we isolate north-pole or south-pole?  
**Ans. :** No, we cannot isolate north- pole of a magnet from its south-pole or vice versa. If you break a bar magnet into two halves, you will not get a single north or south pole but two magnets each with its north and south-poles.
111. What happens when a pole of a bar magnet say its north-pole is marked with a chalk and suspended freely? What do you observe on rotating the bar magnet?



**Ans. :** The marked pole comes to rest in north direction. On rotating, after some time, it again comes to rest in north direction.

112. In which direction does freely suspended magnet rest?

**Ans. :** A freely suspended magnet always points in the north-south direction.

113. How do the shipmen find the direction even when north pointing pole star is not visible?

**Ans. :** Shipmen during navigation can find the "direction with the help of magnetic needle.

114. Why is compass needle kept in a closed glass vessel?

**Ans. :** Compass needle is a small and thin magnet used to find the direction. If it is kept in open, it may deflect in any direction due to pressure exerted by air. So to know right direction, it is kept covered by glass covering.

115. Hang a bar magnet with a thread on a stand and rotate the base of stand. What will happen?

**Ans. :** The direction of bar magnet is not changed as we rotate the stand. It is because a freely suspended magnet comes to rest in particular direction, i.e., north-south directions.

116. What happens when similar poles come close to each other?

**Ans. :** They repel each other.

117. When do two magnets attract each other?

**Ans. :** Two magnets attract each other when their unlike (opposite) poles come close to each other.

118. What do you mean by magnetic field?

**Ans. :** The region around the magnet where its magnetic influence can be felt is called the magnetic field of the magnet.

119. Three identical bars are kept on a table. Two out of three bars are magnets. In one of the magnets, the north-south poles are marked. How will you find out which of the other two bars is a magnet? Identify the poles of this magnet.

**Ans. :** To find out the magnet

(i) Take the bar magnet A in your hand.

(ii) Take the bar magnet B in other hand.

(iii) Bring one side of B towards south pole and note down it is attracted or repelled.

(iv) Bring other side of B towards south pole and again note down the same thing.

(v) If there is an attraction in both cases (iii) and (iv), then it is definitely an iron bar.

(vi) If there is an attraction in one case and repulsion in other case, then it is a bar magnet.

(vii) Do the same for the iron bar C.



### To find out the poles

If in case (iii), the bar is attracted, then it is north pole of the identified bar magnet. If bar is repelled, then it is obviously a south pole of the identified bar magnet.

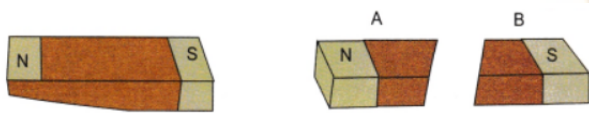
120. Boojho kept a magnet close to an ordinary iron bar. He observed that the Iron bar attracts a pin as shown in Fig.



What inference could he draw from this observation? Explain.

**Ans. :** When we place any iron bar near a bar magnet, it becomes a temporary magnet and small objects like pin, iron filings can be attracted by it. But when we remove this bar from magnet, it again becomes an iron bar and does not attract the small iron objects.

121. A bar magnet is cut into two pieces A and B from the middle as shown in figure.



Will the two pieces act as individual magnets? Mark the poles of these two pieces. Suggest an activity to verify your answer.

**Ans. :** Yes, two pieces will work as an individual magnets because a monopole (single pole) of magnet never exists.



### Activity

- Place the magnet, so formed (*A* and *B*) on the table.
  - Bring the north pole of both magnets towards each other, they will be repelled.
  - Bring the north and south poles of both magnets towards each other, they will attract.
122. Why should we not beat or hammer a magnet?

**Ans. :** By heating or hammering a magnet may lose its magnetic property. It is thus advised not to beat or hammer a magnet.

123. Why magnets should be kept away from mobiles, computer and compact disks (CDs)?

**Ans. :** Televisions, mobiles, CD, computers and many more devices are made up of magnetic materials and magnets in it. If you bring a magnet closer to it then it will spoil these devices.

