LOYOLA COLLEGE (AUTONOMOUS), CHENNAI-600034

M.Sc. DEGREE EXAMINATION-CHEMISTRY

THIRD SEMESTER-NOVEMBER2014

CH-3951: APPLIED ORGANIC CHEMISTRY

Date:

Time: Max: 100 Marks

Part-A

Answer all the questions. Each question carries two marks.

1. Write Bernoullis' equation and explain the terms in it.
2. Differentiate leaching from extraction.
3. Compare the addition reaction of Grignard reagent and alkyl lithiumoncinnamaldehyde.
4. Complete the following reactions:

5. Calculate the percentage of atom economy for a Diels-Alder reaction.
6. What happens when a polymer supported perbenzoic acid reacts with 1-propene?
7. How is enaminoketone prepared by microwave irradiation?
8. Write the mechanism ofmicrowave assisted methylation of acetone.
9. Suggest a method to prepare any one macrocyclic ether which can act as phase transfer catalyst.
10. Write the phase transfer catalysed polymerization reaction.

Part-B

Answer eight questions. Each question carries five marks.

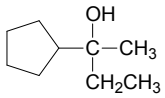
11. Explain any two unit operations with their schematic representation.

12a. What is heat transfer coefficient? (2+3)

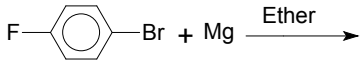
b. Write short note on stirrers and driers.

13. Explain the mechanism of pinacolic coupling.
14. How would you convert *o*-fluoroanisole into *m*-phenylanisole? Give its mechanism.

15a. Suggest as many different routes as possible for the Grignard synthesis of the following alcohol. (3+2)

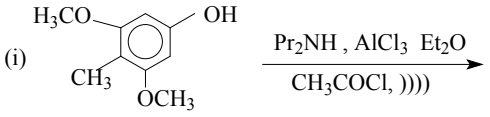


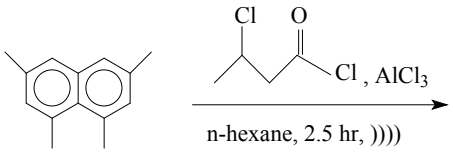
b. Predict the possible product and justify your answer.



16. Suggest any one method to prepare the following compounds: (2+1+2)
(a) PhLi (b) SmI_2 and (c) R_2CuLi
17. Explain the concept of selectivity with their types towards green synthesis.
18. What are ionic liquids? Explain their importance in green synthesis with examples.
19. Write and compare the synthesis of adipic acid from glucose and benzene.
20. Explain the advantages of the following organic sonochemical reactions: (3+2)
(a) Diels-Alder addition and (b) reduction.

21a. Identify the products in the following reactions:

(i) 

(ii) 

b. How is 1-phenyl-2,2-dichlorocyclopropane prepared using PTC.(2+3)

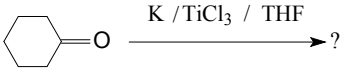
22. Write any five advantages of phase transfer catalysts.

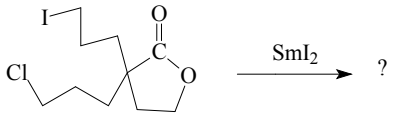
Part-C

Answer four questions. Each question carries ten marks.

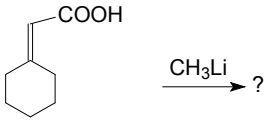
23. (a) Write a note on (i) types of fluid flow (ii) industrial scale nitration. (4+6)
(b) What is meant by energy balance? How is it calculated for a flow system?

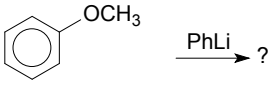
24. (a) Explain the factors affecting chemical process kinetics. (4)
(b) Complete the following reactions with mechanism. (3+3)

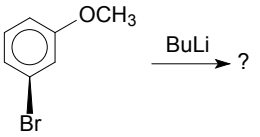
(i) 

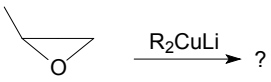
(ii) 

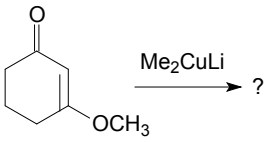
25. Predict the possible products in the following reactions: (5x2)

(i) 

(ii) 

(iii) 

(iv) 

(v) 

26a. List the twelve principles of green chemistry. (6)

b. Write the importance of bio-catalyst in green synthesis with a suitable example.(4)

27a. Discuss the advantages, limitations and precautions in microwave synthesis of organic compounds. (6)

b. "Sonication is effective in promoting thehomocoupling of organometallic intermediates". Justify this statement with suitable example. (4)

28a. Explain the mechanism and the role of phase transfer catalyst in the reaction between 1-chlorooctane and sodium cyanide. (4+6)

b. Explain the applications of phase transfer catalysts in the following synthesis:
(i) benzoyl cyanide from benzoyl chloride and (ii) esterification

****