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B.Tech. (Sem. – 1st)

ENGINEERING CHEMISTRY

SUBJECT CODE : BTCH – 101 (2011 Batch)

Paper ID : [A1106]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section A is **compulsory**.
2) Attempt any **Five** questions from Section B & C.
3) Selecting atleast **Two** questions from Section B & C.

Section - A

Q1) *(2 marks each)*

a) How the use of ultrasonic radiation can help in green syntheses?

b) A copper equipment should not possess a small steal bolt. Explain.

c) What are third generation petrochemicals?

d) What is standard hard water?

e) What is meant by polymerization?

f) State Beer – Lambert law.

g) How scale formation in boilers can be prevented?

h) Hydrogen chloride can undergo stretching vibration only, while carbon dioxide can undergo stretching and bending vibrations. Explain.

i) What is nanochemistry?

j) What is meant by shielding and deshielding of a proton nucleus?

Section - B

(8 marks each)

Q2) (a) Discuss the principle of UV/Visible spectroscopy.

(b) Draw and explain ^1H NMR spectrum pattern for $Cl_2CH\text{-}CHCl\text{-}CHCl_2$.

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Q3) (a) Draw well labeled Jablonski diagram. Discuss non-radiative transitions.

(b) Describe photovoltaic cells.

Q4) (a) What are the disadvantages of sludge formation? How it can be prevented?

(b) Discuss hot lime soda process for softening of water. What are its advantages and disadvantages?

Q5) (a) Define Green Chemistry. What do you understand by atom economy?

(b) Explain the design of safer chemicals by giving examples.

Section – C

(8 marks each)

Q6) (a) Discuss mechanism of wet corrosion.

(b) What do you understand by corrosion and stress corrosion?

Q7) (a) What types of intermolecular bonds are present in polymers? Explain.

(b) What do you understand by tacticity in polymers? Explain different types.

Q8) (a) What do you understand by two dimensional assemblies?

(b) Explain supramolecular structures.

Q9) (a) Discuss natural gas. Discuss its treatment processes.

(b) Discuss the production of ethylene and propylene.

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