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D5BCH2302 **Reg. No.....**

Name: .....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(Regular/Improvement/Supplementary)

CHEMISTRY

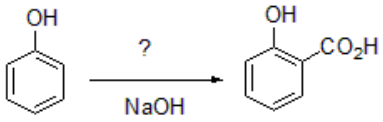
GCHE5B07T: ORGANIC CHEMISTRY II

Time: 2 Hours **Maximum Marks: 60**

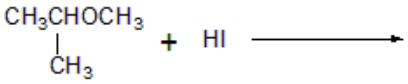
SECTION A: Answer the following questions. Each carries *two* marks.

(Ceiling 20 marks)

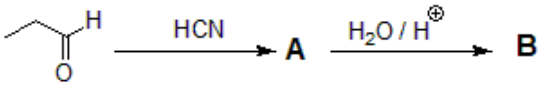
1. Arrange $(CH_3)_3CBr$, CH_3-$CHBr$-CH_3 and CH_3-CH_2-CH_2Br in the increasing order of their E2 reactivities. Justify the order.
2. Discuss the reasons for the low reactivity of aryl halides towards nucleophilic substitution reactions.
3. Why is phenol acidic while alcohols are not?
4. Complete the following by mentioning the missing reagent and give its mechanism:



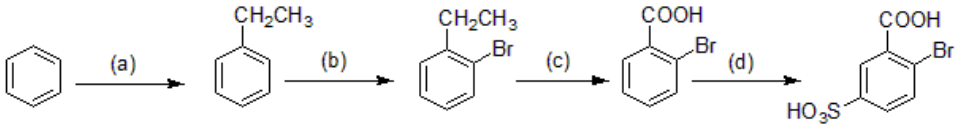
5. What will be the product formed in the following reaction?



6. Give an example of an epoxidation reaction?
7. Complete the following sequence of reactions:



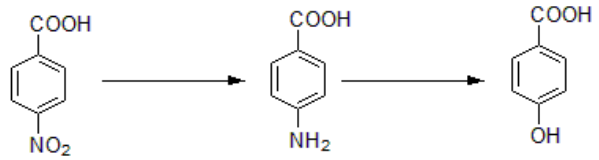
8. Identify the reagents represented by the letters (a), (b), (c), (d) in the following scheme:



9. Why do aromatic carboxylic acids have low acidic strength compared to aromatic sulfonic acids.
10. What are active methylene compounds? Explain with two examples.
11. From the given compounds, select the stronger base. Justify.

    N, N-Dimethylaniline and cyclohexyldimethylamine**.** **(PTO)**

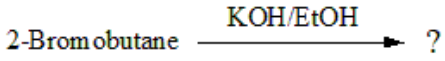
12. What reagents and experimental conditions will bring about each step in the conversion of 4-nitrobenzoic acid to 4-hydroxybenzoic acid?



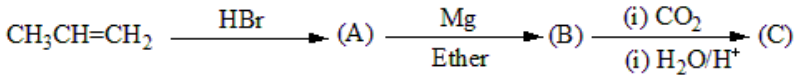
SECTION B: Answer the following questions. Each carries *five* marks.

(Ceiling 30 marks)

13. State Saytzeff's rule and write the major product of the following reaction on the basis of this rule.



14. Identify (A), (B), and (C).



15. Give the reaction of Butanal that occurs when it reacts with the following reagents:
    (a) $LiAlH_4$ (b) Zn-Hg and HCl (c) Tollen's reagent
    (d) Ethanol and dry HCl (e) 2,4-DNP
16. How will you synthesize *p*-toluenesulfonic acid from benzene? Discuss about the synthetic applications of *p*-toluenesulfonic acid.
17. Begining with ethyl acetoacetate, how can you prepare the following compounds?
    (a) Cinnamic acid.
    (b) Succinic acid.
18. Describe the important reactions of nitrobenzene.
19. Write a descriptive note on Schmidt rearrangement reaction?

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. (i) Explain the effect of substituents on the acidity of phenol?
    (ii) Explain the following reactions with mechanisms:
        (a) dienone-phenol rearrangement
        (b) Gatterman aldehyde synthesis
21. Discuss the mechanism of the following reactions:-
    a. Cannizaro reaction
    b. Benzoin condensation
    c. Wittig reaction
    d. Aldol condensation

(1 x 10 = 10 Marks)