(7 pages) **Reg. No. :**.....

Code No. : 30283 E **Sub. Code : JMCH 51/ SMCH 51**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2020.

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY – III

(For those who joined in July 2016 onwards)

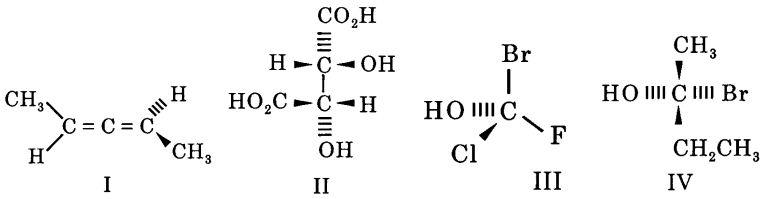
Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

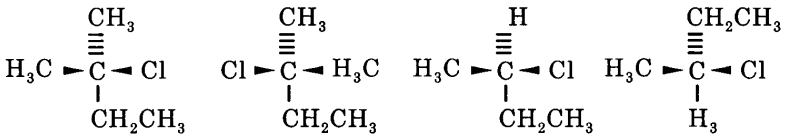
1. Which of the following molecules is achiral?



(a) I (b) II

(c) III (d) IV

2. (R)–2–Chlorobutane is represented by



I II III IV

(a) I (b) II

(c) III (d) IV

3. In which type of projection, we can get staggered and eclipsed conformation.

(a) Newman (b) Fischer

(c) Wedge (d) Sawhorse

4. The cis-trans nomenclature is not applicable when

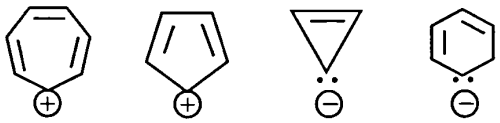
(a) The different groups attached to the carbon atom of double bonds are same

(b) Atleast one of the group attached to each carbon atom is same

(c) The different groups attached to the carbon atoms of double bond are not same

(d) The cis-trans nomenclature is applicable for all compounds

5. Which of the following ion is aromatic?



I II III IV

(a) I (b) II

(c) III (d) IV

6. Which one of the following statement about the chemical properties of benzene is correct?

(a) It readily undergoes both substitution and addition reactions

(b) It readily undergoes addition reactions but not substitution reactions

(c) It does not undergoes either substitution or addition reactions

(d) It readily undergoes substitution reactions but not addition reactions

7. In pyrrole and pyridine, the number of electrons that the nitrogen atom contributes to the π system is

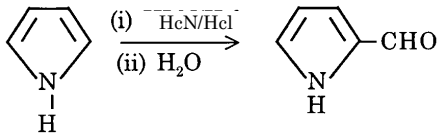
(a) Pyrrole – 2, Pyridine – 2

(b) Pyrrole – 1, Pyridine – 1

(c) Pyrrole – 2, Pyridine – 1

(d) Pyrrole – 1, Pyridine – 2

8. Pick out the name of the following reaction:



(a) Gatterman reaction
(b) Reimer-Tiemann reaction
(c) Friedal Craft reaction
(d) Kolbe-Schmidt reaction

9. The auxochrome is _____

(a) $-N=O$ (b) $-NO_2$
(c) $-NH_2$ (d) $-N=N-$

10. Naphthol yellow is _____

(a) azo dye (b) indigo dye
(c) phthalin dye (d) nitro dye

PART B — (5 × 5 = 25 marks)

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

11. (a) Write notes on:
(i) Absolute asymmetric synthesis.
(ii) Epimerisation.

Or

(b) Explain the mechanism of stereospecific reaction with suitable example.

12. (a) Explain the stabilities of different conformations of 1,2-dichloroethane by energy diagram.

Or

(b) Write note on E-Z notation with example.

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

Or

(b) Explain the mechanism of nitration in benzene.

14. (a) Explain the mechanism of electrophilic nutrotitation in indole.

Or

(b) Discuss the molecular orbital picture of Furan.

15. (a) Write notes on:

(i) Chromophore.

(ii) Auxochrome.

Or

(b) How is naphthalene prepared by Haworth synthesis?

PART C — (5 × 8 = 40 marks)

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

Answer should not exceed 600 words each.

16. (a) How is a racemic mixture of acids, bases and alcohols separated?

Or

(b) Write notes on:

(i) Fischer projection formula.

(ii) D–L notation.

(iii) R–S notation.

17. (a) Write the differences between configurational isomers and conformational isomers.

Or

(b) Explain conformational analysis of chloro ethane.

18. (a) Discuss the general characteristics of aromatic compounds.

Or

(b) Explain the rules of orientation in aromatic compounds.

19. (a) Write notes on:

(i) Hantzsch synthesis

(ii) Fischer-Indole synthesis

(iii) Skraup synthesis

Or

(b) Which is more basic? Pyrrole, Pyridine or Piperidine? Discuss in detail.

20. (a) Explain the modern theory of colour.

Or

(b) Discuss in detail about the structure of naphthalene.

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