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90980 (Pages : 3) Name_____

Reg. No_____

THIRD SEMESTER M.A./M.Sc./M.Com. DEGREE (REGULAR) EXAMINATION
NOVEMBER 2020

(CBCSS)

Chemistry

CHE 3E 01—SYNTHETIC ORGANIC CHEMISTRY

(2019 Admissions)

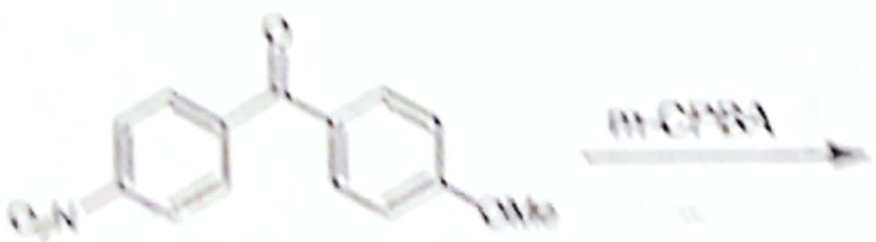
me : Three Hours Maximum : 30 Weightage

Section A

Answer at least **six** *questions.*
Each question carries 1 *weightage.*
All questions can be attended.
Overall Ceiling 6.

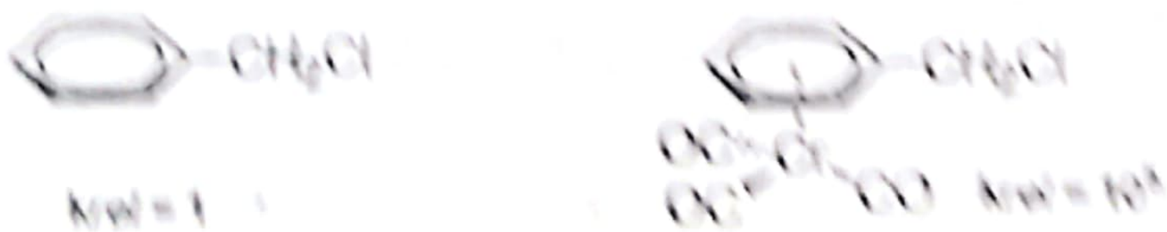
1. Suggest appropriate reagents for selective conversion of an alkene to the corresponding cis- and trans- diols.

2. Predict the product in the following reaction :



3. How will you effect the following conversion ?

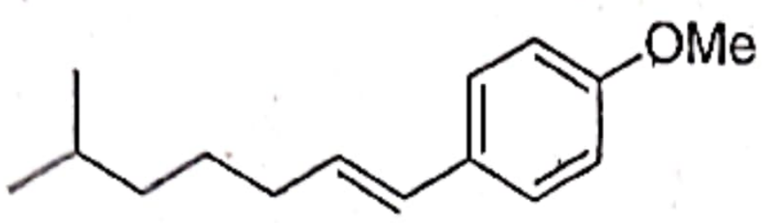
4. Explain the relative rates of solvolysis exhibited by the following compounds :



5. Suggest a protecting group for carbonyl compounds and give the reagents and conditions for introduction and removal of it.

6. Illustrate Claisen condensation with an appropriate example.

7. How will you effect the synthesis of the following compound by Suzuki coupling strategy ?



8. How will introduce a protecting group onto a hydroxyl group which will survive in both acidi basic conditions ?

9. What are donor and acceptor synthons ? Give examples.

10. Why is Corey lactone considered as a key compound in the synthesis of prostaglandins ?

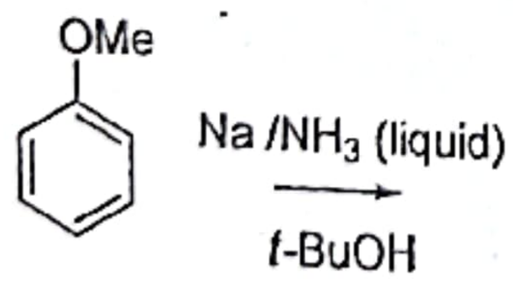
(6 × 1 = 6 weigh

Section B

Answer at least **four** *questions.*
Each question carries 3 *weightage.*
All questions can be attended.
Overall Ceiling 12.

11. Illustrate the application of Swern oxidation. Indicate the mechanism involved.

12. Predict the product and explain the selectivity observed in the transformation.



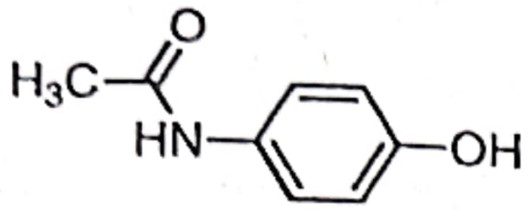
13. What is 9-BBN ? Illustrate its application in organic synthesis with an example.

14. Illustrate the synthetic applications of Stork-enamine reaction with an appropriate example

15. What are crossed aldol condensation reactions ? Explain its significance in synthesis.

16. Write down the catalytic cycle for Heck reaction.

17. Suggest a logical disconnection for the following compound. Write down the structure of all the synthons and corresponding compounds to be used in synthesis.



18. Suggest a name reaction for the synthesis of indole. Give the steps involved.

(4 × 3 = 12 weightage)

Section C

Answer at least **two** *questions.*
Each question carries 6 *weightage.*
All questions can be attended.
Overall Ceiling 12.

19. Write a note on the mechanism and application of hydroboration reaction with special reference to the stereochemical outcome.

20. Give a short account of the major applications of phosphorous and sulfur ylides in organic synthesis.

21. Explain the mechanism of Sonogashira cross coupling and discuss its applications in cyclic peptide synthesis.

22. Discuss salient features of retrosynthetic analysis using benzocaine as a target molecule.

(2 × 6 = 12 weightage)