

Reg. No. :

Name :

I Semester M.Sc. Degree (CBSS – Reg./Supple./Imp.)

Examination, October 2021

(2018 Admission Onwards)

CHEMISTRY

CHE1C.03 : Organic Chemistry – 1

Time : 3 Hours

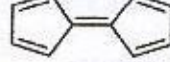
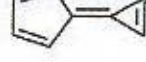
Max. Marks : 60

SECTION – A

Answer **all** questions in **one** word or **one** sentence. **Each** question carries **one** mark.

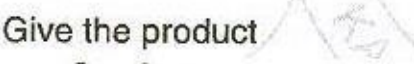
1. Triplet carbene is more stable than singlet carbene. Why ?

2. Which of the following is more stable ?



3. Draw the most stable conformation of ethylene glycol.

4. Give the product



5. Illustrate Hoffmann Elimination.

6. What is the order of nucleophilicity of halide ion in a polar protic solvent like water ?

7. Predict the product



8. Give any one criteria that should be fulfilled by the compound to become photosensitizer.

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SECTION – B

Answer **any eight** questions. Answer in **two** or **three** sentences. **Each** question carries **2** marks.

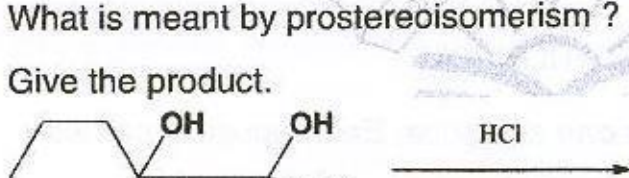
9. Draw the possible canonical structures of vinyl chloride and arrange them in the order of stability.

10. For a halo hydrocarbon, 7-chlorocyclo-1, 3, 5 heptatriene is unusual in its ionization to give chloride ion in water. Why ?

11. Neomenthyl Chloride undergoes HCl elimination more easily than menthyl chloride. Why ?

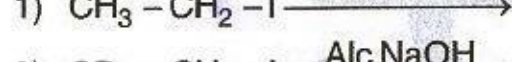
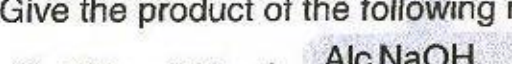
12. What is meant by prostereoisomerism ?

13. Give the product.



14. Explain the effect of nature of nucleophile on SN reactions.

15. Give the product of the following reactions. Which reaction is faster ? Why ?

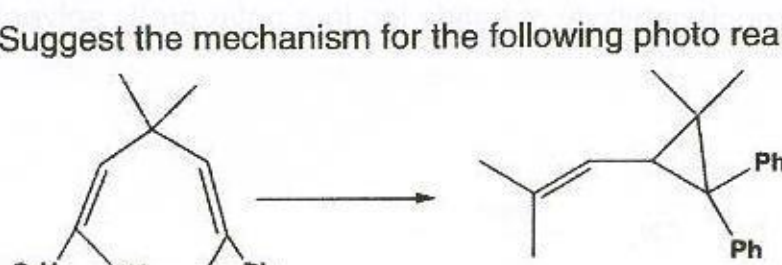


16. Give different possible stereoisomers formed during the dehalogenation of 2, 3-dibromobutane.

17. Why Guanidine is considered as the strongest organic N-base ?

18. Illustrate the product formed when Naphthalene undergoes Photo cyclic addition with alkene.

19. Suggest the mechanism for the following photo rearrangement.



20. What are the characteristics of photoreaction ?

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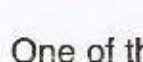
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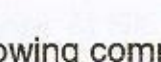
SECTION – C

Short paragraph questions. Answer **four** questions. **Each** question carries **three** marks.

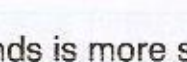
21. One of the following compounds is more stable than the other two. Classify each as aromatic, anti-aromatic and non-aromatic.



Pentalene



Azulene



Heptalene

22. Write a short note on Nitrene.

23. Illustrate Damjanove rearrangement with mechanism.

24. Draw Cis and Trans decalin and explain which is more stable.

25. Give two reactions that involves the formation of benzyne intermediate. Also explain the bonding in Benzyne.

26. How the substrate structure influences E₁, E₂ and E_{1c}B mechanism ?

27. Illustrate the Photo Fries Rearrangement.

28. Gas phase irradiation of 2-pentanone produces acetone, ethylene in about 88% yield along with 12% methyl cyclobutanol. Account for the formation of these products.

SECTION – D

Essay type questions. Answer **four** questions. **Each** question carries **six** marks.

29. A) Discuss aromaticity of annulenes and heteroannulenes.

OR

B) Illustrate one addition and one insertion reaction each involving carbene and nitrene.

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30. A) Illustrate the esterification of menthol, isomenthol, neomenthol and isoneomenthol.

OR

B) Write a short note on :

i) Benzil- Benzilic acid rearrangement.

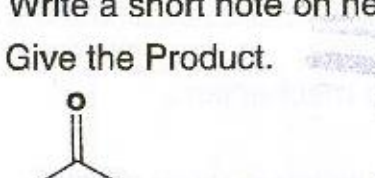
ii) Favorski Rearrangement.

31. A) What are the factors which determines the competition between substitution and elimination reaction ?

OR

B) i) Write a short note on neighbouring group participation in S_N reaction.

ii) Give the Product.



32. A) Discuss the Photochemistry of vision.

OR

B) Explain the following :

i) Singlet and Triplet state.

ii) Photochemistry of Vitamin D.

iii) Barton Reaction.