STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86
For candidates admitted from the academic year 2019-20 and thereafter)

SUBJECT CODE: 19CH/PC/SO44

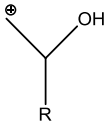
M. Sc. DEGREE EXAMINATION, APRIL 2021
BRANCH IV- CHEMISTRY
FOURTH SEMESTER

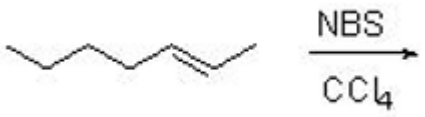
COURSE: MAJOR CORE
PAPER: SYNTHETIC ORGANIC CHEMISTRY AND NATURAL PRODUCTS
TIME: 90 MINUTES **MAXIMUM MARKS: 50**

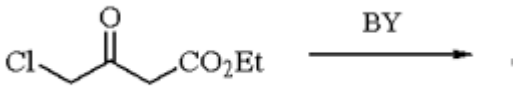
SECTION A

Answer all the questions **(11x1 = 11 marks)**

I. Fill in the blanks.

1. The synthetic equivalent of 

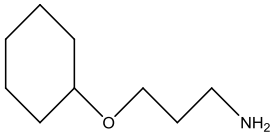
is ……..
2. 

3. 

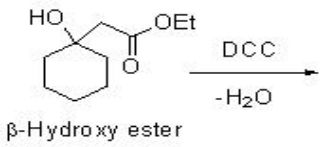
4. The double bond equivalent of the compound with formula $C_{15}H_{24}$ is _____
5. While naming heterocyclics,_____ gets priority when both oxygen and nitrogen are present in a ring
6. In the absence of a β hydrogen, alkaloids can be degraded by_____.

II Answer in a line or two

7. How are natural pigments classified based on their source?
8. Give the isoprene rule.
9. What is Michael accepter? Give an example
10. Carry out the functional group interconversion of the below given compound.



11. Give the product for the below given reaction.

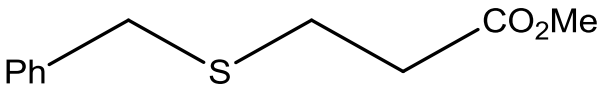


SECTION B

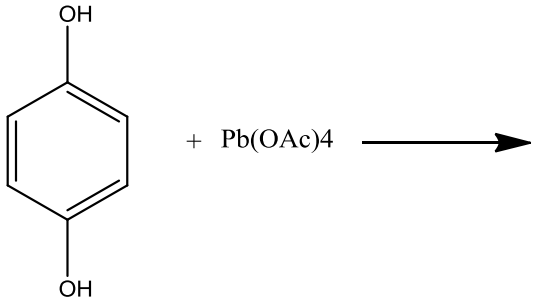
III. Answer any three questions **(3 x 8 = 24 marks)**

12.

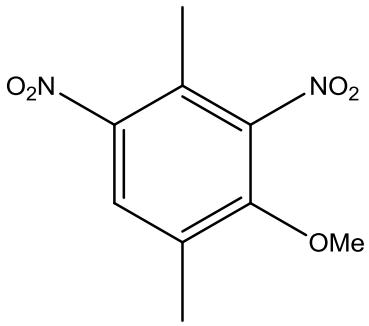
i) Carry out retrosynthetic analysis and forward synthesis of the below given compound. (2 marks)



ii) Write the mechanism for the oxidation of hydroquinone. (2 marks)



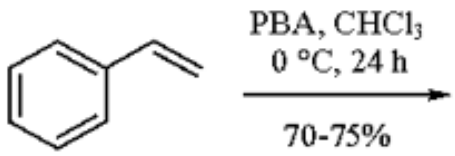
iii) Carry out retrosynthetic analysis and synthesis of Musk Ambrette, a synthetic musk. The compound has got many substituents on the benzene ring. Give explanation for the order of events. (4 marks)



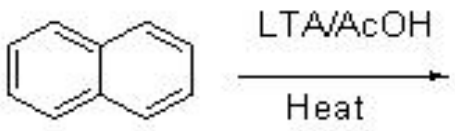
13. Explain in detail the protection and deprotection of alcohols, amines, carboxylic and carbonyl functional groups, with any two representative examples. (7 marks)

14. a) Predict the products: (2x2=4 marks)

i)



ii)



b) **Give Reasons** (2X2 =4 marks)

i) Imidazole is more reactive than benzene towards electrophilic aromatic substitution.

ii) Only tertiary amines give amine oxide on oxidation with hydrogen peroxide.

15. Discuss the structural elucidation of Zingiberene.

SECTION C

IV. Answer any one question (1 x 15 = 15 marks)

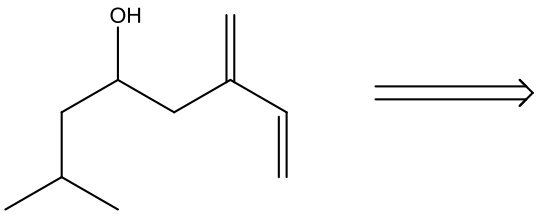
16. a) Give the products obtained when the given compounds are fused with KOH. Quercetin (b) Papavarine (c) Cyanidin (d) Reserpic acid (2X4 =8 marks)

b) i) What is baker's yeast? Discuss the influence of additives over the stereoselective product. (2 marks)

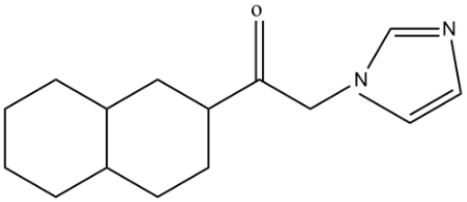
ii) Predict suitable synthon and synthetic equivalents for $C_6H_5CH_2C{\equiv}CH$. (2 marks)

iii) Discuss the synthetic applications of lithium organometallic reagent in the organic synthesis (3 marks)

17. a) i) Discuss the retroanalysis (natural polarity and umpolung) for the below given compound. (4 Marks)



ii) Perform the retrosynthetic analysis and carry out the forward synthesis. (4 Marks)



b) i) Cholestanone on oxidation gives two isomeric products which on heating gives a ketone. With the help of reaction explain how this statement helps in understanding the position of hydroxyl group in Cholesterol. (5 marks)

(ii) What is Diels hydrocarbon? Explain its significance in alkaloid structural elucidation (2 marks)

(iii) What method of degradation can be otherwise followed for isoquinoline?

(3 marks)

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