124. Mention some important precautions to handle magnets.

**Ans. :** (1) Do not heat  
(2) Do not hammer



(3) Do not drop

125. It was observed that a pencil sharpener gets attracted by the poles of a magnet, although its body is made of plastic. Name a material that might have been used to make some part of it.

**Ans. :** The blade of a pencil sharpener is made of iron which is a magnetic material. Due to this a pencil sharpener gets attracted towards the poles of a magnet.

126. Atharv performed an experiment in which he took a bar magnet and rolled it over a heap of steel U-clips. According to you, which of the options given in table is likely to be his observation?

	Position A	Position B	Position C
(i)	10	2	10
(ii)	10	10	2
(iii)	2	10	10
(iv)	10	10	10

Table: Number of pins attracted by the magnet at its various positions

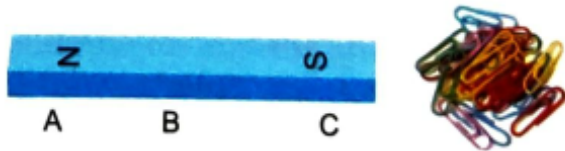


Fig. Bar magnet and heap of steel U-clips

**Ans. :** (i) Magnetic strength is maximum and equal at poles.

127. What is lodestone?

**Ans. :** A natural magnet

128. What is magnet?

**Ans. :** The substances having the property of attracting iron, nickel or cobalt are called magnets.

129. How can you determine north and south poles of a bar magnet?

**Ans. :** By suspending magnet

130. Name three magnetic materials.

**Ans. :** Iron, nickel and cobalt.

131. How many poles a bar magnet has? What are their names?

**Ans. :** Each magnet has two magnetic poles North and South.

132. If a magnet is freely suspended, what alignment will it take?

**Ans. :** A freely suspended magnet always aligns in North (N)-South(S) direction.

133. When does a magnet lose its magnetic property?

**Ans. :** A magnet loses its property when heated, hammered or dropped from a height.

134. What is the use of a compass?

**Ans. :** Compass is used to find direction usually by travellers.

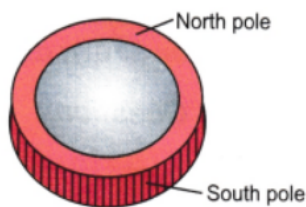
**\* Answer The Following Questions In Short.[2 Marks Each]**

**[28]**

135. Do magnetic poles exist separately like charges? Explain.

**Ans. :** Magnetic poles do not exist separately like positive and negative charges. This means that it is not possible to isolate a north pole of a magnet from its south pole by cutting the magnet from the middle. Whenever a bar magnet is cut into two halves, we get two new magnets, each with its north and south poles. This will continue indefinitely even if extremely small pieces of bar magnets are obtained. Thus magnetic poles always exist in pairs.

136. Where are the poles of a ring magnet? How will you find this?



**Fig. Ring Magnet**

**Ans. :** Ring type or circular magnet also has two poles. Its exterior and interior parts act like different poles. To find out the nature of the two poles, we suspend circular magnet with a piece of thread. We bring another magnet near it. Both attract each other. It clearly concludes that one surface of the circular magnet is attracted but the other surface is repelled by the same pole of the other magnet.

137. What will happen to the magnet when we cut it into two pieces?

**Ans. :** When we cut a bar magnet into two pieces, both these pieces act as magnets and we get two magnets



138. (1) A toy car has a bar magnet laid hidden inside its body along its length. Using another magnet how will you find out which pole of the magnet is facing the front of the car?

(2) You are provided with two identical metal bars. One out of the two is a magnet. Suggest two ways to identify the magnet.



**Ans. :** (1) If the front of the toy car gets attracted to the north pole of the given magnet then it is the south pole of the bar magnet hidden inside the car. On the other hand, if it repels, then it has a north pole in front.

(2) Two ways to identify the magnet are:

→ By suspending the metal bars

→ By attracting iron filings.

