

Seat No. **OCT\_NOV\_2024 WINTER EXAMINATION****11670 Bachelor of Science****Sub. Name: CHEMISTRY -I****Sub. Code: 106595****Day and Date: DECEMBER ,09-12-2024****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Draw neat labelled diagrams wherever necessary
  3. Figures to the right indicate full marks

**Q1)** Choose the correct alternative for each of the following and rewrite the sentence. **[8]**

- i. Among the following, the hard acid is.....
- A. Cs+
  - B. Cu<sup>++</sup>
  - C. H<sup>+</sup>
  - D. OH<sup>-</sup>
- ii. According to the Lux-Flood concept, the base is an ....
- A. oxide ion acceptor
  - B. oxide ion donor
  - C. electron pair acceptor
  - D. electron pair donor
- iii. The stable configuration state of orbital among the following is.....
- A. d1
  - B. d5
  - C. f5
  - D. s1
- iv. The force of attraction between two oppositely charged ions is called .....
- A. gravitational force
  - B. an electrostatic force
  - C. frictional force
  - D. contact force
- v. Li metal or its ion shows.....colour in flame.
- A. grassy green
  - B. crimson red
  - C. brick red
  - D. yellow
- vi. The general configuration of alkaline earth metals is.....

- A. nS1
- B. nS3
- C. nS2
- D. nS0

vii. The principal quantum number of electron explain.....of an electron.

- A. orbital
- B. shell
- C. spin
- D. orientation

viii. The diamond allotrope of carbon shows.....hybridisation.

- A. SP2
- B. dSP2
- C. dSP3
- D. SP3

Q2) Attempt any TWO of the following.

[16]

- a. Explain the formation of ionic bond with energetics involved, using the example of NaCl.
- b. Explain the chemical properties of s-block metals with examples.
- c. Write a detailed note on allotropes of carbon with their structure and bonding.

Q3) Attempt any FOUR of the following.

[16]

- a. Write a note on quantum numbers.
- b. Explain in short the percent ionic characters of ionic bonds with examples.
- c. Write a note on Lewis concept of acids and bases with examples.
- d. Write a short note on stability of electronic configurations.
- e. Explain in short the structure and bonding of diborane.
- f. Discuss in detail 'shapes of s, p and d orbitals'.

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Seat No. **OCT\_NOV\_2024 WINTER EXAMINATION****11670 Bachelor of Science****Sub. Name: CHEMISTRY -II****Sub. Code: 106595****Day and Date: DECEMBER ,10-12-2024****Total Marks: 40****Time: 10:30 AM To 12:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Draw neat labelled diagrams wherever necessary
  3. Figures to the right indicate full marks

**Q1)** Choose the most correct alternative for each of the following and rewrite the sentences. **[8]**

- i. Nucleophiles are ..... species.
  - A. electron loving
  - B. electron hating
  - C. nucleus loving
  - D. nucleus hating
  
- ii. Non-superimposable stereoisomers which are mirror image of each other are called .....
  - A. diastereomers
  - B. enantiomers
  - C. conformers
  - D. geometrical isomers
  
- iii. Nitration, sulphonation and alkylation of benzene are ..... substitution reactions.
  - A. electrophilic
  - B. free radical
  - C. nucleophilic
  - D. none of these
  
- iv. Restricted rotation can be shown by ..... systems.
  - A. -C=C-
  - B. -C=N-
  - C. alicyclic
  - D. all of these-
  
- v. Correct structure for benzene was proposed by .....
  - A. Dewar
  - B. Faraday
  - C. Kekule

D. Claus

- vi. Inductive effect is denoted as .....
- A. M
  - B. E
  - C. I
  - D. all of these
- vii. A free radical is represented as .....
- A. R<sup>+</sup>
  - B. R<sup>•</sup>
  - C. R
  - D. R<sup>-</sup>
- viii. Chichibabin reaction occurs at ..... position in pyridine.
- A. 1
  - B. 2
  - C. 3
  - D. 4

Q2) Answer any TWO of the following -

- a. What is carbocation? Give any two methods for preparation of carbocation. [8]  
Explain structure of carbocation.
- b. What is Friedel-Crafts reaction? Explain the mechanism involved in alkylation and acylation of benzene. [8]
- c. What are optical isomers? Discuss optical isomerism in tartaric acid. [8]

Q3) Write short notes [any FOUR] -

[16]

- a. Kekule's structure of Benzene.
- b. Electrophiles
- c. Plane of symmetry.
- d. Nitration of benzene.
- e. Centre of symmetry.
- f. Chichibabin Reaction