

(6 pages)

Reg. No. :

Code No. : 10481 E Sub. Code : CMCH 62

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2024.

Sixth Semester

Chemistry — Core

ORGANIC CHEMISTRY — III

(For those who joined in July 2021–2022)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. The reaction between phenol and CO_2 is called
- Kolbe reaction
 - Gattermann reaction
 - Reimer-Tiemann reaction
 - None

2. Which among the following is the strongest acid?
- p-nitro phenol
 - p-chloro phenol
 - m-nitro phenol
 - o-nitro phenol
3. The reagent used for the conversion of acetamide to methyl amine is
- PCl_5
 - NaOH/Br_2
 - $\text{Na}/\text{C}_2\text{H}_5\text{OH}$
 - P_2O_5
4. Benzidine rearrangement involves the formation of _____
- Diprotonated intermediate
 - nitrene
 - carbonium ion
 - carbene
5. The compounds used to fix a dye to the fabric is known as
- Azeotrope
 - Bleaching agents
 - Mordant
 - Lake

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6. Anthracene adds with oxygen to give
- Anthraquinone
 - Anthracene oxide
 - Anthraquinol
 - Anthracene peroxide
7. Natural perfume present in oil of cloves
- $\text{C}_6\text{H}_5\text{CHO}$
 - Eugenol
 - Ethyl benzoate
 - Catechol
8. The molecular formula of camphor is
- $\text{C}_{10}\text{H}_{18}\text{O}$
 - $\text{C}_{10}\text{H}_{14}\text{O}$
 - $\text{C}_{10}\text{H}_{16}\text{O}$
 - $\text{C}_{10}\text{H}_{12}\text{O}$
9. An increase-in the molar absorptivity is known as
- blue shift
 - hyper chromic shift
 - batho chromic shift
 - hypo chromic shift

10. The characteristic frequency region of $\text{C}=\text{O}$ group in ketones.
- 1710 cm^{-1}
 - 1760 cm^{-1}
 - 3200 cm^{-1}
 - 1640 cm^{-1}

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Give the mechanism of Perkin's reaction.
Or
(b) How are the following compounds prepared?
(i) 1, 2 dicarboxylic acid
(ii) 1, 4 dicarboxylic acid
12. (a) Write the mechanism of benzilic acid rearrangement.
Or
(b) Explain the Dakin reaction and its mechanism.
13. (a) Explain bathochromic shift and hypochromic shift.
Or
(b) Explain the synthesis of alizarin.

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[P.T.O.]

14. (a) Explain the synthesis of nicotine.

Or

(b) Discuss the structure of limonene.

15. (a) Discuss the types of electronic transitions.

Or

(b) Explain with illustration how IR spectroscopy is used to identify the functional groups.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Discuss the mechanism of

(i) Cannizzaro reaction

(ii) Claisen's reaction.

Or

(b) Describe the mechanism of Knoevenagel and Reimer-Tiemann reaction.

17. (a) Explain the following rearrangement

(i) Fries rearrangement

(ii) Benzidine rearrangement

Or

(b) Discuss the mechanism of Baeyer-Villiger oxidation and hydroperoxide rearrangement.

18. (a) How will you prepare the following dyes?

(i) Malachite green

(ii) Phenolphthalein

(iii) Methyl orange

Or

(b) Discuss the preparation and structure of anthracene.

19. (a) Describe the structure of citral.

Or

(b) Establish the structure of piperine. Give a method of synthesis.

20. (a) Describe the applications of IR spectroscopy.

Or

(b) Interpret NMR spectra for the following compounds

(i) Anisole

(ii) Benzaldehyde

(iii) Isobutane

(iv) Benzyl alcohol