17P217 (Pages: 3) Name:. ……..……

Reg. No……

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, MAY 2018

(Regular/Supplementary/Improvement)

(CUCSS - PG)

CC15P CH2 C07 - REACTION MECHANISM IN ORGANIC CHEMISTRY

(Chemistry)

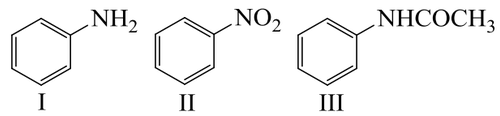
(2015 Admission onwards)

Time: Three Hours Maximum: 36 Weightage

Section A

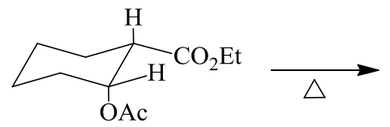
Answer ***all*** questions. Each question carries 1 weightage.

1. What is Ritter reaction?
2. Give the mechanism for photo Fries rearrangement.
3. What are ambident nucleophiles? Give an example.
4. What is Emde degradation?
5. 2-Bromobicyclo[2.2.1]heptane undergo dehydrobromination much faster than 1-bromobicyclo [2.2.1]heptanes. Why?
6. Among cyclopropanone and propanone, which will undergo hydration quickly. Why?
7. Arrange the following compounds in the increasing order of their reactivity towards electrophilic substitution reaction. Justify your answer.

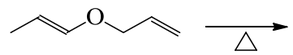


I II III

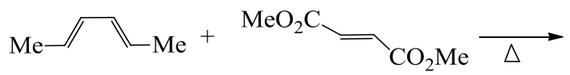
8. What will be the major product in the following reaction. Justify your answer.



9. What are the different classes of alkaloids?
10. What is a photosensitiser? Give an example.
11. Predict the major product of the following reaction?



12. What is the major product formed in the following reaction.

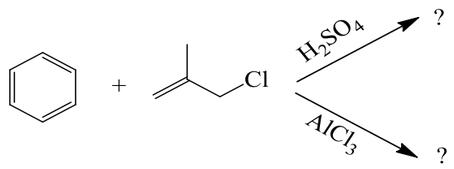


(12 x 1 = 12 Weightage)

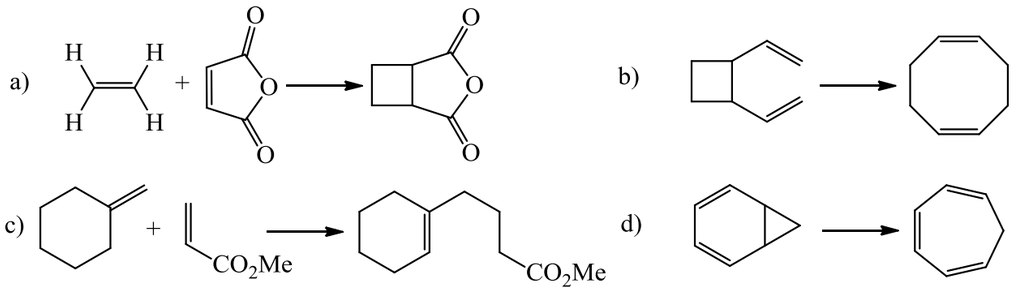
Section B

Answer any ***eight*** questions. Each question carries 2 weightage.

13. Explain the regiochemistry observed in the electrophilic substitution reactions of naphthalene.
14. Discuss the structure and reactivity of carbenes.
15. What are the different mechanisms for ester hydrolysis? Explain any two common mechanisms in detail.
16. Predict the major product in the following reactions. Justify your answer.



17. Describe the conversion of cholesterol to testosterone.
18. Explain E1cB mechanism with a suitable example.
19. Discuss about photooxygenation.
20. Give an account on Saytzev and Hofmann eliminations.
21. Write a note on Norrish type-I and Norrish type-II cleavage.
22. Explain i) Paterno-Büchi reaction and ii) Oxa di-π-methane rearrangement.
23. Compare the reactivity and selectivity of Grignard reagents with organozinc, organocopper and organolithium reagents.
24. Classify the following pericyclic reactions and identify which are thermally allowed.



(8 x 2 = 16 Weightage)

Section C

Answer any ***two*** questions. Each question carries 4 weightage.

25. Explain:
    a) SET mechanism
    b) $S_{RN}1$ mechanism.
    c) S_Ni mechanism
    d) S_NAr mechanism.
26. Write the mechanism for:
    a) Dieckmann condensation
    b) Thorpe condensation
    c) Oppenauer oxidation and
    d) Prince reaction.
27. Derive the selection rules for cycloaddition reactions using correlation diagram method.
28. Describe the Woodward synthesis of cholesterol.

(2 x 4 = 8 weightage)

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