

**Section A (Chemistry)**

- Q1.** The pH of a salt used to make tasty and crispy pakoras is 14. Identify the salt and write a chemical equation for its formation.
- Q2.** How is washing soda prepared from sodium carbonate? Give its chemical equation. State the type of this salt. Name the type of hardness of water which can be removed by it.
- Q3.** On passing excess carbon dioxide gas through lime water, it first milky and then becomes colourless. Explain why. Write all the chemical equations of the reactions involved.
- Q4.** Write the chemical equation for the reaction taking place when steam is passed over hot aluminium.
- Q5.** An ore on heating in air produces sulphur dioxide. Which process would you suggest for its concentration? Describe briefly any two steps involved in the conversion of this concentrated ore into related metal.
- Q6.** (a) Explain the formation of ionic compound CaO with electron dot structure. Atomic number of calcium and oxygen are 20 and 8 respectively.  
(b) Name the constituent metals of bronze.
- Q7.** What is cinnabar? How is metal extracted from cinnabar? Explain briefly
- Q8.** A non-metal X exists in two different forms Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Identify X, Y and Z.
- Q9.** Give reason why:  
(a) Gold and silver are used for making jewellery.  
(b) A few metals are used for making cooking utensils
- Q10.** 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.
- Q11.** A zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After a few days when zinc plate was taken out of the solution, a number of holes were observed on it.  
(a) State the reason for changes observed on the zinc plate.  
(b) Write the chemical equation for the reaction involved.
- Q12.** (a) What is observed when a solution of potassium iodide solution is added to a solution of lead nitrate? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction.  
(b) Why copper can displace silver from silver nitrate and silver can displace copper from copper sulphate solution.

## Section B (physics)

- Q13.** A current of 1 ampere flows in a series circuit containing an electric lamp and a conductor of  $5\ \Omega$  when connected to a 10 V battery. Calculate the resistance of the electric lamp. Now if a resistance of  $10\ \Omega$  is connected in parallel with this series combination, what change (if any) in current flowing through  $5\ \Omega$  conductor and potential difference across the lamp will take place? Give reason.
- Q14.** Why is parallel arrangement used in domestic wiring?
- Q15.** What is the commercial unit of electrical energy? Represent it in terms of joules.
- Q16.** State Ohm's law? How can it be verified experimentally? Does it hold good under all conditions? Comment.
- Q17.** What is Joule's heating effect? How can it be demonstrated experimentally? List its four applications in daily life.
- Q18.** What is the difference between a direct current and an alternating current? How many times does AC used in India change direction in one second?
- Q19.** What is the role of fuse, used in series with any electrical appliance? Why should a fuse with defined rating not be replaced by one with a larger rating?
- Q20.** Under what conditions permanent electromagnet is obtained if a current carrying solenoid is used?