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Jars Education

Shop no. 2,3,4 hendre pada Badlapur west thane

Time : 1 Hour 30 Minute

STD 10 Science
Chapter Based Test

Total Marks : 50

SECTION A

*** Select and write one most appropriate option out of the four options given for each of the questions** **[7]**

1. Which statement is wrong from the following?

(A) The earthing wire is green coloured

(B) In India, current flowing through wire is AC and its frequency is 50Hz

(C) In India, voltage between two wires is 110V

(D) T.V., tube light, bulbs are connected with 5A line

2. Weak ion currents that travel along nerve cell in our body produces _____?

(A) Magnetic Field

(B) Magnetism

(C) Electricity

(D) Electrons

3. Which of the following correctly describes the magnetic field near a long straight wire?

(A) The field consists of straight lines perpendicular to the wire.

(B) The field consists of straight lines parallel to the wire.

(C) The field consists of radial lines originating from the wire.

(D) The field consists of concentric circles centred on the wire.

4. Magnetic field lines are _____:

(A) Open curves

(B) Closed curves

(C) Both A & B

(D) None of the above

5. Choose the incorrect statement:

(A) Fleming's right-hand rule is a simple rule to know the direction of induced current.

(B) The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors.

(C) The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically.

(D) In India, the AC changes direction after every $\frac{1}{50}$ second.

6. The phenomenon of electromagnetic induction is:

(A) The process of charging a body.

(B) The process of generating magnetic field due to a current passing through a coil.

(C) Producing induced current in a coil due to relative motion between a magnet and the coil.

(D) The process of rotating a coil of an electric motor.

7. The front face of a circular wire carrying current behaves like a north pole. The direction of current in this face of circular wire is:

a. Clockwise.
b. Downwards.
c. Anticlockwise.
d. Upwards.

*** Assertion - Reasoning based questions.** **[3]**

8. In the followin questions, a statement of Assertion is given by to corresponding statement of Reason. Of the statement mark the correct answer as:
   a. If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   b. If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
   c. If Assertion is true, but Reason is false.
   d. If Assertion is false, but Reason is true.
   e. If Assertion and Reason both are false.

   Assertion: To avoid risk of electrical shock, the metal body of electric appliances is earthed.

   Reason: Earthing saves us from electrical shocks.

9. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
   a. Both A and R are true, and R is correct explanation of the assertion.
   b. Both A and R are true, but R is not the correct explanation of the assertion.
   c. A is true, but R is false.
   d. A is false, but R is true.

   Assertion: Magnetic field interacts with a moving charge and not with a stationary charge.

   Reason: A moving charge produces a magnetic field.

10. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
    a. Both A and R are true, and R is correct explanation of the assertion.
    b. Both A and R are true, but R is not the correct explanation of the assertion.
    c. A is true, but R is false.
    d. A is false, but R is true.

    Assertion: When a charged particle moves perpendicular to magnetic field then its kinetic energy and momentum gets affected.

    Reason: Force does not change velocity of charged particle.

*** Fill in the blank with correct answer.[1 Mark each]** **[2]**

11. Fill in the following blanks with suitable words:
    Magnetic field lines leave the _____ pole of a bar magnet and enter at its _____.

12. Fill in the following blanks with suitable words:
    A fuse should always be placed in the _____ wire of a mains circuit.

*** Answer the questions.[1 Mark each]** **[2]**

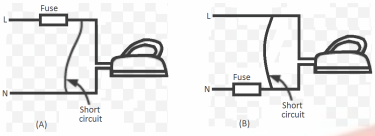
13. Name one device whose working depends on the force exerted on a current-carrying coil placed in a magnetic field.

14. What change should be made in an a.c. generator so that it may become a d.c. generator?

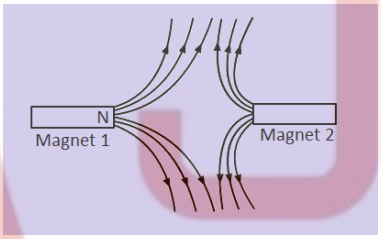
SECTION B

*** Answer the following question. :** **[10]**

1. Describe different ways to induce current in a coil of wire.
2. Which of the following circuits will still be dangerous even if the fuse blows off and electric iron stops working during a short circuit?



3. State two ways in which the current induced in the coil of a generator could be increased.
4. The figure given below shows the magnetic field between two magnets:



   i. Copy the diagram and label the other poles of the magnets.
   ii. Which is the weaker magnet?

5. In the straight wire A, current is flowing in the vertically downwards direction whereas in wire B the current is flowing in the vertically upward direction. What is the direction of magnetic field:
   a. In wire A?
   b. In wire B?

   Name the rule which you have used to get the answer.

SECTION C

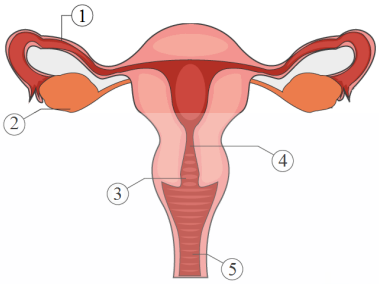
*** Answer short answer questions. [3 Mark each]** **[12]**

1. What is the principle of an electric motor? Name some of the devices in which electric motors are used.
2. What is the maximum number of 60W bulbs that can be run from the mains supply of 220 volts if you do not want to overload a 5A fuse?
3. An electric kettle rated as 1200W at 220V and a toaster rated at 1000W at 220V are both connected in parallel to a source of 220V. If the fuse connected to the source blows when the current exceeds 9.0A, can both appliances be used at the same time? Illustrate your answer with calculations.
4. A coil is connected to a galvanometer. When the N-pole of magnet is pushed into the coil, the galvanometer deflected to the right. What deflection, if any, is observed when:
   a. The N-pole is removed?
   b. The S-pole is inserted?
   c. The magnet is a rest in the coil?

SECTION D

*** Long answer questions [5 Mark each]** **[10]**

1. a. Identify the given diagram. Name the parts 1 to 5.



b. What is contraception? List three advantages of adopting contraceptive measures.

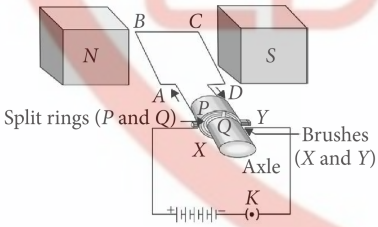
2. What is an electromagnet? Describe the construction and working of an electromagnet with the help of a labelled diagram.

SECTION E

*** case - based/data -based questions** **[4]**

1. Read the following and answer any three questions from (i) to (iv).

An electric motor is a rotating device that converts electrical energy into mechanical energy. Electric motor is used as an important component in electric fans, refrigerators, mixers, washing machines, computers, MP3 players, etc.



An electric motor consists of a rectangular coil ABCD of insulated copper wire. The coil is placed between the two poles of a magnetic field such that the arm AB and CD are perpendicular to the direction of the magnetic field. The ends of the coil are connected to the two halves P and Q of a split ring. The inner sides of these halves are insulated and attached to an axle. The external conducting edges of P and Q touch two conducting stationary bushes X and Y, respectively, as shown in the figure. Commercial motors use an electromagnet in place of a permanent magnet, a large number of turns of conducting wire in the current carrying coil and a soft iron core on which the coil is wound.

i. State the use of split rings.

ii. Which has no effect on the size of the turning effect on the coil of an electric motor?

iii. a) When current is switched ON, an electric fan converts into?
b) In an electric motor, device that makes contact with the rotating rings and

through them to supply current to coil is called?

OR

iv. What is the uses of electric motor?

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