Magnetic effects of electric current(Revision)

1. Name the electric device that converts mechanical energy into electrical energy. Draw the labelled diagram and explain the principle involved in this device.

2 i) What is the function of earth wire in electrical instruments?
 ii) Explain what is short circuiting an electric supply.

3. With the help of a labelled circuit diagram wire describe an activity to illustrate the pattern of the magnetic field lines around a straight current carrying long conducting wire .
i) Name the rule that is used to find the direction of magnetic field associated with a current carrying conductor.
ii) Is there a similar magnetic field produced around a thin beam of moving (a) alpha particles and (b) neutrons? Justify your answer.

4. Two circular coils A and B are placed closed to each other. If the current in coil a is changed, will some current be induced in coil B. Give reason.

5. Why do not two magnetic field lines intersect each other.

6. Draw a pattern of magnetic field lines through and around a current carrying solenoid. What does the magnetic field pattern inside the solenoid indicate? How can this principle be utilized to make an electromagnet? Name two ways by which the strength of the electromagnet can be increased?

7. When a current carrying conductor is kept in a magnetic field, state the position when maximum force acts on it.

8. What is meant by the term 'frequency' of an AC? What is its value in India? Why is an AC considered to be advantageous over DC for long range transmission of electric energy?

9. Why does a current carrying conductor kept in a magnetic field experience force? Name the rule used to determine the direction of this force.

10. What is electromagnetic induction? In what way can the magnitude of the induced current be increaseed?

ELECTRICITY

1. What is the usual current rating of the fuse wire in the line to feed (a) Lights and fans (b) Appliances of 2kW or more power?

2. Draw a circuit diagram of an electric circuit containing a cell, a key , an ammeter , a resistor of 4Ω in series with a combination of two resistors (8Ω each) in parallel and a voltmeter across parallel combination. Each of them dissipate maximum energy and can withstand a maximum power of 16W without melting. Find the maximum current that can flow through the three resistor.

3. Find the following in the electric circuit:
i) Effective resistance of two 8Ω in the combination
ii) current through 4Ω resistor
iii)p.d across 4Ω resistor
iv) power dissipation in 4Ω
v) difference in ammmeter reading if any.

4. A piece of wire having resistance R is cut into four equal parts.
i) How does the resistance of each part compare with the original resistance?
ii)If the four parts are placed in parallel, how will the resistance of the combination compare with the original resistance of the wire?

5i) Distinguish between resistance and resistivity.

ii) A copper wire of resistivity $1.6 \times 10^{-8} \Omega m$ has a cross sectional area of $20 \times 10^{-4} cm^2$. Calculate the length of the wire required to make a 10Ω resistance.

6. Derive an expression for electric energy consumed in a device in terms of V, I and t where the symbols have their usual meanings.

7. A household uses the following electric appliances-
i) refrigerator of rating 400W for 10 h each day
ii) 2 electric fans of rating 80W each for 12 h each day
iii) 6 electric bulbs of rating 18W each for 6h each day.
Calculate the electric bill of the household for the month of june if the cost per unit of electric energy is Rs 3.00.

8. A circuit has a fuse of 5A. What is the maximum number of 100W, 220V bulbs which can be safely used inthe circuit?