Printed Pages:02 **Sub Code: RAG 202**

Paper Id: | 1 | 8 | 0 | 2 | 3 | 2 | **Roll No.** | | | | | | | | | | |

B. TECH.
(SEM II) THEORY EXAMINATION 2017-18
ENGINEERING CHEMISTRY

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What is meant by Permanent hardness?
b. Define cloud point & pour point of a lubricant.
c. Write two gaseous fuels.
d. What is meant by Pseudo first order reaction?
e. Define coefficient of viscosity
f. What do you mean by hardening of cement?
g. Write name of salts responsible for temporary hardness.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Discuss the formation of scale & sludge in boiler. Write their disadvantages and methods of its removal & preventions.
b. Describe pitting and stress Corrosion.
c. Give various methods for the determination of molecular weight of polymer. Explain any one method in detail.
d. What is energy of Activation? Write Arrhenius equation
e. What is meant by calorific value of fuel? What is the difference between gross calorific value and net calorific value?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Discuss the zeolite process for the treatment of water and write the advantages of zeolite process over soda lime process.
(b) Classify fuels and their advantages.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) State mechanism of lubricant and their properties.
(b) Give a brief account of corrosion and its mechanism. Explain the reason: The rusting of iron is quicker in saline water than in ordinary water.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Classify polymers on the basis of structure, synthesis and molecular force involved.
(b) Explain the specific conductivity and equivalent conductivity. Describe the determination method of conductivity.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Define chemical kinetics? Derive the equation for a first order reaction.

(b) What is cement? Also explain the manufacturing process of Portland cement.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the Lime soda process for the softening of water.
The hardness of 1,000 litres of a water sample was completely removed by passing it through a zeolite softener. The softener then required 30 litres of NaCl solution containing 1.5 mg/l of NaCl solution. Calculate the hardness of the sample of water.

(b) i. Calculate the potential of following electrochemical cell at 25°C : $Cu(s)|Cu^{2+}(aq)(0.60M)||H^{+}(0.01M)|H_2$ (0.96atm);Pt
Given: $E^0_{Cathode} = 0.00$ V, $E^0_{Anode} = 0.30$ V.

ii. Differentiate between condensation and addition polymerization.