

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

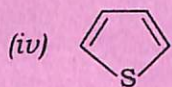
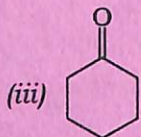
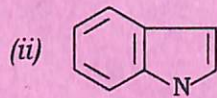
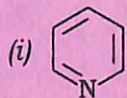
(ii) 9,10-dihydroanthracene

(iii) anthrone

(iv) None of the above

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



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

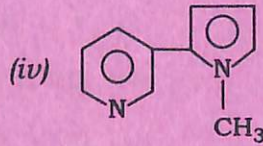
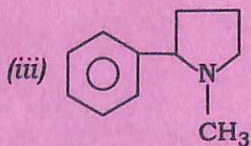
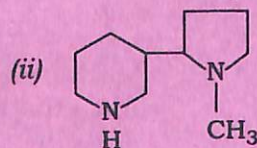
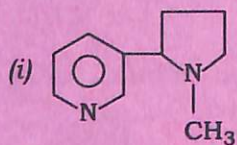
(i) Myrcene

(ii) Citral

(iii) Camphor

(iv) Quinine

(d) The chemical structure of nicotine is



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( Continued )

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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  $\alpha$ -isomer at low temperature and  $\beta$ -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  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  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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( Turn Over )

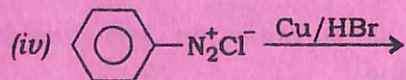
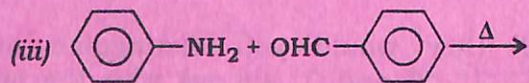
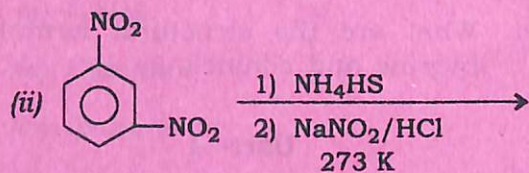
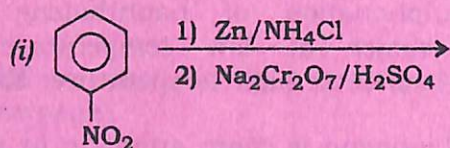
( 4 )

(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

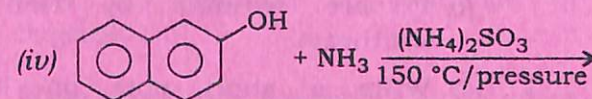
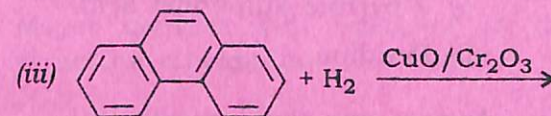
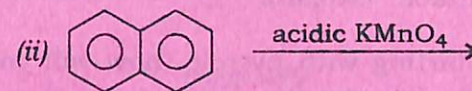
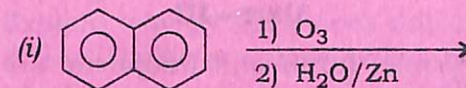


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### UNIT—II

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  $\alpha$ -naphthol

(ii) Phenanthrene into diphenic acid

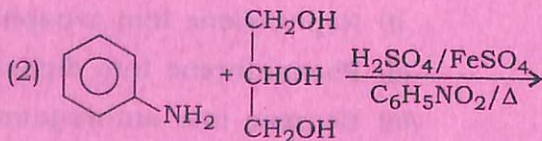
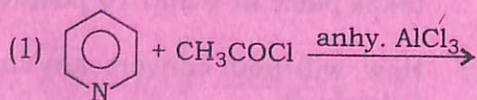
(iii) Benzene into anthraquinone

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- (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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- (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  $\text{KNO}_3$  in presence of  $\text{H}_2\text{SO}_4$  at  $300^\circ\text{C}$ ? 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

- (b) How will you show that citral is an  $\alpha$ ,  $\beta$  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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