Roll No. .....

24005

B. Tech. 2nd Semester
(Common for all Branches) (Re-Appear)
Examination – October, 2020

ENGINEERING CHEMISTRY

Paper : CH-101F

Time : 1.45 hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any ***three*** questions. All questions carry equal marks.

1. (a) Define the system having incongruent melting.
(b) Define metastable equilibrium.
(c) Differentiate triple point and eutectic point.
(d) Define Break-point chlorination.
(e) Define demineralization of water.
(f) Describe stress cracking.
(g) What do you understand by galvanization ?
(h) Describe saponification value of a lubricant.
(i) Write uses of teflon.
(j) What do you understand by Blue-shift ?

2. (a) How is the phase diagram of water helpful in explaining (i) Ice skating (ii) Flow of glaciers.

(b) Explain the mechanism of Homogeneous and heterogeneous catalysis.

3. (a) Draw and explain the phase diagram of sodium sulphate- water system.

(b) Explain the concepts of promoters, inhibitors and poisoners.

4. (a) 100 ml of water sample requires 10 ml N/50 EDTA when titrated using buffer solution of pH 9-10 and EBT indicator, calculate the hardness of water.

(b) What do you understand by desalination of water ? Discuss in detail the reverse- osmosis process for desalination of sea water with help of neat, clean and labeled diagram. What are its advantages and disadvantages ?

5. (a) Write short notes on :
(i) Boiler corrosion
(ii) Caustic embritllement.

(b) A zeolite softener was 90% exhausted by removing the hardness completely when the 200000 litres of hard water sample passed through it. The exhausted zeolite bed requires 145 litres of 35% *NaCl* solution for its complete regeneration. Calculate the hardness of water.

6. (a) Write short notes on :
   (i) Waterline corrosion
   (ii) Role of sacrificial anode in corrosion control.
   (b) Write short notes on :
   (i) Molybdenum disulphide as solid lubricant.
   (ii) Semi-solid lubricants.

7. (a) Why additives are used in lubricants ? Gives some examples of additives/which are commonly used in lubricants.
   (b) Write short notes on :
   (i) Dry corrosion
   (ii) Microbial corrosion

8. (a) Discuss the principle and application of TGA
   (b) Write short notes on :
   (i) Polymer composite
   (ii) Buna-S

9. (a) Write the applications of U.V. and I.R. spectroscopy.
   (b) Write short notes on :
   (i) Ziegler-Natta Catalyst
   (ii) Write uses of Teflon and Phenol-formaldehyde resin