

Total No. of Pages: 02
SECOND SEMESTER

Roll No.
B.Tech. (Gp B)

MID SEMESTER EXAMINATION

March-2019

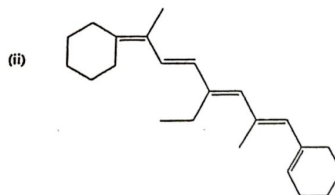
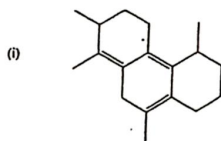
AC-102 CHEMISTRY

Time: 1.5 Hours

Max. Marks: 30

Note: Answer ALL questions. Assume suitable missing data, if any.

- 1 Answer all the following questions [2×5]
- [a] Distinguish between Iodimetry and Iodometry in volumetric analysis by taking suitable example.
 - [b] Mention various types of electronic transitions possible in the following molecules:
Methane, Ethene, Formaldehyde and Chloromethane.
 - [c] Draw the structure of phenolphthalein and name the functional groups present. Explain its solubility in water.
 - [d] Define glass transition temperature (T_g)? Give one example each of an exothermic and endothermic physical change.
 - [e] Write possible IR frequencies for the following functional groups:
-OH, -NH, C=O and C≡N.
- 2 Explain the principle and thermograms of TGA. Write its four applications. [3+2]
- 3 Calculate λ_{max} for the following molecules using Woodward – Fieser rule: [1½+1½+2]



Explain Finger print region and give source of IR radiations in IR spectrophotometer.

- 4 (a) Alkaline water sample (100 mL), on titration, required 14.5 mL of N/50 HCl upto phenolphthalein end point. When few drops of methyl orange are added to the same solution and titration further continued, the yellow colour of the solution just turned red after addition of another 10.5 mL of the acid solution. Elucidate the type of alkalinity present (i.e. ions responsible for causing alkalinity) and calculate their strength.
- (b) Calculate the concentration in $\mu\text{g/mL}$ of a solution of organic compound (mol. mass 211) giving an absorption of 0.612 at its λ_{max} 281 nm in 4 cm cell. The molar absorptivity at 281 nm is 5372.
- [2.5 + 2.5]
- 5 Suggest and explain a suitable method for determination of hardness of water. Write down three conditions for a precipitation titration to take place.
- [3 + 2]