

Code No. : 20313 E Sub. Code : AMCH 53

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY – III

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

The essential condition for optical isomerism is

- (a) presence of symmetric carbon atom
- (b) presence of sp^3 carbon atom
- (c) presence of asymmetric atom
- (d) absence of sp^3 carbon atom

2. Epimers differ in the configuration of
 - (a) one asymmetric carbon
 - (b) two asymmetric carbon
 - (c) three asymmetric carbon
 - (d) all the above
3. Which of the following show cis-trans isomerism?
 - (a) C_2H_5Br (b) C_2H_5Cl
 - (c) $(CH)_2(COOH)_2$ (d) CH_3CHO
4. The torsional bond angle of staggered conformation is
 - (a) $\pm 90^\circ$ (b) $\pm 120^\circ$
 - (c) $\pm 180^\circ$ (d) $\pm 360^\circ$
5. Reagent used in Fridel-Craft reaction is
 - (a) $-NH_3$
 - (b) $-AlCl_3$
 - (c) H_2O
 - (d) Con. H_2SO_4 . Con. HNO_3
6. Which one is O-P directive in nature?
 - (a) $-OH$
 - (b) $-NH_2$
 - (c) (a) and (b)
 - (d) $-NO_2$

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In pyridine the hybridisation of nitrogen atom is

- a) sp
- b) sp^2
- c) sp^3
- d) sp^3d

Quinoline is a

- a) Five membered heterocyclic
- b) Fused ring heterocyclic
- c) Six membered heterocyclic
- d) All the above

Alizarin is synthesised from

- a) quinoline
- b) autoquinone
- c) naphthaquinone
- d) phenantraquinone

When naphthalene is oxidised with V_2O_5 gives

- (a) phthalic acid
- (b) 1, 4-naphtha quinone
- (c) phthalic anhydride
- (d) pthalonic acid

PART B — (5 × 5 = 25 marks)

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

11. (a) Write notes on : ($2\frac{1}{2} \times 2 = 5$)
 - (i) Partial asymmetric synthesis
 - (ii) Absolute synthesis.

Or

 - (a) Discuss two steps involved in determining R, S notation.
12. (a) Explain geometrical isomerism in oximes.

Or

 - (b) Differentiate between conformations and configurations.
13. (a) What are benzenoid and non benzenoids compounds? Give suitable examples. ($2\frac{1}{2} \times 2 = 5$)

Or

 - (b) Explain SN^1 reaction mechanism with example.

14. (a) Compare the basicity of pyridine, piperidine and pyrrole.

Or

- (b) Explain the following :

- (i) Hanizsch synthesis. (2 + 3 = 5)
(ii) Skraup synthesis.

15. (a) Classify dyes according to chemical constitution with examples. (5)

Or

- (b) Explain the following reactions :

- (i) Elbs reaction
(ii) Diels-Alder reaction.

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 different types of symmetry elements. (4 × 2 = 8)

Or

- (b) Discuss the following terms : (2 × 4 = 8)

- (i) Stereospecificity
(ii) Stereoselectivity.

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17. (a) Explain the following terms : (2 + 3 + 3 = 8)

- (i) 1, 3 diaxial interaction
(ii) sequence rules for E-Z notation
(iii) Give one example for syn-anti isomerism.

Or

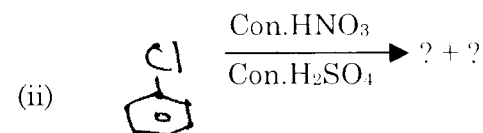
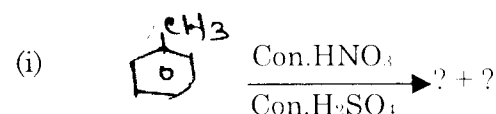
- (b) Write down the factors affecting the stability of conformations. (4 × 2 = 8)

18. (a) Write the mechanism of the following reactions : (2 × 4 = 8)

- (i) Nitration of benzene
(ii) Acylation of benzene

Or

- (b) Complete the reaction and write the mechanism. (2 × 4 = 8)

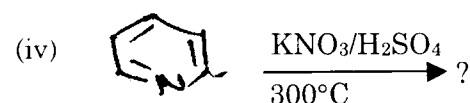
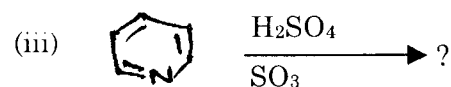
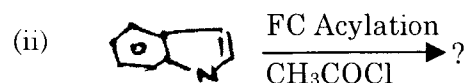
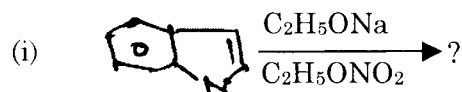


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19. (a) (i) Draw and discuss the molecular orbital diagram of pyridine.
(ii) Compare the basicity of pyridine with pyrrole.

Or

- (b) Complete the following equations : (4 × 2 = 8)



20. (a) Discuss the preparation of the following : (2 × 4 = 8)

- (i) Alizarin (ii) Indigo

Or

- (b) Derive the structure of naphthalene.

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