

Total No. of Printed Pages—8

4 SEM TDC CHMH (CBCS) C 9

2023

(May/June)

CHEMISTRY

(Core)

Paper : C-9

(Organic Chemistry)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Choose the correct answer from the following : 1×4=4

(a) Anthracene when reduced with sodium and ethanol gives

- (i) 9,10-anthraquinone
- (ii) 9,10-dihydroanthracene
- (iii) anthrone
- (iv) None of the above

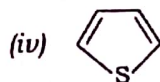
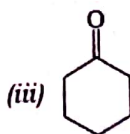
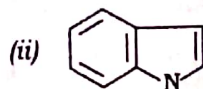
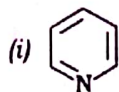
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(2)

- (b) Which of the following is not a heterocyclic compound?



- (c) Which one of the following is not a terpene?

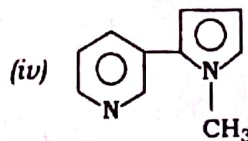
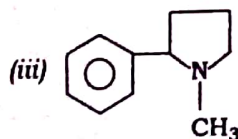
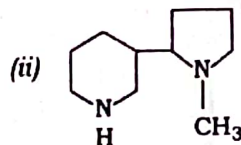
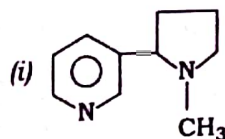
(i) Myrcene

(ii) Citral

(iii) Camphor

(iv) Quinine

- (d) The chemical structure of nicotine is



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(3)

2. Answer any *four* questions from the following : 2×4=8

- (a) What is diazotization? How is benzene diazonium chloride prepared in the laboratory?
- (b) Aromatic amines are weaker bases than aliphatic amines. Explain.
- (c) Sulphonation of naphthalene gives α -isomer at low temperature and β -isomer at high temperature. Explain.
- (d) Thiophene is more aromatic in nature than furan. Explain.
- (e) What are the structural formulae of hygrine and conine?

UNIT—I

3. Answer any *three* questions : 3×3=9

- (a) How would you distinguish among 1°, 2° and 3° amines with the help of nitrous acid?
- (b) Write short notes on any *two* of the following : 1½×2=3
- (i) Hofmann's exhaustive methylation
- (ii) Hofmann elimination reaction
- (iii) Gabriel phthalimide synthesis

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(4)

(c) Discuss the synthesis of the following :

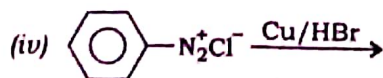
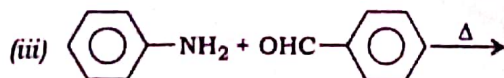
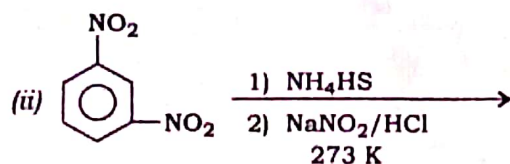
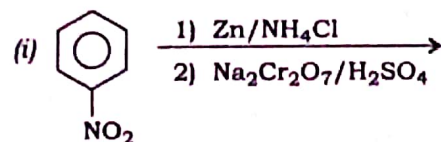
1½×2=3

(i) Azobenzene from aniline

(ii) *m*-nitroaniline from nitrobenzene

(d) Complete the following reactions
(any three) :

1×3=3



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(5)

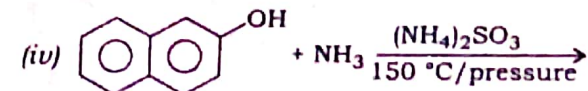
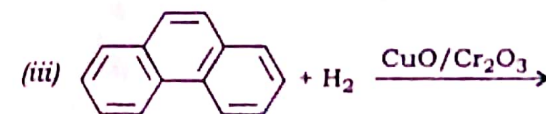
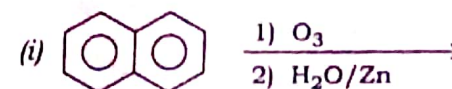
UNIT—II

4. Answer any *three* questions :

3×3=9

(a) Complete the following reactions
(any three) :

1×3=3



(b) Explain why, electrophilic substitution of anthracene and phenanthrene mainly takes place at 9 and 10 positions.

(c) How will you convert any *two* of the following?

1½×2=3

(i) Naphthalene into α -naphthol

(ii) Phenanthrene into diphenic acid

(iii) Benzene into anthraquinone

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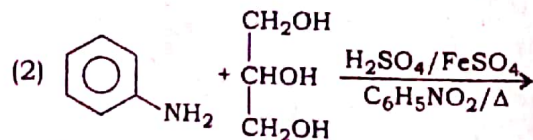
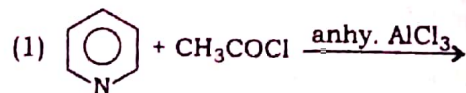


(6)

- (d) Prepare naphthalene with the help of Haworth's synthesis. What happens when naphthalene is treated with hydrogen in presence of nickel catalyst? 2+1=3

UNIT—III

5. (a) Pyrrole, furan and thiophene are more reactive than benzene to electrophilic attack. Explain. 2
- (b) Starting with pyrrole, how will you get the following? 1+1=2
- (i) 2-pyrrole sulphonic acid
- (ii) Pyridine
- (c) Answer any three questions : 2×3=6
- (i) Prepare pyridine by Hantzsch synthesis.
- (ii) Write a short note on Knorr quinoline synthesis.
- (iii) Complete the following reactions : 1+1=2



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(7)

- (iv) Convert the following : 1+1=2

- (1) Thiophene from sodium succinate
- (2) Furan from furfural

- (d) Explain why pyridine does not undergo Friedel-Crafts reactions. What happens when pyridine is treated with KNO₃ in presence of H₂SO₄ at 300 °C? 2+1=3

UNIT—IV

6. (a) Explain Zeisel method and Herzig-Meyer method with reference to the structure elucidation of alkaloids. 2

Or

Give one method of synthesis of hygrine.

- (b) Write down the sequential steps when Hofmann exhaustive methylation is employed with nicotine and name the product. 2

- (c) Give one medicinal use each of morphine and quinine. $\frac{1}{2} \times 2 = 1$

UNIT—V

7. (a) What is special isoprene rule? Explain with example. 1

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- (b) How will you show that citral is an α, β unsaturated aldehyde? 2

Or

Draw the geometrical structure of citral.

- (c) How will you synthesize the following (any one)? 2

(i) Citral from methylheptenone

(ii) Geranic acid from geraniol

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