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Reg. No. : .....

Code No. : 20323 E Sub. Code : AMCH 53

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

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY — III

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Total number of stereoisomers in tartaric acid is

- (a) 1 (b) 2  
(c) 3 (d) 4

6. The number of  $\pi$ -electrons in Azulene is

- (a) 6 (b) 10  
(c) 12 (d) 8

7. The electron on nitrogen participating in the resonance in pyridine is present in which orbital?

- (a) p-orbital  
(b) sp orbital  
(c)  $sp^2$  orbital  
(d)  $sp^3$  orbital

8. Electrophilic substitution in furan usually occurs at

- (a) the C (2) atom  
(b) both the C (2) and C (3) atoms  
(c) the O atom  
(d) the C (3) atom

9. Which of the following is a basic dyes?

- (a) Aniline yellow  
(b) Congo red  
(c) Alizarin  
(d) Indigo

2. In which type of projection we can get staggered and eclipsed conformations.

- (a) Newman projection  
(b) Sawhorse projection  
(c) Fischer projection  
(d) Wedge projection

3. Which cyclohexane conformation has the highest energy?

- (a) boat (b) chair  
(c) twist boat (d) twist chair

4. The preferred conformation of 1,2 glycol

- (a) fully eclipsed  
(b) anti eclipsed  
(c) partly eclipsed  
(d) gauche

5. Nitration of benzene is

- (a) Free radical substitution reaction  
(b) Nucleophilic substitution reaction  
(c) Nucleophilic adding reaction  
(d) Electrophilic substitution reaction

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10. Electrophilic substitution takes place in anthracene at \_\_\_\_\_ position.

- (a) C<sub>9</sub> (b) C<sub>1</sub>  
(c) C<sub>9</sub> and C<sub>10</sub> (d) C<sub>2</sub>

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write a note on atropisomerism.

Or

(b) Discuss the optical activity of biphenyl compounds.

12. (a) What are the various conditions for compounds to exhibit geometrical isomerism?

Or

(b) Discuss the conformational analysis of n-butane.

13. (a) Write a note on Huckel's rule.

Or

(b) Explain the rules of aromatic trisubstitution.

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[P.T.O.]

14. (a) Explain the molecular orbital picture of furan.

Or

(b) Discuss the electrophilic substitution reactions of quinoline.

15. (a) Discuss the synthesis of Anthracene.

Or

(b) Explain their classification of dyes according to their chemical constitution.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain the asymmetric synthesis.

Or

(b) Describe the optical activity and symmetry elements.

17. (a) Write a notes on :

(i) geometrical isomerism of oximes

(ii) geometrical isomerism of alkenes.

Or

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(b) Discuss the conformational analysis of 1, 2 glycol and cyclopentane.

18. (a) Describe the benzyne mechanism.

Or

(b) Explain the mechanism of aromatic nucleophilic substitution with examples.

19. (a) Explain the preparation and chemical reactions of pyridine with mechanism.

Or

(b) Describe the molecular orbital picture of thiophene and pyridine.

20. (a) Discuss the oxidation and electrophilic substitutions reactions of anthracene.

Or

(b) Explain preparation and uses of

(i) Methyl orange

(ii) Indigo

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