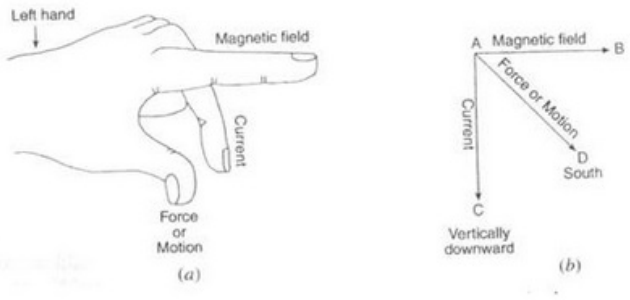
PAGE 85:

Q1.
Weak ionic currents flowing in the human body produce magnetism.
Q2.
The technique called Magnetic Resonance Imaging (MRI) is based on magnetism produced in human body. It is used for obtaining images of internal parts of the body.
Q3.
Brain and heart.
Q4.
Magnetic Resonance Imaging.
Q5.
Magnetic Resonance Imaging (MRI)
Q6.
Magnetic Resonance Imaging (MRI).

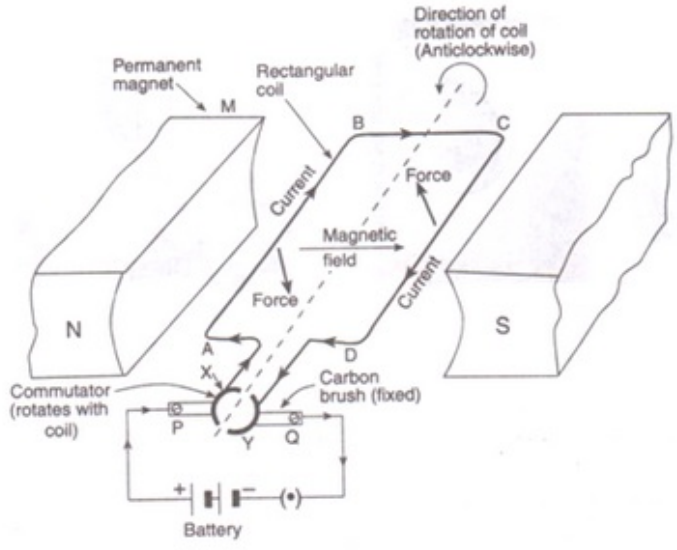
PAGE NO 91:

Q1.
When a current-carrying conductor is placed in a magnetic field, a mechanical force is exerted on the conductor which can make the conductor move.
Q2.
The force experienced by a current-carrying conductor placed in a magnetic field is the largest when the current carrying conductor is at right angles to the magnetic field.
Q3.
(a) Current.
(b) Magnetic field.
(c) Force acting on the conductor.
Q4.
Electrib bell works on the magnetic effect of current. It uses an electromagnet to produce sound.
Q5.
Electrical motor.
Q6.
Electrical energy to mechanical energy.
Q7.
False, An electric motor converts electrical energy into mechanical energy.
Q8.
(a) Current - direction of center finger.
(b) Magnetic field - direction of fore finger.
(c) Force or Motion - direction of thumb.
Q9.
A commutator reverses the direction of current in the coil of a motor.
Q10.
Commutator.
Q11.
The function of commutator rings is to reverse the direction of current flowing through the coil every time the coil just passes the vertical position during a revolution.
Q12.

Carbon.
Q13.
The core of the coil of an electric motor made of soft iron.
Q14.
Brush remains fixed. Commutator rotates with the coil.
Q15.
The function of split rings is to reverse the direction of current flowing through the coil every time the coil just passes the vertical position during a revolution.
Q16.
(a) left
(b) Commutator; rotation.
Q17.
(a) Fleming's left hand rule.
(b) By increasing the current flowing in the conductor; by increasing the strength of magnetic field.
(c) Electric motor.
Q18.
Fleming's left hand rule: Hold the forefinger, the centre finger and the thumb of your left hand to right angles to one other. Adjust your hand in such a way that the forefinger points in the direction of magnetic field and the and the centre finger points in the direction of current, than the direction in which thumb points, gives the direction of force acting on the conductor.

