

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

Paper ID : 2012298

Roll No.

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B.TECH

Regular Theory 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)
- Graphite is better lubricant than molybdenum disulphide. Why?
 - Predict the number of signals in $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$.
 - What do you understand by Polymer Blends?
 - Calculate the bond order of N_2
 - Define the term Pitch.
 - Classify the polymers on the basis of tacticity.
 - 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 $\text{Mg}(\text{HCO}_3)_2 = 7.3 \text{ mg/L}$, $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ mg/L}$, $\text{MgCl}_2 = 9.5 \text{ mg/L}$ and $\text{CaSO}_4 = 6.8 \text{ mg/L}$.
- 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.

