

Section – A : Physics

1. Compute the no. of electrons passing per minute through an electric bulb of 60W, 220V.
2. You are provided with two bulbs operating on 220V, one of 60W and other of 100W. If the two are connected in series and then the combination is connected to 440V, which one of them will fuse and why?
3. I can spend Rs. 9.00 per month (30 days) for electricity bill. If rate is 30 paise per kWh and I use 5 identical bulbs for 5h a day. What should be the power of each bulb?
4. Draw the diagram for the magnetic field of a
 - a) Current carrying straight conductor.
 - b) Current carrying circular coil.
 - c) Current carrying solenoid.
5. State the law
 - a) which gives the direction of magnetic field.
 - b) gives the direction of Force on a current carrying conductor placed in a magnetic field.
 - c) which gives the direction of induced current.

Section – B : Chemistry

1. Why does not a wall immediately acquire a white colour when a coating of slaked lime is applied on it?
2. Identify the substance which is oxidized and reduced in the following reactions.
$$\text{H}_2\text{S} + \text{Br}_2 \rightarrow 2 \text{HBr} + \text{S} \quad ; \quad \text{CuO} + \text{Zn} \rightarrow \text{ZnO} + \text{Cu}$$
3. Give one example each of Thermal, Electrolytic and Photo decomposition reaction.
4. A green coloured hydrated metallic salt on heating loses its water of crystallization molecules and gives the smell of burning sulphur. Identify the salt and write the equation.
5. Which important properties of Aluminum are responsible for its great demand in industry?
6. A Cu plate was dipped into a solution of AgNO_3 . After sometime a black layer was deposited on the copper plate. State the reason for it. Write the chemical equation for the reaction involved.
7.
 - a) Show the formation of NaCl and MgCl_2 by the transfer of electrons.
 - b) Why has sodium chloride a high melting point?
 - c) Name the cathode and anode in the electro refining of copper.

Section – C : Biology

1. Name the energy currency in the living organism. When and where is it produced?
2. How are oxygen and carbon dioxide transported in human beings? How are lungs designed to maximise the area for exchange of gases?
3. Why is it necessary to separate oxygenated and deoxygenated blood in mammal & birds ?
4. Differentiate between the transport of materials in xylem & phloem on the basis of transported substance, direction, components and force.
5. What is the fate of the glucose that enters the nephron along with the filtrate?
6. How can haemodialysis save & prolong the life of uremic patient?
7. What is a nerve impulse? Which structure in a neuron helps to conduct a nerve impulse
 - i) towards the cell body
 - ii) away from the cell body.
8. What is the difference between the movement in a sensitive plant & the movement in our legs?