



K22P 1569

Reg. No. :

Name :

I Semester M.Sc. Degree (CBSS-Reg./Sup./Imp.) Examination, October 2022
(2019 Admission Onwards)

CHEMISTRY

CHE1C.03 : Organic Chemistry – 1

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **all** questions in **one** word or **one** sentence. **Each** question carries **one** mark.

1. But-2-ene is more stable than but-1-ene. Why ?

2. Which of the following is aromatic ?



cyclobutadiene



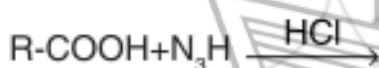
cyclopropenyl cation



cyclopentadienyl cation

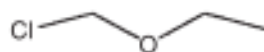
3. Draw the most stable conformation of trans-1,4-cyclohexanediol.

4. Give the product



5. Discuss the bonding in Benzynes.

6. Even though the following compound (I) is primary halide it undergoes hydrolysis rapidly. Why ?



(I)

7. Complete the following reaction



8. What is the importance of photosensitiser in photochemistry ?

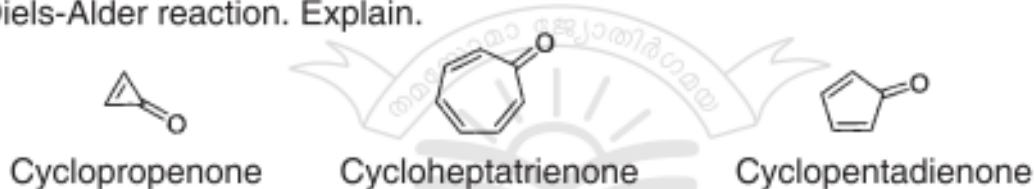
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SECTION – B

Answer **any eight** questions. Answer in **two** or **three** sentences. **Each** question carries **2** marks.

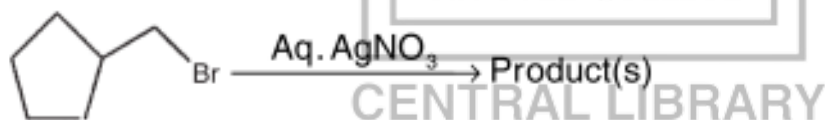
9. $:CF_2$ (Singlet) carbene is more stable than $:CF_2$ (Triplet) carbene. Why ?
10. Cyclopropenone and cycloheptatrienone are more stable than anticipated. Cyclopentadienone, however, is relatively unstable and rapidly undergoes Diels-Alder reaction. Explain.



11. Discuss the Lossen Rearrangement with mechanism.
12. Draw different conformers of n-butane. Discuss their stability.
13. Explain chirality based on molecular shape.
14. Give the product.



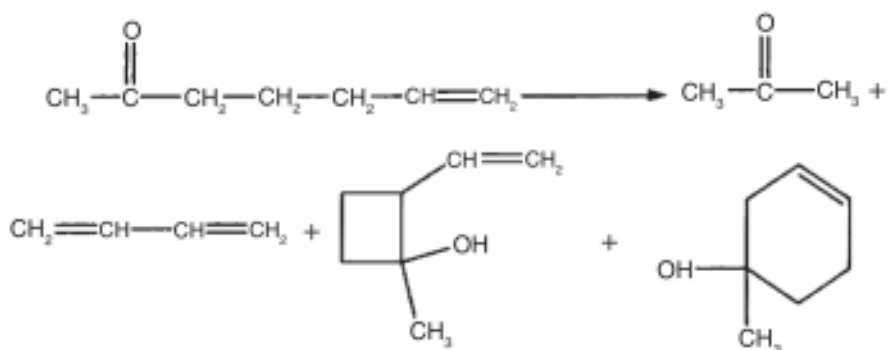
15. Explain the effect of substrate structure in Aliphatic nucleophilic substitution reactions.
16. Complete the following reaction



17. Give different products during the dehalogenation of dibromostilbene.



18. Suggest the mechanism for the following photoreactions.



19. Give one method to generate singlet oxygen and illustrate one reaction in which singlet oxygen plays a key role ?

20. Write a note on photodimerisation of α, β unsaturated ketones ?

SECTION – C

Short paragraph questions. Answer **four** questions. **Each** question carries **three** marks.

21. Discuss the formation, hybridisation, shape and stability of carbanions ?
22. On the basis of MO theory discuss the aromaticity of benzene and antiaromaticity of cyclobutadiene.
23. When 28 mg of mandelic acid was dissolved in 1 cm³ of ethanol and the solution placed in a 10 cm long polarimeter cell, an optical rotation α of -4.35° was measured at 20°C with light of wavelength 589 nm. What is the specific rotation of the acid ?
24. Illustrate Favorski rearrangement with mechanism.
25. Out of cis and trans 2-iodocyclohexyl brosylate which will undergo acetolysis faster. Why ?
26. Discuss the stereo chemical aspects of E₂ Elimination with examples.
27. Discuss Di-Pie methane arrangement and give its mechanism.
28. Predict the product formed in the following reaction :
 - a) Addition of 1,3 butadiene to anthracene
 - b) Addition of vinyl cyanide to naphthalene.



SECTION – D

Essay type questions. Answer **four** questions. **Each** question carries **six** marks.

29. A) Explain the following terms with suitable example.

- a) Aromatic
- b) Antiaromatic
- c) Nonaromatic
- d) Homoaromatic.

OR

B) What is resonance ? What are the factors that effect the stability of resonance structures.

30. A) Explain homotopic, enantiotopic and diastereotopic ligands with suitable examples.

OR

B) What happens when

- i) Hydrochloride salt of N, N-dimethyl aniline is heated
- ii) Hydrazobenzene is treated with a mineral acid
- iii) When salicylaldehyde is treated with alkaline hydrogen peroxide followed by hydrolysis.

31. A) Give different mechanism possible in Aromatic Nucleophilic Substitution reactions.

OR

B) Give a short essay on Elimination reaction.

32. A) Give a brief account on Norish Type 1 and Norish Type II reactions.

OR

B) Discuss the Photochemistry of vision.