MODEL QUESTION PAPER

B-Tech

FIRST SEMESTER EXAMINATION-2008-09

ENGINEERING CHEMISTRY (EAS 102)

Time- 3hours M.M. : 100

Note: The Question paper contains three Sections, A, B and C with the weightage of 20, 30 and 50 marks respectively. Follow the instructions as given in each sections.

SECTION-A

This section contains 10 questions of multiple choice/ Fill in the blanks/ True, False/ Matching Correct answer type questions. Attempt all parts of this Section. [10x2=20]

Q.1 (a) Oxygen molecule has ..... electrons in its MO diagram.

(b) Acetone is more volatile than alcohol (True/False)

(c) Addition polymerisation is also known as ..... polymerisation.

(d) Phase rule equation is .....

(e) % of methane in biogas is .....

(f) In R.S. Configuration 'R' stands for

(i) Reuse (ii) Recycle (iii) rectus (iv) Reduce

(g) Neoprene is polymer of ..... monomer.

(h) Number of Constituents per Unit cell in FCC

(i) 1 (ii) 2 (iii) 3 (iv) 4

(i) Rusting of iron is an example of .....

(j) $-\overset{O}{\overset{\|}{C}}-OH$ is a (i) Auxochrome (ii) chromophore

(iii) Chlorophyl (iv) None of these

SECTION-B

Attempt any three. All questions carry equal marks (10x3=30)

2- (a) Write down the applications of IR spectroscopy.

(b) Define Polymerisation. Differentiate between addition and condensation polymerisation?

(c) What is chemical shift ?

(d) What is a free radical ? Give two methods for the generation of free radicals ?

(e) Discuss the E-Z nomenclature of olefines.

(f) Write a note on "Protection of Corrosion"

SECTION-C

Attempt any two parts from each question. All questions are compulsory. [10 × 5 = 50]

3-(a) How do you determine the net Calorific Values using Bomb Calorimeter ?

(b) Describe the application of the phase rule for one Component system ?

(c) Write note on "Hofmann Rearrangement" ?

4- (a) Discuss the kinetics and stereochemistry of SN^2 reaction.

(b) Calculate the NMR signals and Splitted Signals in the following molecules:

(i) $CH_3-O-CH_2-CH_3$ (ii)  (iii) $H_2C=C<_{H}^{H}$ (iv) $CH_3-CH_2-CH_2-Cl$

(v) $CH_3-\underset{Br}{CH}-COOH$

(c) Calculate the energy of activation whose rate Constant is tripled by 10°c rise in temperature in the vicinity of 27°c.

5- (a) Explain hydrogen evolution and oxygen absorption theory for electrochemical corrosion.

(b) Give the mechanism of Aldol Condensation

(c) H_2O is liquid but H_2S is a gas

(6) (a) What do you understand by the term "Metallic Bond" Explain it on the basis of Molecular Orbital Theory.

(b) What are liquid crystals? How are they classified? Differentiate clearly between Smectic liquid crystal and nematic Liquid crystal

(c) Write note on Fullerenes.

(7) (a) Enumerate the differences between thermoplastics and ~~thermo~~ thermosetting plastics.

(b) Write anote on "Biomass and Biogas.)

(c) Give a brief account of the applications of Conducting Polymers.

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