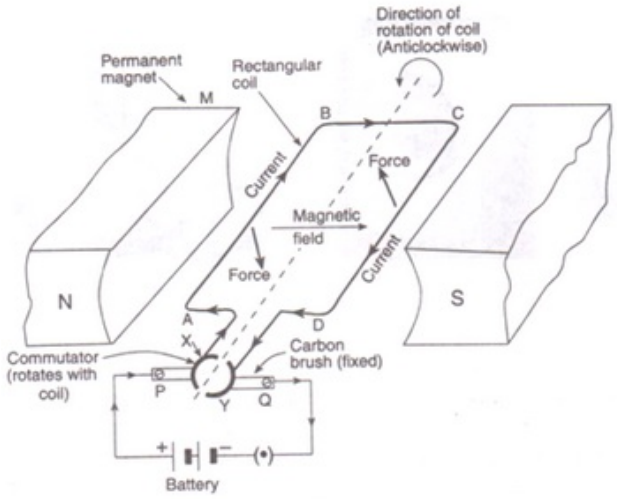


Q19.
Fleming's left hand rule: Hold the forefinger, the centre finger and the thumb of your left hand to right angles to one other. Adjust your hand in such a way that the forefinger points in the direction of magnetic field and the and the centre finger points in the direction of current, than the direction in which thumb points, gives the direction of force acting on the conductor.



Q20.
(a) The current to the coil must be reversed twice during each rotation so that the coil keeps rotating continuously in the same direction.

(b) Commutator.
Q21.
(a)
(i) Direction of rotation would be reversed
(ii) Direction of rotation would be reversed
(iii) Direction of the rotation would remain unchanged
(b) Motor can be made more powerful by winding the coil on a soft iron core of by increasing the number of turns of the coil.
Q22.
(a) Electric motor is a device used for converting electrical energy into mechanical energy.
Working of an electric motor:



Initially, the coil ABCD is in the horizontal position. On pressing the switch, current enters the coil through carbon brush P and commutator half ring X. The current flows in the direction ABCD and leaves via ring Y and brush Q. The direction of magnetic field is from N pole to S pole of the magnet. According to Fleming's left-hand rule, the force on sides AB and CD is in the downward and upward directions respectively. This makes the coil ABCD move in the anticlockwise direction.
When the coil reaches vertical position, then the brushes P and Q will touch the gap between the two commutator rings and current is cut off. But the coil does not stop rotating as it has already gained momentum. When the coil goes beyond the vertical position, the side CD comes on the left side and side AB comes to the right side, and the two commutator rings change contact from one brush to the other. This reverses the direction of current in the coil, which in turn reverses the direction of forces acting on the sides AB and CD of the coil. The side CD is pushed down and side AB is pushed up. Thus, the coil rotates anticlockwise by another half rotation.
The reversing of current in the coil is repeated after every half rotation due to which the coil (and its shaft) continues to rotate as long as current from the battery is passed through it. The rotating shaft of electric motor can drive a large number of machines which are connected to it.
(b) In commercial electric motors:
i. the coil is wound on a soft iron core. This increases the strength of magnetic field, which makes the motor more powerful.
ii. the coil contains a large number of turns of insulated copper wire.
iii. a powerful electromagnet is used in place of permanent magnet.

PAGE 93:

Q31.
Clockwise direction (according to Fleming's left hand rule).
Q32.
According to Fleming's left hand rule, the wire moves in the upward direction (out of the page).

Q33.
Force will be due South (according to Fleming's left hand rule).
Q34.
According to Fleming's left hand rule, the wire moves in the downward direction (into the page).
Q35.
Force on a current-carrying wire that is parallel to magnetic field will be zero.
This is because the magnitude of force depends on the sin of the angle between the direction of current and the direction of magnetic field, so if the current carrying wire is held parallel to the magnetic field, the force will be zero.
Q36.
Positive charge.

********** END **********