

Exam. Code : 103206

Subject Code : 1396

B.A./B.Sc. Semester—VI

CHEMISTRY

(Organic Chemistry—IV)

Time Allowed—3 Hours] [Maximum Marks—35

PART—A (Compulsory)

Note :— Attempt ALL questions. Each question carries 1 mark.

1. Differentiate between auxochrome and chromophore giving examples.
2. What are mercaptans ? Why are they named so ?
3. What do you mean by vulcanization of rubber ?
4. What is Schweitzer's reagent ? Give its importance.
5. Write the name and draw the structure of an amino acid having secondary nitrogen atom.
6. Is diethyl malonic ester acidic ? Support your answer with proper reasoning.
7. Define Lambert-Beer law.
8. What are relaxation processes ? Explain. $1 \times 8 = 8$

PART—B

Note :— Attempt any **TWO** questions from each of the following Sections. Each question carries **4½** marks.

SECTION—I

9. (a) Define:

(i) Hook's law

(ii) Equivalent and non-equivalent protons

(iii) Fermi resonance. 3

(b) Discuss the significance of finger print region in IR. 1.5

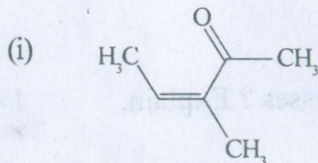
10. (a) Why acetylenic protons absorb upfield as compared to vinylic protons in proton NMR? 2

(b) An organic compound having molecular formula $C_9H_{11}Br$ showed the following peaks in NMR spectra:

δ 2.15 (m, 2H), 2.75 (t, 2H), 3.38 (t, 2H) and 7.22 (s, 5H).

Assign suitable structure to the compound giving justification. 2.5

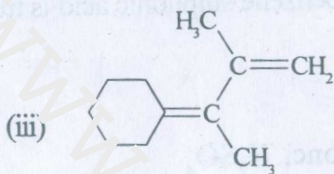
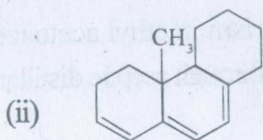
11. Calculate λ_{\max} for the following compounds:



2797(2416)/QFV-49333

2

(Contd.)



4.5

SECTION—II

12. (a) Write a short note on Zeigler Natta polymerization. What are its advantages over the free radical polymerization? 2.5

(b) How will you prepare :

(i) 2-Methylpropanoic acid from malonic ester

(ii) Acetyl acetone from ethyl acetoacetate? 2

13. An organic compound having molecular formula C_8H_{10} shows the following spectral data :

UV : λ_{max} 262 nm

IR : 3070-3035, 2970-2860, 1610, 1500, 750

NMR : δ 1.20 (t, 3H), 2.60 (q, 2H), 7.10 (s, 5H)

Elucidate its structure.

4.5

14. (a) Explain keto-enol tautomerism in ethyl acetoacetate.
How will you separate them through aseptic distillation?
1.5
- (b) What happens when benzene sulphonic acid is treated with :
- (i) Oleum
 - (ii) Conc. HNO_3 /conc. H_2SO_4
 - (iii) Pt_2/Fe ? 3

SECTION—III

15. Write notes on :
- (a) Secondary structure of proteins
 - (b) Kiliani-Fischer synthesis
 - (c) Zwitterion structure of α amino acids. 1.5 each
16. (a) Why glucose and fructose give the same osazone ?
Discuss modern mechanism of osazone formation.
2
- (b) Write a short note on classification of monosaccharides. 2.5
17. (a) How will you prepare α -amino acids using Gabriel's phthalimide synthesis ? 2
- (b) Give a brief account on the double helix structure of DNA. 2.5