

Total No. of printed pages = 4

63/2 (SEM-4) CHM 402

2022

**CHEMISTRY**

(Theory Paper)

Paper Code : CHM 402

**(Natural Products and Heterocyclic Chemistry)**

Full Marks – 80

Time – Three hours

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

1. Answer the following questions (any *four*) :

5×4=20

- (a) Write about the method of ascending the sugar series.
- (b) Write briefly about cellulose.
- (c) Write the occurrence and classification of terpenoids.

[Turn over

- (d) Explain the isoprene rule of terpenoids with examples.
- (e) Discuss the general methods of structure determination of terpenoids.
- (f) Discuss briefly about vitamins D<sub>1</sub> and D<sub>2</sub>.

2. Answer the following questions (any four) :

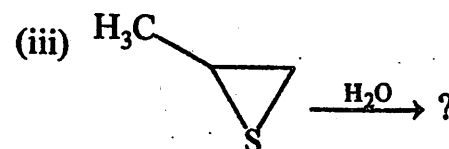
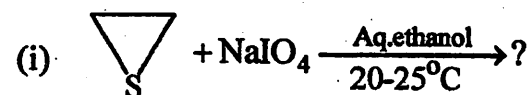
5×4=20

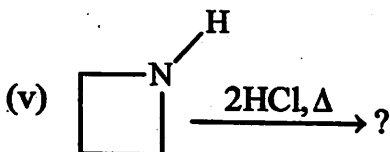
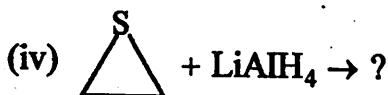
- (a) Draw a flow chart for the extraction of crude alkaloid from a plant.
- (b) How can the number of methoxy group be determined in alkaloid? Give a chemical reaction which confirms the presence of phenanthrene nucleus in morphine. 3+2=5
- (c) Write the Pschorr's synthesis of dimethyl morphol. 5
- (d) Write the synthesis of opso pyrrole and phyllo pyrrole. 2½+2½=5
- (e) How would you proceed to confirm the structure of ethyl methyl maleimide? 5
- (f) Elucidate the structure of haematinic acid and confirm it by synthesis. 5

3. Answer the following questions (any four) :

5×4=20

- (a) Write short note on click chemistry. 5
- (b) What are  $\pi$ -excessive and  $\pi$ -deficient heterocycles? Explain with suitable example. 5
- (c) Give the mechanistic steps involved in the synthesis of thiirane and aziridine by any one method. 2½+2½=5
- (d) Write down the synthesis of imidazole starting from  $\alpha$ -haloketone. Write any two reaction of imidazole. 3+2
- (e) Write the product of the following reaction : 1×5=5





4. Answer the following questions (any *two*) :

10×2=20

(a) Write about the synthesis of b-carophyllene or longifolene. 10

(b) Establish the position of propionic acid residue and vinyl group in both the types of chlorophyll. 5+5=10

(c) What is chlorine -e trimethyl ester ? Establish the structure of the compound from the degradation of chlorophyll-a. 2+8=10

(d) Write about the ring structure of sucrose.

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