

Roll No. ....

24005

**B. Tech. 2nd Semester  
(Common for all Branches) (Re-Appeal)  
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 (b) Explain the mechanism of Homogeneous and heterogeneous catalysis.

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

b (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. <https://www.mdustudy.com>

(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 embrittlement.

(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. 16

- (b) Write short notes on : 8
- (i) Ziegler-Natta Catalyst
  - (ii) Write uses of Teflon and Phenol-formaldehyde resin

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