17208

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) Assume suitable data, if necessary.

Marks

1. **Answer any NINE :** **(9 × 2) = 18**

(a) Name two oxide ores of iron. Write their chemical formulae.

(b) Why do a Blast furnace attain maximum temperature in the fusion zone ?

(c) Define alloy steel. Give any two examples of alloy steel.

(d) Name factors affecting atmospheric corrosion.

(e) State two constituents of paint and one function of each.

(f) What is cathodic protection ? Give an example.

(g) Distinguish between galvanising and tinning.

(h) Write a simple test to identify soft water and hard water.

(i) How can the exhausted permutit or Zeolite be regenerated ?

(j) How is sterilisation of water carried out by bleaching powder ? Write chemical reactions.

(k) Write two properties of Plaster of Paris.

(l) What is slaking of lime ?

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2. **Answer any FOUR :** **(4 × 4) = 16**

    (a) Write chemical reactions taking place in the zone of heat absorption of a blast furnace.

    (b) How are steels classified on the basis of percentage of Carbon ? Write composition, properties and application of any one of them.

    (c) Define heat treatment. Name its methods. Explain any one of them.

    (d) Explain the role of oxide film formed during corrosion. Give examples.

    (e) In any structure, two dissimilar metals should not be allowed to come in contact with each other. Why ? Explain with an example.

    (f) Explain process of cementation.

3. **Answer any FOUR :** **(4 × 4) = 16**

    (a) Define scale. State disadvantages of scale formation in boiler.

    (b) Name types of impurities present in natural water. Suggest one method for removal of each of them.

    (c) Calculate the temporary hardness present in a 25 ml of sample of water, if

    (i) Total hardness = 310 mg/litre

    (ii) Permanent hardness = 133 mg/litre

    (d) Describe ion exchange process of water softening with a labelled diagram. Write chemical reactions.

    (e) What is filtration ? Explain pressure filtration process with the help of a figure.

    (f) Write two properties and two applications of water proofing cement and concrete.

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