17208

15116

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) Write the products of blast furnace.

b) Write two applications of cast iron.

c) Define:

(i) Hardening

(ii) Normalizing

d) Write different types of oxide films formed due to oxygen. Which type of oxide film is protective?

e) Name the different constituents of oil paint.

f) Write two applications of metal cladding.

Marks

g) Distinguish with two points between Galvanizing and Tinning.

h) Write two causes of hardness of water.

i) Write two disadvantages of chlorination method.

j) Draw a neat labelled diagram of zeolite process.

k) Write two properties of water proofing cement.

l) Write chemical composition of fat lime and lean lime.

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

a) Write the chemical reactions in the reduction zone of blast furnace.

b) Define Annealing. Write three properties of Annealing.

c) Write four properties and four applications of high carbon steel.

d) Describe mechanism of electrochemical corrosion by absorption of oxygen gas.

e) Describe four factors affecting rate of electrochemical corrosion.

f) Define paint. Write all characteristics of good paint.

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

a) Write four distinguishing points between temporary hardness and permanent hardness of water.

b) Write two causes of scale and sludge formation and write its four disadvantages.

c) What is the carbonate and non-carbonate hardness of a sample of water in ppm containing $Ca(HCO_3)_2$ = 16.2 mg/lit, $Mg(HCO_3)_2$ = 7.3 mg/lit, $MgCl_2$ = 9.5 mg/lit and $CaSO4_2$ = 13.6 mg/lit?

d) Describe the coagulation process for purification of water.

e) Describe ion-exchange process of water softening with neat labelled diagram and chemical reactions.

f) Define concrete. Write the properties and applications of it.