139. Make a list of given substances into two groups magnetic and non magnetic.

Key, Wood, Glass, Alpin, Chalk, Pencil, Nail, Cup of tea, Book, Rubber, Needle, Fork.

**Ans. :** Magnetic substances:

Key, alpin, nail, needle, fork (because all these stick to the magnet)

Non-magnetic substances

Wood, glass, chalk, pencil, cup of tea, book, rubber, (none of these sticks to the magnet)

140. What are soft and hard magnetic materials?

**Ans. :** Soft iron is called soft magnetic material because it loses its magnetism easily. Soft iron is used in making electromagnets. Steel is called a 'hard' magnetic material because it does not lose its magnetism so easily. It is used to make permanent magnets.

141. Why does a freely suspended magnet always rest in north-south direction ?

**Ans. :** A freely suspended magnet always rest in north-south direction because the north-pole of the magnet lies in the geographic north direction and the south pole of the magnet lies in the geographic south direction. So it aligns itself in N-S direction.

142. Does the compass needle point in different directions?

**Ans. :** The compass needle has a magnetic needle closed in a glass covering. The needle can rotate on its pin pointed base. Its red marked end always indicates towards the north direction. It always rests in north-south directions. We use it to find out the direction.

143. Column I shows different positions in which one pole of a magnet is placed near that of the other. Column II indicates the resulting interaction between them for different situations. Fill in the blanks.

Column I	Column II
N-N	_____
N- _____	Attraction
S-N	_____
_____ -S	Repulsion

Ans. :

Column I	Column II
N-N	Repulsion
N-S	Attraction
S-N	Attraction
S-S	Repulsion

144. You are given a magnet which does not have the poles marked. How can you find its poles with the help of another magnet which has its poles marked?

**Ans. :** Bring the north pole of the marked magnet close to one end of the unmarked magnet. If the end of the unmarked magnet is repelled, it is also a north pole (like poles repel). If the end of the unmarked magnet is attracted, it is a south pole (opposite poles attract). And the other end of the unmarked magnet will be the opposite pole of the one you just identified.

145. A bar magnet has no markings to indicate its poles. How would you find out near which end its North pole is located without using another magnet?

**Ans. :** The bar magnet can be tied with a string and suspended in the air till it comes to rest. The freely suspended bar magnet would come to rest in the north-south direction.

Therefore, the pole that points in the north direction would be the north pole of the magnet.

146. If the earth is itself a magnet, can you guess the poles of the earth's the magnet by looking at the direction of the magnetic compass?

**Ans. :** The north pole of a compass needle points towards the earth's geographic north pole. Since, opposite poles attract, the earth's geographic north pole is actually the magnetic south pole of the earth's magnet. And the earth's geographic south pole is the magnetic north pole of the earth's magnet.

147. Two ring magnets X and Y are arranged as shown in figure. It is observed that the magnet X does not move down further. What could be the possible reason? Suggest a way to bring the magnet X in contact with magnet Y, without pushing either of the magnets.

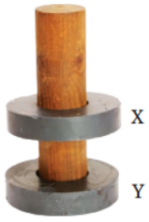
**Ans. :** If two magnets are brought closer to each other, then they either attract each other or repel each other. If the unlike poles are kept in front of each other then they will attract each other.

And if the like poles are kept in front of each other then they will repel each other. In the given figure, we see that the magnet X is floating above the magnet Y.

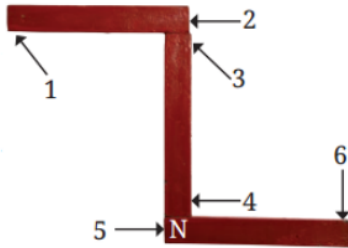
It must be because the like poles of both the magnets are facing each other, resulting in a repulsive force between them.

In order to bring the magnet X in contact with magnet Y, flip either of the two magnets so that their unlike poles face each other now. As we know, unlike poles

attract each other, this will make both the magnets to come in contact with each other.



