C 42745 (Pages : 3) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2023

(CBCSS)

Chemistry

CHE 2C 07—REACTION MECHANISM IN ORGANIC CHEMISTRY

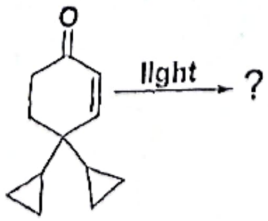
(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A

Answer any **eight** *questions.*
Each question carries a weightage of 1.

1. What type of solvent is best for SN2 reaction. Give 2 examples.
2. Tert-butyl carbonyl anion [$(CH_3)_3CC{=}O$ anion] reacts with methyl iodide to yield the corresponding ketone. What happens if the concentration of methyl iodide is doubled ?
3. Illustrate the product formed when diethyl malonate reacts with cyclohex-2-enone in presence of a mild base.
4. Which reactive intermediate is involved when o-bromo fluorobenzene reacts with phenyl azide to produce N-phenyl benzotriazole in presence of lithium ? Depict the reaction.
5. Depict the product formed when 2 moles of benzaldehyde react with 1 mole of acetone.
6. How can acetone be converted to methyl vinyl ketone ?
7. What product is formed from the following reaction ?



8. Depict the Norrish type-II reaction.

Turn over

9. Give examples of secondary metabolites.

10. Depict the structures of citral and quercetin.

(8 × 1 = 8 weig

Section B

Answer any **six** *questions.*
Each question carries a weightage of 2.

11. Depict the product formed when (R)-2-hydroxybutane is treated with thionyl chloride.

12. Illustrate the SNAr mechanism for the conversion of 2-nitrofluoro benzene to methoxybenzene.

13. How is benzoic acid converted to 2-methoxy benzoic acid ?

14. What happens when pyrrole is treated with chloroform and potassium hydroxide ?

15. Depict the reaction with reagents and mechanism for the conversion of benzaldehyde to acid.

16. Illustrate Hoffmann-Loffler-Freytag reaction.

17. What are the structures of reserpine and cephalosporin ?

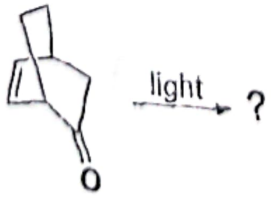
18. How is the alkaloid structure elucidated ?

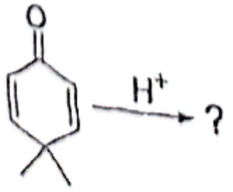
(6 × 2 = 12

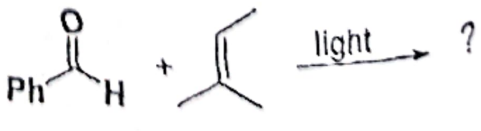
Section C

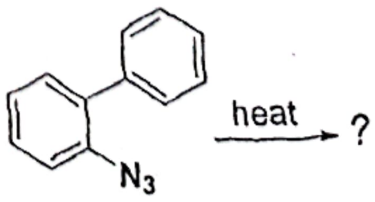
Answer any **two** *questions.*
Each question carries a weightage of 5.

19. Predict the products from the following reactions :

(i) 

(ii) 

(iii) 

(iv) 

20. Explain the correlation diagram for sigmatropic reactions.

21. Explain :

    i) Secondary orbital interaction ; and

    ii) [2 + 2] cycloaddition of ketene with alkene with suitable illustrations.

22. How are terpenes classified ? Give example in each class and explain their acid catalyzed rearrangement reaction.

(2 × 5 = 10 weightage)