S.NO: 22N1-PCH **Course Code: PGQA**

A.D.M.COLLEGE FOR WOMEN, NAGAPATTINAM

(AUTONOMOUS)

M. Sc. (Chemistry) Degree Examination

I Semester – November – 2022

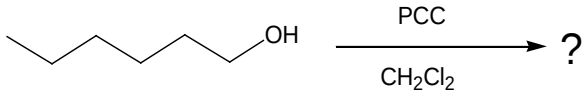
CC I – ORGANIC CHEMISTRY I

Time: 3 hours **Maximum Marks: 75**

Section –A **10X2=20**

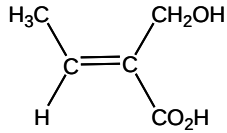
Answer **ALL** the Questions:

1. State the Huckel's rule for aromaticity.
2. What is alternate and non alternatehydrocarbon ?write one example for each.
3. What is PCC ?and complete the following reaction.

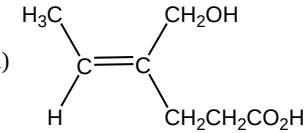


4. What is Swern oxidation? Give an example.
5. Assign the E /Z notation for the following molecules.

(i)

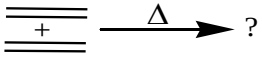


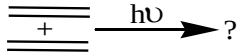
(ii)



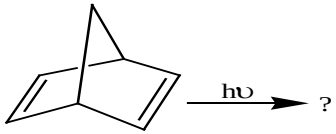
6. Draw R and S configurational isomer of lactic acid.
7. Define Quantum yield.
8. What do you meant by photosensitization? Give one example.

9. Complete the following reaction. Justify your answer.

(i) 

(ii) 

10. Find the product of following reaction.



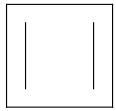
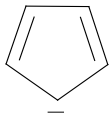
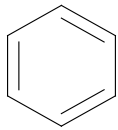
Section –B **5X5=25**

Answer **ALL** the Questions:

11. a) Classify the following molecule as aromatic , non-aromatic and anti aromatic (i) cyclopropene (ii) cyclopropenyl cation (iii) [4]annulene (iv) cyclopentadienyl anion (v) Cyclooctatetraene

(or)

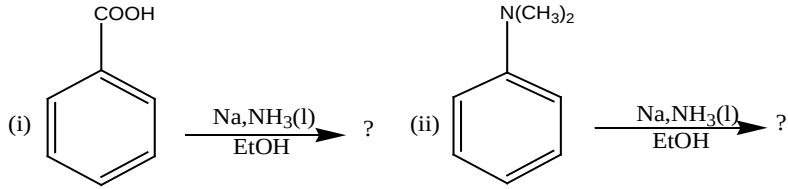
b) Draw the Frost molecular orbital diagram and explain aromaticity for the following compounds

(i)  (ii)  (iii) 

12. a) Explain reaction and mechanism of Baeyer-villiger oxidation.

(or)

b) Identify the correct product and propose a suitable mechanism for the following reaction



13. a) Explain the Cahn- Ingold –Prelog rule for assigning R and S configuration of optical active compound with one example

(or)

b) Explain the mechanism and stereochemistry of addition of bromine to Cis-2- butene.

14. (a) Explain the reaction and mechanism of Norrish type I and type II reaction

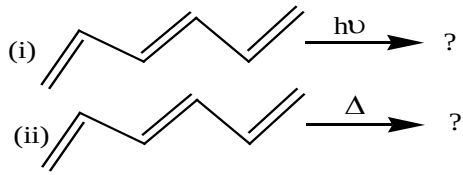
(or)

b)Discuss photochemical isomerization and dimerization of alkene

15. (a) Explain the Frontier molecular orbital method for the cyclization of Butadiene under thermal and photochemical condition.

(or)

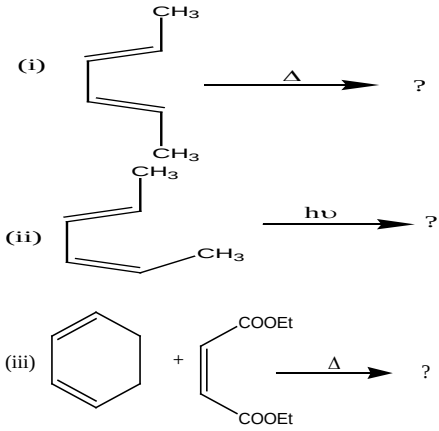
b) Complete the following electro cyclic reaction with suitable frontier orbital.



Section –C 3 X 10 = 30

Answer any **THREE** Questions

16. (i) What is homoaromaticity? Explain it using cyclooctatetraene
    (ii) Explain the aromaticity of azulene ,pentalene, and heptalene
17. Explain the structure and application of following reagent in Organic synthesis (i) triacetoxy borohydride (ii) L-selectride (iii) $NaBH_4$ (iv) Corey- akshi-Shibata
18. With neat energy profile diagram, discuss the conformational isomer of (i) Cyclohexane and (ii) Decalin
19. Write and explain the following photo chemical reactions with appropriate example.
    (i). PaternoBuchi reaction (3)
    (ii) Photo Fries rearrangement (3)
    (iii) Barton Reaction. (4)
20. Complete the following reaction. (4x2.5)



(iv) Cope and Claisen cope rearrangement
