

**B.Sc. CHEMISTRY  
FOURTH SEMESTER  
ORGANIC CHEMISTRY-III  
BSC-402 [SPECIAL REPEAT]  
[USE OMR FOR OBJECTIVE PART]**

**SET  
A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

**( Objective )**

Marks: 20

*Choose the correct answer from the following:*

**1X20=20**

- Alkaloids are  
a. natural products, founds in animals, that contains one or more alcohol groups  
b. natural products, founds in plants, that contains one or more nitrogen hetero atoms  
c. natural products, founds in animals, that contains one or more nitrogen heteroatoms  
d. alcohol-like compounds
- Quinine is obtained from the bark of which tree?  
a. Cinchona  
b. Redwood  
c. Banyan  
d. Eucalyptus
- Nicotine causes which of these changes in the body?  
a. lowers body temperature  
b. increases heart rate  
c. increases blood pressure  
d. increases heart rate and blood pressure
- The alkaloid used as sedative is  
a. Cocaine  
b. Hygrine  
c. Morphine  
d. Atropine
- What happens when nicotine comes into contact with the brain?  
a. tissues swell  
b. dopamine is released  
c. nerve centers shut down  
d. adrenaline increases
- The alkaloid Quinine is used in the treatment of  
a. Malaria  
b. High blood pressure  
c. Parkinson disease  
d. Alzheimer
- Nitriles can be prepared by  
a. the hydration of amines  
b. the dehydration of acids  
c. the reduction of acids  
d. the dehydration of amides
- Acetamide reacts with  $\text{Br}_2/\text{NaOH}$  to give  
a. Methylamine  
b. Urea  
c. Ethylamine  
d. Acetyl bromide

9. Acetonitrile undergoes reduction with  $\text{LiAlH}_4$  to form
- Methylamine
  - Dimethylamine
  - Ethylamine
  - Trimethylamine
10. Which type of amines produces  $\text{N}_2$  when treated with  $\text{HNO}_2$ ?
- Quaternary
  - Tertiary
  - Secondary
  - Primary
11. Naphthalene is a
- Isolated benzenoid system
  - Fused non-benzenoid system
  - Fused benzenoid system
  - Isolated benzenoid system

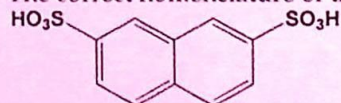
12. Pyridine is a
- weak base
  - weak acid
  - neutral molecule
  - Strong base
13. The nature of Indole is
- Non-aromatic
  - Aromatic
  - Anti-aromatic
  - Aliphatic

14. Common name of the following structure is

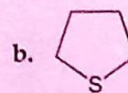
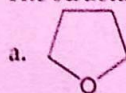


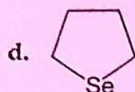
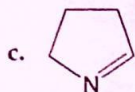
- Pyrrrole
  - Imidazole
  - pyrazole
  - oxazole
15. Molecular formula of isoprene unit is
- $\text{C}_5\text{H}_8$
  - $\text{C}_5\text{H}_{10}$
  - $\text{C}_5\text{H}_5$
  - $\text{C}_5\text{H}_{12}$

16. The correct nomenclature of the following compound is



- Naphthalene-2,7- disulfonic acid
  - Naphthalene-2,8- disulfonic acid
  - Naphthalene-3,7- disulfonic acid
  - Naphthalene-1,7- disulfonic acid
17. The structure of Naphthalene has
- 4 $\alpha$  and 2 $\beta$  position
  - 4 $\alpha$  and 4 $\beta$  position
  - 2 $\alpha$  and 2 $\beta$  position
  - 2 $\alpha$  and 4 $\beta$  position
18. Anthracene is a
- Linear non-aromatic system
  - Linear benzenoid fused system
  - Non-linear benzenoid fused system
  - Non-linear non-benzenoid fused system
19. The structure of THF is





20. Hantzsch synthesis is related to

- a. Anthracene  
c. Benzene

- b. Phenanthrene  
d. Pyridine

( Descriptive )

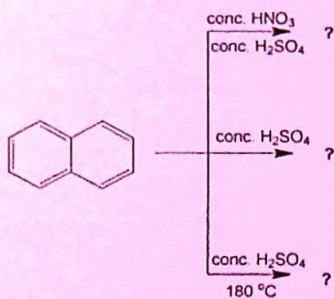
Time : 2 hrs. 30 mins.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

1. a. Discuss the Gabriel phthalimide synthesis? How will you synthesize aliphatic primary amine by this method? why aromatic primary amine cannot be prepared by this method? 5+5=10

b. What are the products of the following reactions?

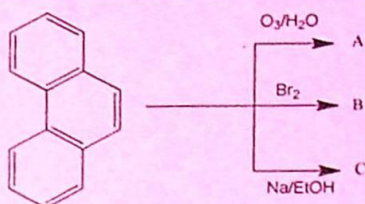


2. a. Draw the structures of pyrazole and oxazole. Describe the Knorr pyrrole synthesis with mechanism. 5+5=10

b. What is benzene diazonium salts? How are they produced? Starting from benzene diazonium chloride how will you synthesize (i) chlorobenzene and (ii) phenol. Give chemical reaction.

3. a. Explain Haworth synthesis of naphthalene. 6+4=10

b. Write down A, B and C



4. a. What are alkaloids? Discuss the general features of alkaloids. 5+5=10
- b. How are alkaloids isolated from plants? Describe their general properties.
5. a. What is Citral? Draw the structure of *cis* and *trans*-form of Citral. 5+5=10  
Describe its synthesis.
- b. Draw the structure of  $\alpha$ -terpineol. Describe the synthesis procedure and mention its uses
6. a. How the name 'indole' given? Describe Fischer indole synthesis with detailed mechanism. 5+5=10
- b. Discuss about the Knorr-quinoline synthesis and its mechanism.
7. a. What is Mannich reaction? Write the mechanism of the reaction. Can you use an aldehyde other than formaldehyde? 5+3+2=10
- b. Write a note on Hofmann's elimination reaction.
- c. How does nitrous acid react with primary amine? Give the chemical equation.
8. a. What is the carbylamine reaction? Why this reaction can be used as a test for only primary amine but not for secondary and tertiary amine? 5+5=10
- b. Discuss the effect of substituent and solvent on the basicity of amines. Give reason why order of the basic strength in case of methyl substituted amines in aqueous solution is as follows:  
 $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$ .

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