

(6 pages)

Reg. No. : .....

Code No. : 10007 E Sub. Code : SMCH 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Fifth Semester

Chemistry – Core

ORGANIC CHEMISTRY – III

(For those who joined in July 2017 – 2019)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Optically active isomers but not mirror images are called \_\_\_\_\_.
- (a) Enantiomers  
(b) Mesomers  
(c) Tautomers  
(d) Diastereomers

6. Cine-substitution is explained by
- (a)  $SN_1$  mechanism  
(b)  $SN_2$  mechanism  
(c) Benzyne mechanism  
(d) None
7. What is the product formed when thiophene reacts with bromine is benzene
- (a) 2-bromothiophene  
(b) 3-bromothiophene  
(c) 3, 4-dibromothiophene  
(d) 2,5-dibromothiophene
8. Benzopyrrole is
- (a) Indole (b) Furan  
(c) Quinoline (d) Naphthalene
9. Which of the following is a direct dye
- (a) Phenolphthalein (b) Congored  
(c) Alizarin (d) Indigo
10. Naphthalene on oxidation with alkaline  $KmO_4$  gives \_\_\_\_\_.
- (a) Phthalic acid (b) Phthalic anhydride  
(c) Phthalonic acid (d) None

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2. In which type of projection we can get staggered and eclipsed conformations
- (a) Newmann projection  
(b) Sawhorse projection  
(c) Fischer projection  
(d) Wedge projection
3. Total number of conformations in ethane are \_\_\_\_\_.
- (a) Infinity (b) 2  
(c) 3 (d) 4
4. Which of the following conformation of n-butane is the least stable?
- (a) Anti (b) Eclipsed  
(c) Fully eclipsed (d) None
5. Sulphonation of benzene is a \_\_\_\_\_.
- (a) Irreversible reaction  
(b) Reversible reaction  
(c) Addition reaction  
(d) None

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PART B — (5 × 5 = 25 marks)

Answer ALL questions by choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Differentiate enantiomers and diastereomers.
- Or
- (b) Discuss the mechanism of stereospecific reactions with example.
12. (a) Draw the Newmann and Sawhorse representation for n-butane.
- Or
- (b) Define the term :
- (i) Torsional angle  
(ii) Energy barrier.
13. (a) Discuss the mechanism of nitration.
- Or
- (b) Discuss Korner's absolute method of orientation.
14. (a) Although Pyrrole, Furan and Thiophene do not contain any benzene ring still they are classified as aromatic compounds. Explain.
- Or
- (b) Write skraup synthesis of quinoline.

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[P.T.O.]

15. (a) Give the preparation and uses of malachite green.

Or

(b) Explain the synthesis of naphthalene.

PART C — (5 × 8 = 40 marks)

Answer ALL questions by choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss the sequence rules with example for D-L notation.

Or

(b) Explain partial and absolute asymmetric synthesis.

17. (a) (i) Discuss the conformational analysis of propane.

(ii) Draw the energy diagram for propane.

(iii) Draw the sawhorse representation for staggered and eclipsed forms of propane.

Or

(b) Discuss the conformational analysis of (i) 1,2-halohydrin (ii) 1, 2-glycol.

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18. (a) Discuss the consequences of aromaticity.

Or

(b) Explain  $SN_1$  and  $SN_2$  mechanism for aromatic nucleophilic substitution.

19. (a) Compare the aromatic characters of thiophene, pyrrole and furan.

Or

(b) Explain the mechanism of electrophilic substitution in Isoquinoline.

20. (a) Discuss briefly various theories of colour and chemical constituents of dyes.

Or

(b) Discuss the structure of anthracene.

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