Reg. No..... Name.....

M.Sc. DEGREE END SEMESTER EXAMINATION NOVEMBER - 2016

SEMESTER- 1, CHEMISTRY / PHARMACEUTICAL CHEMSITRY

COURSE: P1CHET02 / P1CPHT02; STRUCTURAL AND MOLECULAR ORGANIC CHEMISTRY

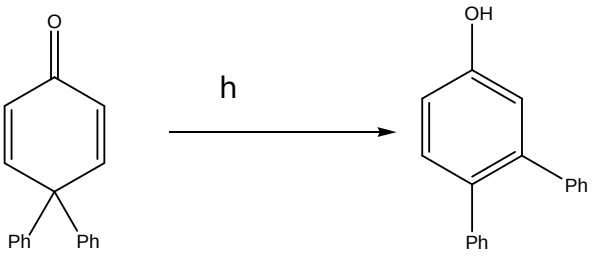
(For Supplementary / Improvement 2015 Admission)

Time: Three Hours Max. Marks: 75

Section A

(Answer any **10** *questions. Each question carries* **2** *Marks)*

1. Why is propene acidic?
2. What are anti-aromatic compounds? Give two examples.
3. Explain the mechanism of following reaction.

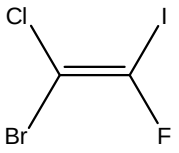


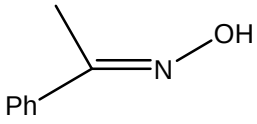
4. 1, 2-dibromoethane has a dipole moment of 1 D. Explain.

5. Write a note on fullerenes and graphene.
6. Explain Patterno- Buchi reaction.

7. Name the following as E, Z or Syn or anti

a) b)



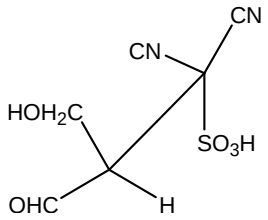


8. A solution of optically active 1-phenylethanol, $C_6H_5(OH)$-CH_3 in aqueous solvent containing

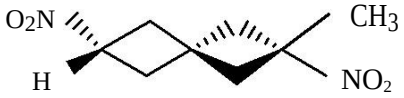
H+ slowly racemizes. Account.

9. Assign the configuration as R or S for the following:

(a)



(b)



10. Explain helical chirality with examples.

11. Which is the stronger acid, cis or trans 4- t-butylcyclohexane carboxylic acid? Why?

12. Explain Curtin Hammett principle.

13. Draw the structure of adamantane . Why is adamantane very stable and unreactive?

(10 × 2 = 20)

Section B

(Answer **5** *questions by attempting not more than* **3** *questions from each bunch.*

Each question carries **5** *marks each)*

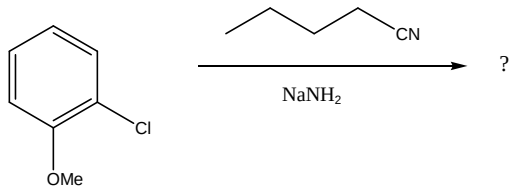
Bunch 1(Problem Type)

14. a) Discuss the semi-pinacolic deamination of threo and erythro 1,2-1-(p- chlorophenyl)aminoethanol.

b) Discuss the pyrolysis of menthyl xanthate and neomenthyl xanthate.

15. Predict the product(s) and explain the mechanism of the following reactions:

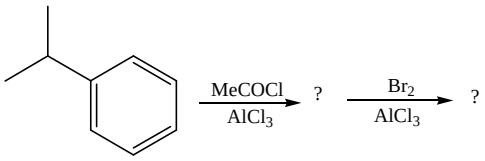
(a)



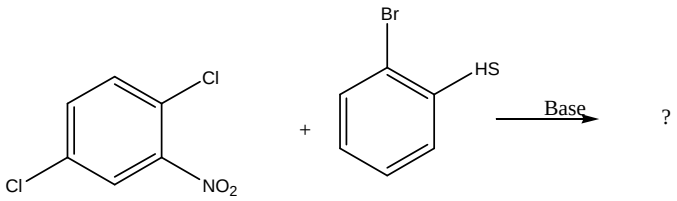
b) $C_6H_5CHO + EtOOC\text{-}CH_2\text{-}CH_2\text{-}COOEt \xrightarrow{NaH}$

16. Complete the following reactions and explain the mechanisms:

a)

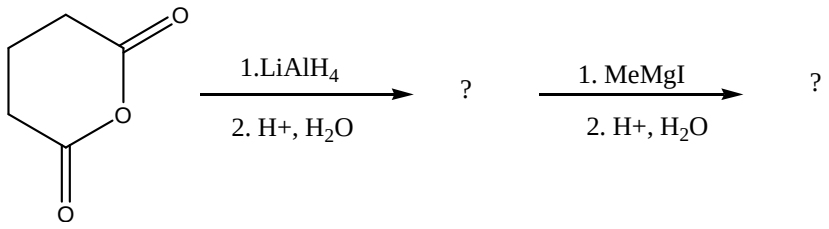


b)

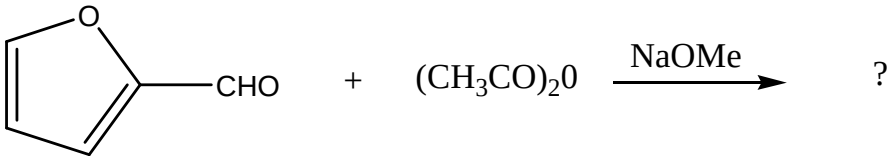


17. Predict the product and explain the mechanism:

a)



b)



Bunch 2 (Short Essay Type).

18. Explain steric assistance with examples.
19. Describe the applications of NMR spectroscopy as a tool for distinguishing aromatic and antiaromatic compounds.
20. Describe the conformational analysis of decalines.
21. Write a short note on Taft equation. (6 × 5 = 30 Marks)

Section C

(Answer any **2** *questions. Each question carries* **15** *marks)*

22. a) Write a note on photochemistry of azo and nitro compounds. (5)
    b) Explain the mechanism of photoreactions of ketones. (10)

23. a) Explain HSAB concept. (5)
    b) Compare AAC1 and AAC2 mechanism for ester hydrolysis. (5)
    c) Explain kinetic isotopic effect with examples. (5)

24. a) Explain the stereochemistry of pyrolytic elimination (5)
    b) Explain the aromatic nature of annulenes. (5)
    c) Write a note on SNAr mechanism. (5)

25. Discuss in detail the conformational analysis and stereochemistry of various disubstituted cyclohexanes. (2 × 15 = 30)