

Total No. of Printed Pages—12

**4 SEM TDC CHM M 3 (N/O)**

**2 0 1 6**

( May )

**CHEMISTRY**

( Major )

Course : 403

**( Organic Chemistry )**

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

( New Course )

*Full Marks : 48*

*Pass Marks : 14*

*Time : 2 hours*

1. Choose the correct answer from the following :

1×5=5

(a) Keto-enol tautomerism arises due to

- (i) migration of a proton
- (ii) migration of an enolic group
- (iii) migration of a hydroxyl group
- (iv) migration of a ketogroup



( 2 )

( 3 )

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(b) Which of the following is most basic?

(i) Diphenylamine

(ii) *p*-toluidine

(iii) *p*-chloroaniline

(iv) *p*-nitroaniline

(c) Combination of  $\alpha$ -amino acids through which linkages result in formation of protein is known as

(i) ester linkage

(ii) glycosidic linkage

(iii) peptide linkage

(iv) lactum linkage

(d) The alkaloid isolated from tea leaves is

(i) theobromine

(ii) uric acid

(iii) xanthine

(iv) caffeine

(e) The hybridization of N-atom in pyridine is

(i)  $sp$

(ii)  $sp^2$

(iii)  $sp^3$

(iv) Not hybridized

2. Answer any *five* from the following :  $2 \times 5 = 10$

(a) Synthesize succinic acid from ethyl acetoacetate (EAA).

(b) Explain Hofmann elimination reaction with the help of an example.

(c) What is zwitterion? Explain with the help of an example.

(d) Pyridine is more basic than pyrrole. Explain.

(e) Starting from  $\beta$ -naphthol, how will you synthesize  $\beta$ -naphthylamine?

(f) Define alkaloids. How are they isolated?

#### UNIT—I

3. (a) Starting from diethylmalonate, synthesize any *one* from the following : 2

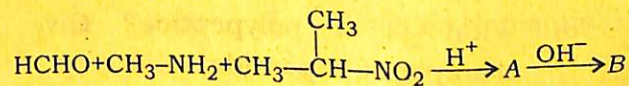
(i) *n*-valeric acid

(ii) Succinic acid

(b) Starting from ethylacetoacetate, synthesize pentane-2,4-dione. 2

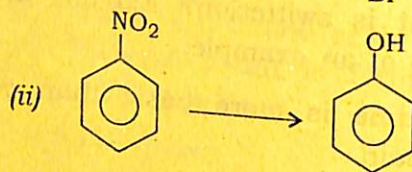
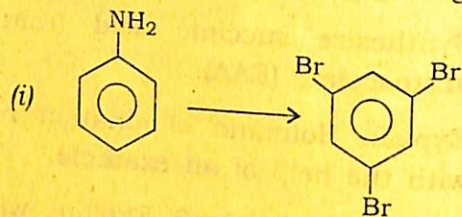
#### UNIT—II

4. (a) What is Mannich base? Complete the following reaction :  $1+1=2$





(b) Convert any one of the following :



5. (a) What happens when diazomethane reacts with (i) ethylene and (ii) acid chloride? 1+1

Or

How can alkyl isocyanates be prepared from primary amines? What happens when alkylisocyanates are refluxed with alcohols? 1+1

- (b) What happens when propanamide is treated with bromine and aqueous KOH solution?

#### UNIT—III

6. (a) How can you synthesize glycine with the help of Gabriel's phthalimide synthesis? 2+1
- (b) What is a polypeptide? Give one example of tripeptide.

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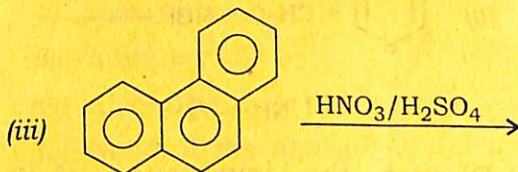
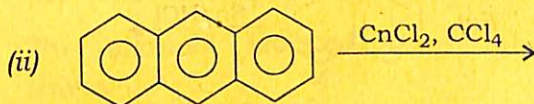
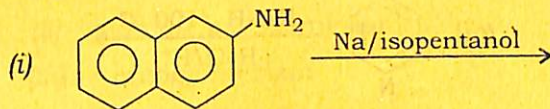
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Or

Explain briefly about the tertiary structure of proteins. 3

#### UNIT—IV

7. (a) Synthesize anthracene starting from tetralin showing all steps. 2
- (b) Complete the following reactions (any two) : 1×2=2



#### UNIT—V

8. (a) Pyridine undergoes electrophilic substitution reactions preferentially at C-3 position. Explain. 2
- (b) Synthesize 1-methyl isoquinoline with the help of Bischler-Napieralski synthesis. 3

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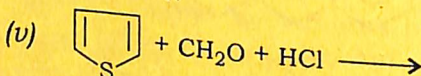
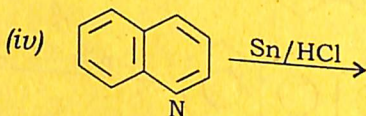
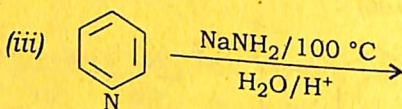
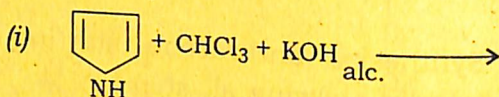
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Or

Synthesize 2,4-diethylpyrrole with the help of Paal-Knorr synthesis.

(c) Complete the following reactions (any three) : 1×3



## UNIT—VI

9. (a) Discuss the importance of Zeisel's method in the structure determination of alkaloids.

(b) Explain Hofmann's exhaustive methylation considering the example of nicotine and give the name of the product.

(c) Write one medicinal use each of cocaine and reserpine.