Unit -8 Electricity and magnetism.

Very Short Answers Questions.

1. What is Magnet?
A magnet is an object that attracts magnetic materials like iron.

2. What is natural magnet?
A natural magnet is a magnet found in nature, such as lodestone.

3. What is magnetic force?
Magnetic force is the force by which a magnet attracts or repels objects.

4. What is molecular magnet?
A molecular magnet is a tiny magnet present inside a magnetic substance.

5. What is meant by demagnetization?
Demagnetization is the process of removing magnetism from a magnet.

6. What is an electric meter?
An electric meter measures the electrical energy used in a house.

7. What is main switch?
Main switch is a switch used to control the main electric supply of a house.

8. What is an angle of dip?
The angle between the Earth's magnetic field and the horizontal plane is called the angle of dip.

9. What are the source of electricity?
Cells, batteries, generators, and power stations are sources of electricity.

10. What is house wiring system?
House wiring system is the arrangement of wires to supply electricity safely in a house.

11. Write down the utility of fuse.
A fuse protects electrical appliances from damage due to excess current.

12. What is the unit of current?
The unit of electric current is **ampere (A)**.

13. Name the electric equipment that are used at your home.
Electric equipment used at home are:
Fan, bulb, television, refrigerator, heater.

14. Write one difference between phase wire and neutral wire.
Phase wire carries current, while neutral wire returns current.

15. Why is earthing wire important in household wiring?
Earthing wire protects us from electric shock.

16. What is distribution board?
A distribution board distributes electricity to different circuits in a house.

17. What is MCB?
MCB (Miniature Circuit Breaker) is an electrical safety device used in household wiring to protect circuits.

18. What is fuse?
A fuse is a safety device that melts and breaks the circuit when excess current flows.

Short answer questions.

19. Differentiate between Magnet and Magnetic Substance.

Magnet	Magnetic Substance
It has north and south poles	It does not have poles.
It can attract and repel	It Only gets attracted.

20. Magnetic poles always exist in pair, why?
Magnetic poles always exist in pairs because a single pole cannot exist alone.

When a magnet is broken, each piece still has both north and south poles.

21. What is magnet? Write any two properties of magnet.

A magnet is an object that attracts magnetic materials like iron.

Properties:
• Like poles repel and unlike poles attract.
• A freely suspended magnet always points north-south.

22. Write molecular theory of magnetism.

According to molecular theory, each molecule of a magnetic substance acts like a tiny magnet.
In a magnetized substance, these molecular magnets are aligned in one direction.

23. Write any two causes of demagnetization.

The two causes of demagnetization are given as:
• Heating a magnet
• Hammering or dropping a magnet

24. What are the two poles of magnet.

The two poles of a magnet are:
• North pole
• South pole

25. Write any four activities that causes demagnetization.

The four activities that causes demagnetization are as follows:
• Heating the magnet
• Hammering the magnet
• Dropping the magnet repeatedly
• Improper storage of magnets

26. Write full form of MCB and Mention its application.

Full form: Miniature Circuit Breaker

Application:
It is used in household wiring to protect circuits from overload and short circuit.

27. Write any two characteristics of MCB.
The two characteristics of MCB are:
• It automatically trips during overload.
• It can be reused after switching ON again.

28. Write any two differences between fuse and MCB.

Fuse	MCB
Fuse wire melts when excess current flows	MCB trips automatically
It needs replacement after use.	It can be reused.

29. MCB is more useful than fuse, why?
MCB is more useful because it can be reused and provides faster and safer protection than a fuse.

30. Write any two methods of conservation of magnetism.
The two methods of conservation of magnetism are:
• Store magnets with soft iron keepers.
• Avoid heating and hammering magnets.

31. Write any two differences between natural magnet and artificial magnet.

Natural Magnet	Artificial Magnet
It is Found in nature	It is Made by humans
It has weak magnetic strength	It has strong magnetic strength

Long question answers.

32. Which one is the magnet in the figures given below? Why?
a. Figure showing arrangement of poles in a rectangular box.
b. Figure showing pieces of blades.

(a) Rectangular box showing arrangement of poles:
The rectangular box is a **magnet** because the north and south poles are present only at the two ends.
In a magnet, magnetic poles always occur in pairs and are concentrated at the ends.

(b) Pieces of blades:
The pieces of blades are **not magnets** because they do not stick together.
Magnetic substances get attracted by a magnet but do not show magnetism on their own.

Therefore, the rectangular box represents a magnet, while the blade pieces are only magnetic substances.

33. Draw a figure showing arrangement of molecules in a magnetic substance. How is magnet made from a magnetic substance? Write.

(Figure search from book:)

A magnet is made from a magnetic substance (like iron) by **stroking it with an existing magnet in one direction** or **by passing electric current through a coil around it**.
This aligns the molecular magnets in one direction, making it a magnet.

34. Write any two effects of terrestrial magnetism.

Terrestrial magnetism is the magnetic effect of the Earth. Its effects are:

Compass Navigation:
A freely suspended magnet, like a compass needle, aligns itself along the Earth's magnetic field, helping in navigation.

Angle of Dip and Declination:
The Earth's magnetism causes the **angle of dip** (angle made with horizontal) and **magnetic declination** (angle between geographic north and magnetic north).
These effects are important for surveying and navigation.

35. A. What is magnet? State the molecular theory of magnetism.
B. Describe an experiment to show magnetic induction.

Magnet:
A magnet is an object that can attract magnetic substances like iron, nickel, and cobalt and can also repel or attract another magnet.

Molecular Theory of Magnetism:
According to the molecular theory, every molecule of a magnetic substance acts like a tiny magnet with its own north and south poles.

In an **unmagnetized substance**, these molecular magnets are randomly oriented.

In a **magnetized substance**, the molecular magnets are aligned in the same direction, producing overall magnetism.

Experiment to show a magnetic substance becomes a magnet.

Aim: To show that a magnetic substance becomes a magnet when placed near a magnet.

Materials: Bar of soft iron, a strong bar magnet, small iron filings.

Procedure:

Place a soft iron bar near a bar magnet without touching it.

Sprinkle small iron filings near the soft iron bar.

Observe that the iron bar itself attracts the filings.

Observation:
The soft iron bar becomes temporarily magnetized due to the **magnetic field of the nearby magnet**.

Conclusion:
A magnetic substance can be magnetized by placing it in the magnetic field of a magnet. This is called **magnetic induction**.

36. In a house, four electric bulbs of each 60W power are used for 3.5hours daily. How much electricity is consumed in one month? How much tariff should be paid if the cost of one unit is Rs. 8.50?

Given:

Number of bulbs = 4

Power of each bulb = 60 W = 0.06 kW

Daily usage = 3.5 hours

Number of days in a month = 30

Cost of 1 unit = Rs. 8.50

Step 1: Find total energy consumed per day

Energy (in kWh) = Power (kW) × Time (hours)

Energy per bulb per day=0.06×3.5=0.21 kWh

For 4 bulbs:

Total energy per day=0.21×4=0.84 kWh

Step 2: Find total energy consumed in a month
Energy per month=0.84×30=25.2 kWh (units)

✅ So, electricity consumed = 25.2 units

Step 3: Calculate tariff
Cost =25.2×8.50=Rs. 214.2