Register Number:
Date: / /2020

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
B.Sc. Chemistry - IV SEMESTER
SEMESTER EXAMINATION: APRIL 2020
CH418 - CHEMISTRY

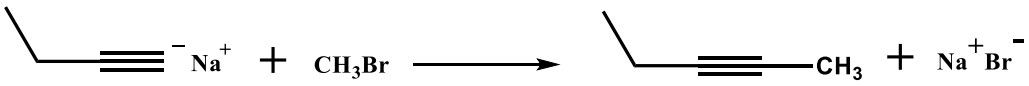
Time- 1 1/2 hrs **Max Marks-35**

This paper contains 3 printed pages and three parts. Give chemical equations wherever necessary.

Part A

Answer any **three** of the following **[3 X 2 =6]**

1. How do you convert an alkyl halide to anitrile?
2. How do you prepare an alkyne starting from a vicinal dihalide?
3. Write the reaction of cleavage of an ether using HI.
4. What is Diel'sAlder reaction? Give an example.
5. Identify the nucleophile, substrate and the leaving group in the following reaction.

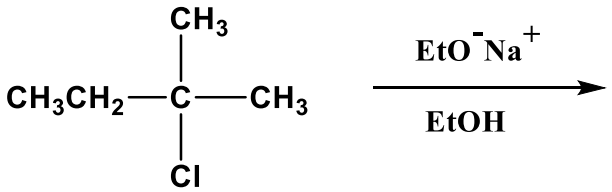


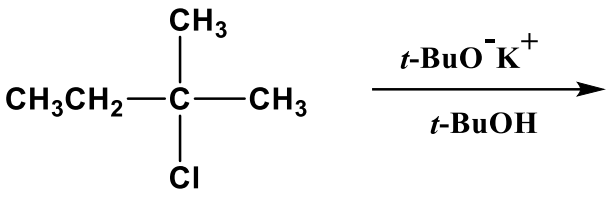
Part B

Answer any **four** of the following **[4 X 6 =24]**

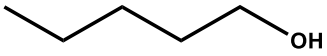
6. a) Give the rate equation and the mechanismof **E2**reaction of an alkylhalide.
   b) Explain the order of the stability of carbocations. (3+3)
7. How do the following factors affect the rate of **S_N1**reaction?
   i) structure of the substrate
   ii) concentration and reactivity of the nucleophile.
   iii) solvent.
8. Predict theproduct/s in the following reactions and explain the formation of product/s.

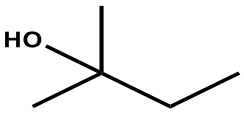
i)

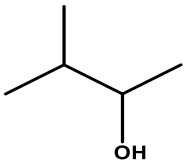


ii) 

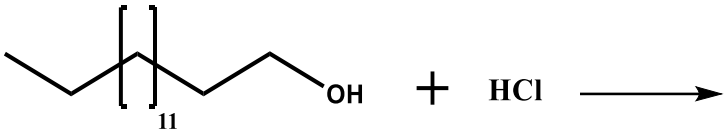
9. Discuss kinetic Vs thermodynamic control of the reaction of 1,3-butadiene with hydrogen bromide with the help of energy profile diagram.
10. a) Explain the regioselectivity of the reaction of addition of HBr to 1-propene.
    b) Write the hydroboration-oxidation reaction of 1-methylcyclopentene. Comment on the stereochemistry of the reaction. (3+3)
11. a) Arrange the following alcohols in the decreasing order of reactivity towards acid-catalyzed dehydration and account for the order.

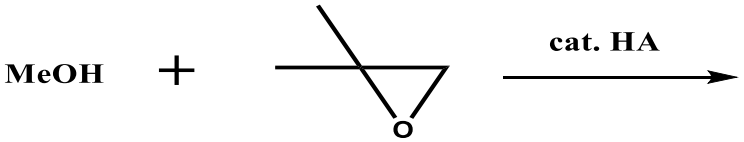
i) 

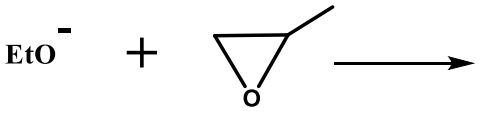
ii) 

iii) 

    b) Predict the products of the following reactions.

i) 

ii) 

iii) 

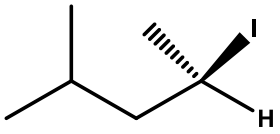
(3+3)

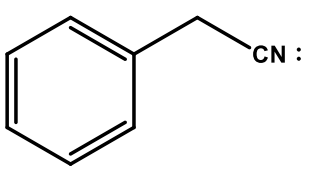
(3+3)

Part C

Answer any **one** of the following **[1 X 5 =5]**

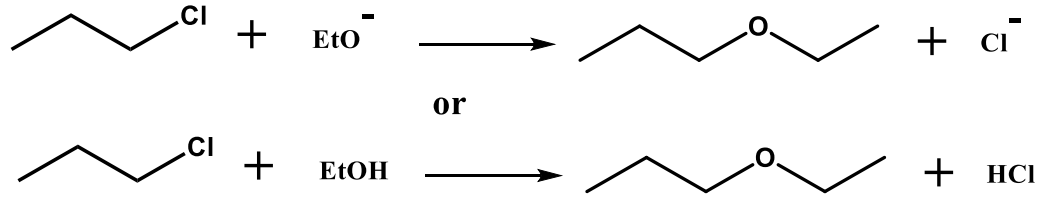
12. a) Starting with an appropriate alkyl halide and using any other needed reagents, outline the syntheses of each of the following compounds.

i) 

ii) 

b) Which S_N2 reaction of each pair would you except to take place more rapidly in a polar protic solvent and why?

i)



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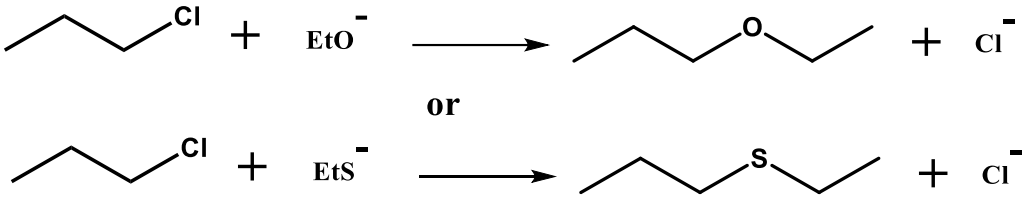
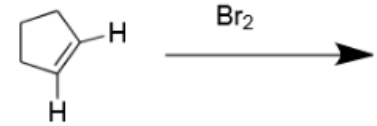


(2+3)

13. a) Predict the products of the following reactions and specify the stereochemistry in the products.

i)



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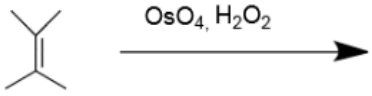

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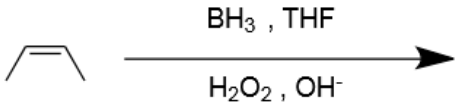

b) Write the structure of E and Z diastereomers of 2-Bromo-3-chlorobut-2-ene.

(3+2)
