

S.C.No.—2005408

B.Sc. EXAMINATION, 2022

(Main/Re-appear)

(Fourth Semester)

CHEMISTRY

CH-403

Organic Chemistry

Time : 3 Hours

Maximum Marks : 29

Note : Attempt *Five* questions in all. All questions carry equal marks.

1. Answer the following questions :

- (a) Diazonium salts used in the form of freshly prepared aqueous solutions. Give reason. 1

~~(b)~~ Define Hook's Law. 1

- (c) What is Sarett reagents ? Give one use of it. 1

- (d) Compare the basic nature of aniline and methylamine. 1

- (e) Give the reaction for preparation of cinnamic acid from benzaldehyde. 1.8

2. (a) Define the following terms :

~~(i)~~ Fermi Resonance 1.5

~~(ii)~~ Overtones. 1.5

- (b) Differentiate between rocking and wagging vibrations with suitable examples. 2.8

3. (a) Give an account on the factors influencing vibrational frequency in IR spectra. 3

- (b) Calculate the number of fundamental vibrations possible for carbon-dioxide molecule and methane molecule. 2.8

4. (a) Compare the relative basicity of primary, secondary and tertiary amines in aqueous medium. 3

(b) Why *p*-nitroaniline is less basic than *p*-methoxy aniline ? 2.8

5. (a) Describe the separation of primary, secondary and tertiary amines using Heinberg's method. 3

(b) Give reaction and mechanism for Gabriel phthalimide reaction. 2.8

6. (a) What is diazotization reaction ? Explain with mechanism. Why are arene-diazonium salts more stable than alkane diazonium salts ? 3

(b) How will you convert benzene diazonium chloride into phenol ? Give mechanism. 2.8

7. (a) Write a short note on coupling reaction. 3

(b) How nitrobenzene reacts with Zn-NaOH-CH₃OH ? 2.8

8. (a) Explain the oxidation of alcohols with Corey's reagent. 3

(b) What happens when crotonaldehyde is reduced with sodium borohydrate ? 2.8

9. (a) Describe the mechanism for Benzoin condensation. 3

(b) Why does formaldehyde not give aldol condensation ? 2.8