

Exam. Code : 103206

Subject Code : 1426

B.A./B.Sc. 6th Semester

CHEMISTRY

(Organic Chemistry—IV)

Time Allowed—3 Hours] [Maximum Marks—35

PART—A (Compulsory)

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

1. How will you study the progress of oxidation of 2-propanol to propanone using IR spectroscopy ?
2. How will you prepare sulphaguanidine ?
3. What are active methylene compounds ? Give one example.
4. How are precessional frequency of a proton and magnetic field related ?
5. Briefly discuss vulcanization.

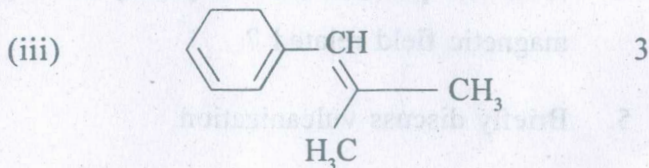
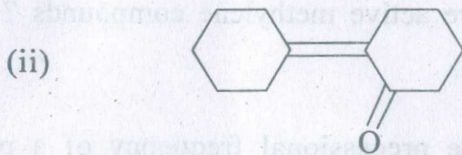
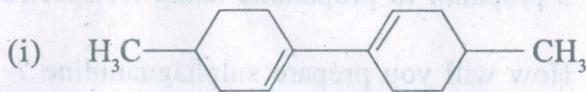
6. Draw Haworth projection formula for alpha-D(+)-glucose.
7. How can ethylbenzene and styrene be distinguished by NMR spectroscopy ? Explain.
8. Give preparation of an amino acid using Strecker's synthesis. 1×8=8

PART—B

Note :—Attempt any two questions from each of the following sections. Each question carries 4½ marks.

SECTION—I

9. (a) Calculate λ_{\max} for the following compounds :



- (b) Why TMS is used as a reference compound in NMR ? 1½
10. (a) Discuss the factors affecting positions of IR absorptions. 2½
- (b) Sketch the NMR of ethyl alcohol and acetaldehyde. 2
11. (a) Discuss the principle of UV spectroscopy. 2
- (b) An organic compound, molecular formula $C_{10}H_{13}Cl$, shows the PMR signals at $\delta 1.57(s, 6H)$, $3.07(s, 2H)$, $7.27(s, 5H)$. Assign a proper structure giving suitable explanations. 2½

SECTION—II

12. (a) Give preparation and uses of orlon, PVC and PMMA. 3
- (b) How will you convert cyclopentanone to 2-allyl cyclopentanone using enamine ? 1½
13. (a) Discuss Claisen condensation reaction and its mechanism. 3
- (b) Give mechanism of the preparation of benzene sulphonic acid from benzene. 1½

14. An organic compound having molecular weight 86 shows the following spectral data.

UN : λ_{\max} 278 nm ($\epsilon = 15$) ; IR : 2985-2850(m), 1718(s), 1416(m) cm^{-1}

NMR : δ 1.1(d, 6H), 2.1(s, 3H), 2.45(septet, 1H).

Elucidate its structure. 4½

SECTION—III

15. Explain the following giving examples :

(a) Modern mechanism of osazone formation

(b) Kiliani Fischer synthesis

(c) Mutarotation with mechanism. 1½ each

16. (a) Differentiate between DNA and RNA. 2½

(b) Discuss evidences in the favour of zwitterion structure of amion acids. 2

17. (a) Give a brief account on Sanger's method. 2

(b) Discuss solid phase peptide synthesis. 2½