Instructions –

(1) All Questions are Compulsory.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any **NINE of the following**: 18

   a) State different products of blast furnace.

   b) State two uses of slag.

   c) Define:
      
      (i) Metallurgy
      
      (ii) Flux

   d) Why galvanised containers are not used for storing food stuffs.

   e) Identify the type of corrosion in following examples:
      
      (i) Submarines dipped in sea water
      
      (ii) Rusting of Iron articles.

   f) Define -
      
      (i) Sherardizing
      
      (ii) Chromizing

   g) Define paint. Write its two characteristics.

   h) Distinguish between temporary hardness and permanent hardness in water. (Two points)
i) Why soft water is preferred in sugar industry other than hard water?

j) Write four characteristics of potable water.

k) Name the two constituents of cement with its formulae.

l) Give any two uses of plaster of paris.

2. Attempt any **FOUR of the following:**

   a) Write the chemical reaction taking place in the zone of reduction in blast furnace.

   b) Explain the process of Annealing of steel.

   c) Give any four differences between: low carbon, medium carbon and high carbon steel.

   d) Explain the mechanism of immersed corrosion with evolution of hydrogen gas.

   e) State and explain the factors affecting rate of electrochemical corrosion.

   f) Explain metal cladding process with suitable diagram.

3. Attempt any **FOUR of the following:**

   a) Describe adverse effects of hard water washing purposes and drinking purposes.

   b) Explain the sterilization of water by using chlorine gas and bleaching powder.

   c) Discuss the bad-effect of using hard water in following industries:
      (i) Paper Industry
      (ii) Textile Industry

   d) Explain Zeolite process with suitable diagram.

   e) Calculate hardness of water sample if 50 ml water sample takes 8.5 ml 0.025 M disodium EDTA in titration at pH = 10 buffer.

   f) Explain four important properties of water proofing cement.