

(6 pages)

Reg. No. : .....

Code No. : 20325 E Sub. Code : CMCH 62

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Sixth Semester

Chemistry — Core

ORGANIC CHEMISTRY — III

(For those who joined in July 2021 and 2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

- O-xylene on oxidation yields  
(a) terephthalic acid (b) phthalic anhydride  
(c) isothalic acid (d) none
- Which among the following is the strongest acid?  
(a) o-nitro phenol (b) p-chloro phenol  
(c) p-nitro phenol (d) m-nitro phenol

- Pinacols are \_\_\_\_\_.  
(a) alcohols  
(b) monohydric alcohols  
(c) dihydric alcohols  
(d) 1, 2 diols
- Which among the following is a sigmatropic rearrangement?  
(a) Claisen (b) Hofman  
(c) Curtius (d) Pinacole
- Alizarin is synthesised from \_\_\_\_\_.  
(a) Quinone  
(b) Naphtha Quinone  
(c) Anthraquinone  
(d) Phenanthra quinone
- The shift to a longer wavelength is known as \_\_\_\_\_.  
(a) Blue shift  
(b) Red shift  
(c) Hyper chromic effect  
(d) Hypsochromic effect

7. Citral and neral are examples of \_\_\_\_\_.
- optical isomers
  - conformational isomers
  - cis-trans isomers
  - none of these
8. Piperidine alkaloid is \_\_\_\_\_.
- coniine
  - nicotine
  - piperine
  - papavarine
9. UV spectrum mainly give information about \_\_\_\_\_.
- hydrogen bonding
  - molecular rearrangement
  - conjugation
  - functional group
10. Which of the following transitions require least energy?
- $n - \pi^*$
  - $\pi - \pi^*$
  - $\sigma - \sigma^*$
  - $n - \sigma^*$

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PART B — (5 × 5 = 25 marks)

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

11. (a) Give the mechanism of Perkin's reaction.
- Or
- (b) Discuss the mechanism of Reimer-Tieman reaction.
12. (a) Write down the mechanism of Fries rearrangement.
- Or
- (b) Explain the mechanism of Baeyer-Villiger Oxidation.
13. (a) Explain bathochromic shift and hypsochromic shift.
- Or
- (b) Explain the theories of colour and chemical constitution.
14. (a) Discuss the structure of coniine.
- Or
- (b) Discuss the determination of structure of menthol.

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[P.T.O.]

15. (a) How many types of NMR signals are to be expected on the spectrum of the following compounds?
- (i) Acetone
  - (ii) Benzaldehyde
  - (iii) Mesitylene.
- Or
- (b) (i) Define Chemical Shift.  
(ii) Give the reason for TMS used as standard reference.

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 mechanism of Knoevenagel and Kolbe's reaction.
- Or
- (b) Discuss the mechanism of Benzoin Condensation.
17. (a) Write the mechanism of Curtius and Schmidt rearrangement.
- Or
- (b) Discuss the mechanism of Hofmann rearrangement.

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18. (a) Explain the synthesis and structure of Naphthalene.
- Or
- (b) How will you prepare the following dyes?
- (i) Methyl orange
  - (ii) Alizarin.
19. (a) How will you elucidate the structure of nicotine?

Or

- (b) Discuss the synthesis of camphor.
20. (a) How many types of NMR signals are to be expected on the spectrum of the following compounds?
- (i) Ethyl Methyl Ketone
  - (ii) Anisole
  - (iii) Benzaldehyde
  - (iv) Acetone.
- Or
- (b) Discuss in detail Woodward Fischer rules as applied to conjugated dienes and  $\sigma, \beta$  unsaturated ketones.

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