148. Three magnets are arranged on a table in the form of the shape as shown in figure. What is the polarity, N or S, at the ends 1, 2, 3, 4 and 6 of the magnets? Polarity of one end (5) is given for you.



**Ans. :** Polarity of end 5 is given as North, then the other end of this magnet will have a south polarity, i.e. polarity of end 6 is south. Vertically placed magnet is attracted towards end 5 (north polarity), therefore polarity of end 4 must be south (unlike poles attract each other). Then the other end of this magnet will possess north polarity, i.e. end 3 represents north pole.

End 2 is attracted towards end 3, hence possessing south polarity and then end 1 must be having north polarity.

End 1- North polarity, End 4- South polarity,

End 2-South polarity, End 6-South polarity,

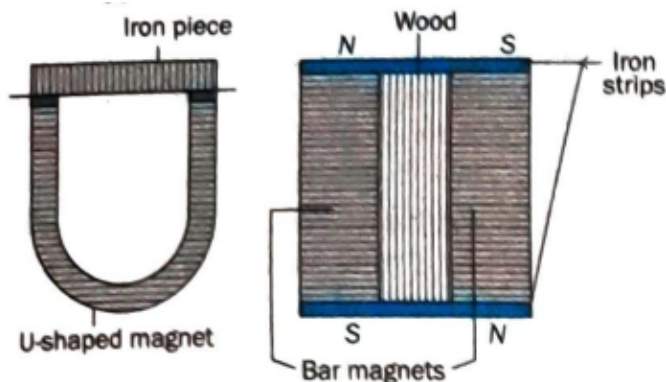
End 3- North polarity

\* Answer The Following Questions In Brief.

[21]

149. Suggest an arrangement to store a U-shaped magnet. How is this different from storing a pair of bar magnets?

**Ans. :** It is a suggested way as shown in figure below.



U-shaped magnet is kept along with an iron piece while bar magnets are kept in

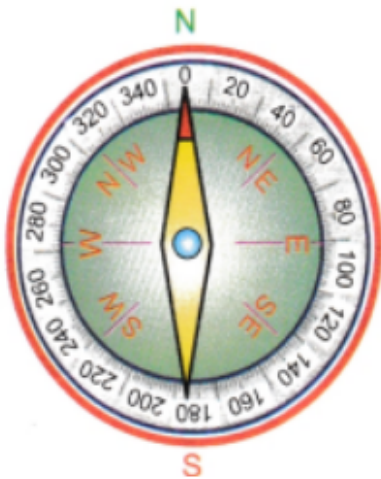
pairs with opposite poles on the same side along with iron strips and magnets separated by wood along their length.

150. Mark the north-poles of two bar magnets and bring the poles of the magnets near each other, and note down your observations in table.

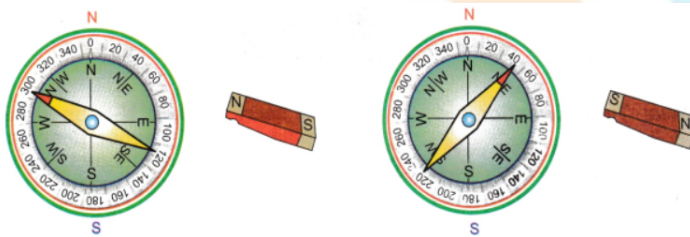
Ans. :

poles, facing one another	They are called	We observe
North – South	Opposite poles	Attraction
North – North	Similar poles	Repulsion
South – South	Similar poles	Repulsion
South – North	Opposite poles	Attraction

151. shows a magnetic compass. What will happen to the position of its needle if you bring a bar magnet near it? Draw a diagram to show the effect on the needle on bringing the bar magnet near it. Also draw the diagram to show the effect when the other end of the bar magnet is brought near it.?



Ans. : The magnetic needle of the compass will get deflected.



