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SECOND SEMESTER

B.Tech. (Gp B)

END SEMESTER EXAMINATION

May-2019

AC-102 CHEMISTRY

Time: 3 Hours *Max. Marks: 40*

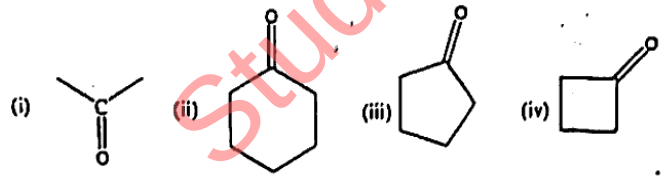
Note : Answer FIVE questions. Question number ONE is compulsory
Assume suitable missing data, if any.

1 Answer the following questions (Any *Six*) [2x6=12]

[a] Give one example each of internal, external, self and polymeric indicator.

[b] How DSC is used to check the purity of any compound?

[c] Arrange the following molecules in their increasing order of stretching frequency of C=O. Discuss the reason



[d] Write four examples of secondary batteries?

[e] What is reduced phase rule? When is it applied?

[f] Calculate the % atom economy of synthesis of ammonia.

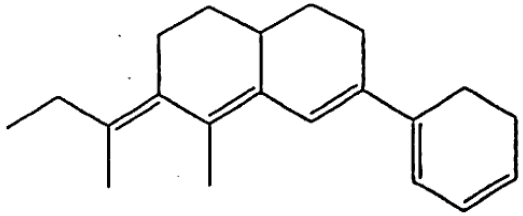
$$N_2 + 3H_2 \longrightarrow 2NH_3$$

[g] What is an auxochrome? Explain with an example.

2 [a] Explain the principle of DTA with the help of a suitable thermogram. [3]

[b] Discuss the mode of termination in free-radical addition polymerization. Write monomers of Terylene and Kevlar. [4]

3 [a] Explain the mass spectrum of isopropane. Calculate λ_{max} for the following molecule using Woodward – Fieser rule



[3]

[b] What do you mean by enantiotropy? Draw and explain the phase diagram of sulphur. [4]

4 [a] In a polymer, there are 100 molecules of molecular weight 100; 200 molecules of molecular weight 1000; and 300 molecules of molecular weight 10,000. Find $\bar{M}_n$, M_w and PDI. [3]

[b] Predict the number of signals and multiplicity (splitting) of the respective signals in the following compounds:

(i) $(CH_3)_2C\text{-}O\text{-}CH_3$ (ii) $H\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_2CH_2CH_3$ [4]

5 [a] Explain Volhard's method for determination of halide ion. [3]

[b] Define electroplating. What is its significance? How the balanced concentration of metal ions is maintained in electrolytic cell? [4]

6 Write short notes on any TWO of the following. [3.5x2=7]

(a) Li-ion battery
(b) Green solvents
(c) Fuel cell
(d) Eutectic system