Printed Pages: 4 **RAS-102**

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012298 Roll No.

B.TECH

RegularTheory Examination (Odd Semester - I), 2016-17

ENGINEERING CHEMISTRY

Time : 3 Hours *Max. Marks : 100*

Section - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

a) Graphite is better lubricant than molybdenum di sulphide. Why?

b) Predict the number of signals in $CH_3CH_2CH_2OH$.

c) What do you understand by Polymer Blends?

d) Calculate the bond order of N_2

e) Define the term Pitch.

f) Classify the polymers on the basis of tacticity.

g) Describe sludge and scales.

h) Write down the reaction of synthesis of plaster of paris.

i) Define chemical shift.

j) Define biodegradable polymer.

Section - B

2. Attempt any Five questions from this section. **(5×10=50)**

a) i) What are ion exchanger resins? Discuss their role in ion exchange process of water softening.

ii) Calculate the temporary,permanent and total hardness of a sample of water that is analyzed as Mg (HCO3)2 =7.3 mg/L,Ca(HCO3)2 = 8.1 mg/L, MgC12 = 9.5 mg/L and CaSO4 = 6.8 mg/L.

b) i) Give preparation, properties and applications of following polymers -

Buna-N, Nylon-6:6, Terylene

ii) What are composites?Give their classification and advantages.

c) i) Differentiate Schottky and Frenkel defect.

ii) Discuss the postulates of Molecular Orbital Theory.

d) Describe the process of manufacturing of Portland cement with the help of schematic diagram. Also discuss setting and hardening of cement.

e) i) Describe principle and working of Galvanic cell.

ii) The percentage composition of coal sample is : C = 85%, H = 5%, O = 6%, N=4%, S = 2% ash = 5% and moisture = 3%.

Calculate the minimum amount of air needed in combustion of 1 kg of coal.

f) Define phase rule. Discuss its application to one component system.

g) i) Write down a short note on Graphite.

ii) What is Grignard reagent? Give its preparation and various applications.

h) Give the basic principle of UV- spectroscopy. Explain various types of electronic transition. Predict electronic transition in CH_3CHO.

Section - C

Attempt any two questions from this section. **(2×15=30)**

3. i) What is corrosion? Explain wet theory of corrosion. Also discuss the methods of prevention of corrosion.

ii) What is the composition of bio-gas. Discuss the process of formation of bio gas.

4. i) Define lubrication with its mechanism.

ii) How many types of liquid crystals do you know? Explain with their applications.

5. i) A sample of coal contains C = 70%,O = 20%, H = 8%, S =1 %, N = .5%, ash = .5%

Calculate GCV and NCV of coal.

ii) What are conducting polymers? How can we improve the conducting property of a polymer.