(i) Printed Pages : 4 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 4 5 2

Exam. Code : 0 0 0 5

B.A./B.Sc. (General) 5th Semester

(2123)

CHEMISTRY

(Same for B.Sc. Microbial & Food Technology)

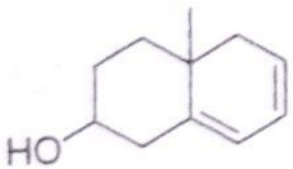
Paper–XVIII : Organic Chemistry–A

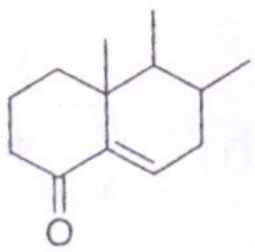
Time Allowed : Three Hours] [Maximum Marks : 22

Note :—Attempt **FIVE** questions in all, including Q. No. **9** (Unit–V) which is compulsory and selecting **ONE** question from each Unit-I to Unit-IV.

UNIT—I

1. (a) Calculate the λ_{max} the UV spectrum of the following compounds :

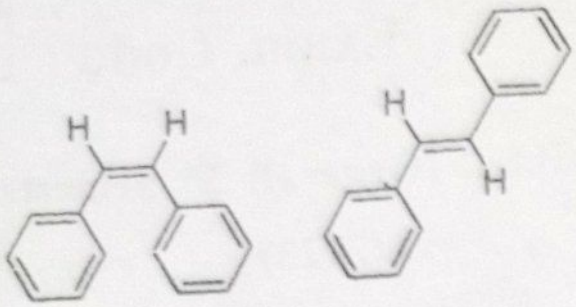
(i) 

(ii) 

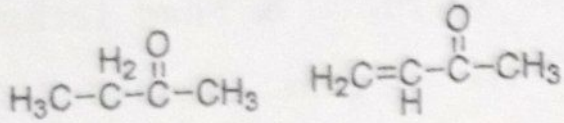
3

(b) Amongst amines and alcohols, which absorb at longer wavelength and why ? 1

2. (a) Which of the following pairs of molecules is expected to absorb at longer wavelength any why ?

(i) 

I II

(ii) 

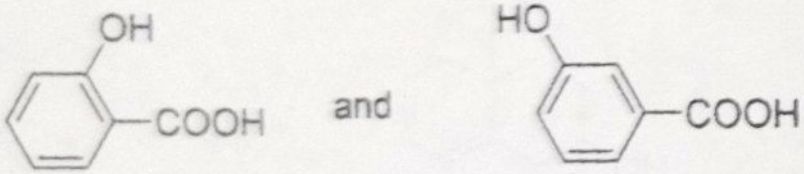
I II 2

(b) Discuss different types of electronic transitions possible in organic molecules. 2

UNIT—II

3. (a) Define Finger Print region. Give its importance also. 1

(b) How do you differentiate the following pair using IR spectroscopy :

(i) 

(ii) CH_3CH_2OH and CH_3CHO 3

4. (a) Give the approximate positions of characteristic infrared bands of benzaldehyde. Assign the bands also. 2

(b) A hydrocarbon with molecular formula C_8H_{10} shows the following bands in the infra-red spectrum. (i) 3016 cm^{-1}, (ii) 1602 cm^{-1}, 1578 cm^{-1}, 1460 cm^{-1}, (iii) 705 cm^{-1}(m), 790 cm^{-1}(m). Assign structure (with explanation) to it. 2

UNIT—III

5. (a) Explain spin-spin splitting in detail. 2

(b) How inter- and intra- molecular hydrogen bonding can be distinguished by NMR studies ? 2

6. (a) From the following sets of NMR data, give a structure (with explanation) consistent with each of the following :

(i) $C_9H_{11}Br$, δ 2.15 (Quintet, 2H); 2.75 (t, 2H); 3.38 (t, 2H); 7.22 (s, 5H)

(ii) $C_9H_{11}Br$, δ 1.45 (d, 3H); 2.75 (d, 2H); 3.40 (m, 1H); 7.20 (s, 5H). 3

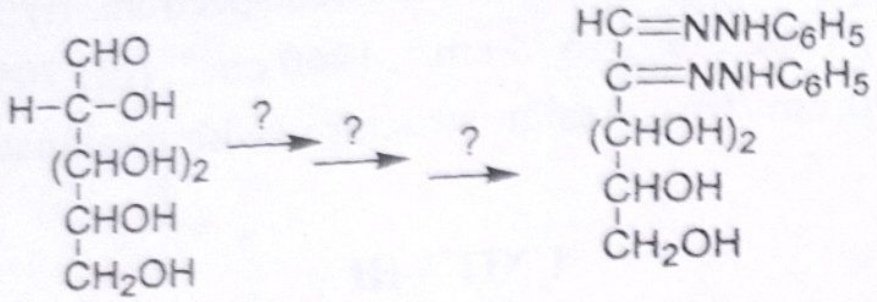
(b) Does toluene show splitting of the signals ? Give reason. 1

UNIT—IV

7. (a) Write short note on (i) sucrose and (ii) structural polysaccharide found in cell wall of plants, by writing the names, structures and linkages involved of the monosaccharides involved. 3

(b) What are glycosides ? Describe a glycidic linkage. 1

8. (a) Give the mechanism for following conversion :



2

(b) Explain the interconversion of glucose and fructose.

2

UNIT—V

9. (a) Why no absorption arises due to n $\rightarrow \sigma^*$ transition in the spectrum of trimethyl amine in acidic solution ?

(b) Why for salicylic acid, C=O stretching occurs at 1665 cm^{-1}; whereas for p-hydroxy benzoic acid, the C=O stretching occurs around 1680 cm^{-1} ?

(c) Define coupling constant and give its importance.

(d) What is the difference between epimers and anomers ? Give examples also.

1.5×4=6