17208

15162

2 Hours / 50 Marks   Seat No.

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.

(6) Use of Non-Programmable Electronic Pocket Calculator is permissible.

(7) 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) Name the two ores of iron with their chemical formulae.

(b) Write chemical reaction for formation of slag in blast furnace.

(c) Give four purposes of heat treatment of steel.

(d) State two factors affecting on atmospheric corrosion.

(e) Give two functions of pigments

(f) Distinguish between galvanizing and tinning (two points of each).

(g) Write two applications of metal spraying.

(h) List two causes of formations of boiler scales.

(i) How can the exhausted permutite or zeolite be regenerated ?

(j) Draw the diagram of reverse osmosis cell for desalination of sea water.

(k) List any four constituents of cements.

(l) What is slaking of lime ?

P.T.O.

2. **Attempt any FOUR of the following :** **16**

    (a) Write the chemical reaction in the zone of heat absorption for extraction of iron in blast furnace.

    (b) With neat and labelled diagram, describe open hearth process for preparation of steel.

    (c) Differentiate between annealing normalising.

    (d) Describe mechanism of electrochemical corrosion by evolution of hydrogen gas.

    (e) What is atmospheric corrosion ? Name the types of oxides film form in atmospheric corrosion with examples. Which oxide film is more protective ?

    (f) Explain the sacrificial anodic protection with neat labelled diagram. Write it's two applications.

3. **Attempt any FOUR of the following :** **16**

    (a) Describe the four types of impurities present in natural water. Write one example of each.

    (b) List two disadvantages of each, using hard water in paper industry and textile industry.

    (c) Calculate total hardness in ppm, when 50 ml of water samples requires 6.0 ml of 0.02 M EDTA using EBT as indicator in basic medium.

    (d) Describe ion exchange process of water softening with neat labelled diagram and chemical reaction.

    (e) Describe chlorination process with chemical reaction by using chlorine gas. Write it's two advantages.

    (f) Describe setting and hardening of cement. Write chemical reaction taking place in same.

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