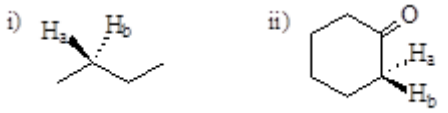
M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year I Semester
Organic Chemistry - I

Time : 3 Hours **Max.marks :75**

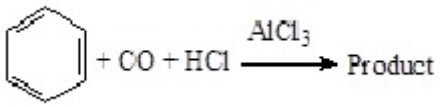
Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Assign Pro R and Pro S protons in the following compound.



2. Why trans-1,2-dimethylcyclobutane is more stable than cis-1,2-dimethylcyclobutane?
3. Give the Newman projection of most stable conformations of diastereomers of 2,3-butandiol.
4. Which of the following is more acidic and why? e,a-4-t-butylcyclohexane carboxylic acid & e,e-4-t-butylcyclohexane carboxylic acid
5. What is Hammet equation? Mention the terms involved in it.
6. What is Chichibabin reaction?
7. Predict the product and mention the name of the following reaction.



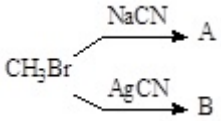
8. How will you synthesis m-bromo phenol from benzene?
9. Give the synthesis of flavone from 2-hydroxy acetophenone.
10. Give one example and its structure for the following natural products. Isoflavones and anthocyanins
11. Neopentyl halides are very unreactive towards nucleophilic substitution reactions. Why?
12. How the formation of benzyne intermediate is confirmed in aromatic nucleophilic substitution reactions?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Explain the optical isomerism exhibited by biphenyls and spiranes.

14. Discuss the conformation analysis of 1,2 and 1,3-dimethylcyclohexane.
15. Identify A & B and Justify your answer.



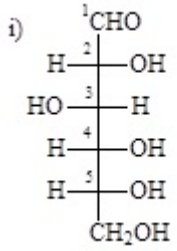
16. Explain ion pair mechanism with suitable evidences.
17. Write the mechanism of nitration of benzene. What are the various nitrating agents? Give evidences for the formation of electrophile.
18. Give the mechanism of the following reactions.
    i) Vilsmeyer-Hack reaction ii) Reimer-Tieman reaction
19. How the positions of hydroxyl and ketonic group in cholesterol are confirmed?

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. a. What are stereo specific and stereo selective reactions? Give one example for each. (5)
    b. Assign R/S notation for the following. (4 + 1)

i)



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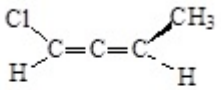

21. a. Write short note on conformations and stereochemistry of 9-methyl decalins. (4)
    b. Predict the product for the reaction of the following diastereomers with HONO. (3 +3)

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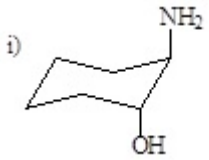

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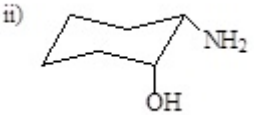

22. Explain the following with mechanism and evidences. (6 + 4)
    i) Benzyne mechanism ii) Dieckmann condensation
23. a. Give the mechanism of nitration of benzene. What are the various nitrating agents?
    b. Covert benzene into sym-tribromobenzene.
24. a. Give the synthesis of vitamin A1.
    b. Convert cholesterol to progesterone.

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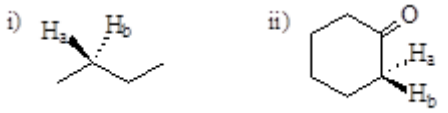

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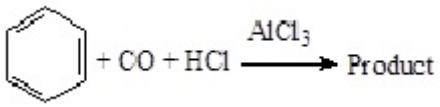

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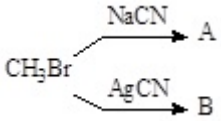

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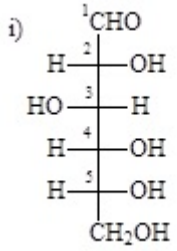

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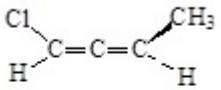

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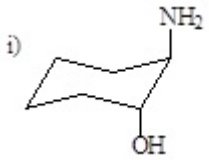

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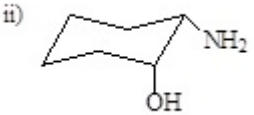

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