152. How can you show that unlike poles attract each other while like poles repel each other?

Ans. : Suspend a magnet on a stand with the help of a string. Now it rests in N-S directions. Take another magnet which has been marked N-S on it and bring N-pole of this magnet near the N-pole of the suspended magnet. You will find that the suspended magnet rotates and moves away showing that like poles repel each other. The same can be repeated by bringing south-pole of one magnet near south-pole of suspended magnet.

Now you must have found that during the above experiment, south-pole comes

towards north-pole and vice versa. It can be repeated by bringing south-pole near a north-pole and north-pole near south-pole of suspended magnet. You will find that unlike poles attract each other.

153. What are the precautions need to be taken while handling a magnet

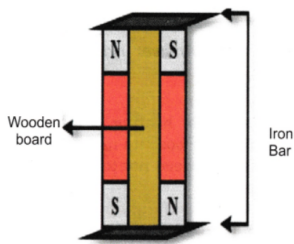
**Ans. :** When heated, hammered or dropped from a height, magnets tend to lose their properties. They become weak if they are not stored properly and hence:

- Bar magnets should be stored in pairs separated by a small block of wood and their unlike poles facing the same side with a soft iron across their ends.
- A piece of iron should be kept across the poles in case of a horse shoe magnet.
- Magnets should be kept away from computers, mobiles, televisions etc.
- Magnets should be handled with care and they should be stored properly.

154. What is the correct way of storing a bar magnet? Also support your answer with diagram.

**Ans. :** Bar magnet: Two-bar magnets should be placed inside a wooden box so that:

- (a) the poles of two magnets lie opposite to each other.
- (b) a wooden piece should be kept between the two magnets.



155. While a mechanic was repairing a gadget using a screwdriver, the steel screws kept falling down. Suggest a way to solve the problem of the mechanic on the basis of what you have learnt in this chapter.

**Ans. :** To solve the problem of steel screws falling down while using a screwdriver, mechanic can magnetize the screwdriver. This way, the screwdriver will attract and hold the screws, preventing them from falling.

How to magnetize the screwdriver? (Refer to text 4.5, making your own magnet).

\* Answer The Following Questions To The Point.

[5]

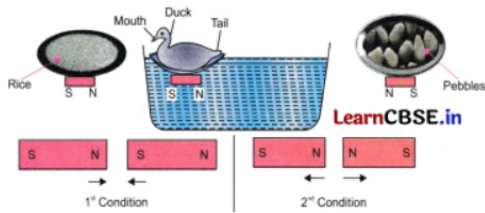
156. Bhawana witnessed an interesting game at the fair. A duck was floating in a tub. When a plate containing some grains of rice was brought close to the duck, the duck moved towards the plate. But, when a plate containing some pebbles was brought close to; the duck, it moved away from the plate. Explain how this could have been possible.

**Ans. :** This game is based on the plate containing rice which may have magnet attached to its bottom. The magnet is fitted in such a way that its north-pole points towards rice grains, while south- pole indicates towards pebbles. A magnet (bar magnet) may also be fitted in the bottom of the duck, where south-pole points



towards mouth and north-pole towards tail of the duck.

When the rice portion of the plate is brought closer to the duck, the duck moves towards rice grains because unlike poles of two magnets attract each other. In second situation, same (like) poles repel each other. So the duck moves away.



\* Match the following.

[5]

157.

Column A	Column B
(a) Poles of a bar magnet are present	(i) Magnetic
(b) The rock that attracts iron pieces	(ii) Nickel and cobalt
(c) The materials that get attracted towards a magnet	(iii) At the ends
(d) Except iron, these materials are also magnetic	(iv) North-South
(e) A freely suspended bar magnet always comes to rest in the direction	(v) Repel each other
	(vi) Lodestone

Ans. :

Column A	Column B
(a) Poles of a bar magnet are present	(iii) At the ends
(b) The rock that attracts iron pieces	(vi) Lodestone
(c) The materials that get attracted towards a magnet	(i) Magnetic
(d) Except iron, these materials are also magnetic	(ii) Nickel and cobalt
(e) A freely suspended bar magnet always comes to rest in the direction	(iv) North-South

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Student Bro