

Mid-West University
Examinations Management Office
Surkhet, Nepal
End Semester Examinations -2078

Bachelor level/ B.Sc /3rd Semester
Time: 3 hrs

Full Marks : 100
Pass Marks : 50

Subject : Fundamentals of Chemistry-III (CHE 335)

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Inorganic Chemistry

Group- A

Answer any Seven questions in very short.

[7X2=14]

1. Compare general electronic configurations of s- and p-block elements with examples.
2. Write any two important anomalous behaviours of beryllium.
3. Write any two biological properties of calcium.
4. Write about 3center-2 electron bond.
5. Mentions the applications of carbides.
6. Give the general methods of preparations of phosphate fertilizers.
7. What is acid rain? Write its harmful effects.
8. How can you prepare perchloric acid? Write its one property.
9. Define clathrate compounds? Write their uses.

Group-B

Short questions. (Attempt all questions)

10. Explain the significant characteristics of solubility of alkali metals in liquid ammonia. [6]
11. Compare the bonding in trimethylamine and trisilylamine with diagrams. [6]
12. Describe about the extraction of aluminium metal with diagrams. [7]

OR

Write short notes on:

- a. Differences between oxygen and other elements of group VIA.
- b. Electropositive characters of iodine.

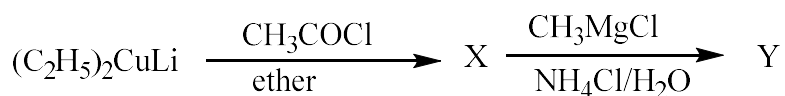
Organic Chemistry

Group-A

Answer any Seven questions in very short.

[7X2=14]

1. Define cycloalkanes. Draw the structure of 3,5-Dimethylcyclohexene.
2. Why do cyclopropane undergo ring opening reactions but cyclopentane does not?
3. Write two distinguishing features of aldehydes and ketones.
4. Write the characteristics of aromatic chemical species.
5. Chlorobenzene is less reactive than benzene but gives ortho and para products in electrophilic aromatic substitution. Explain.
6. Why Nitrobenzene is less reactive than benzene towards electrophilic substitution reactions?
7. What is Rosenmund reduction?
8. Draw the mechanism of Wittig reaction.
9. Complete the following series of reactions and identify X and Y.



Group-B

Short questions. (Attempt all questions)

10. Describe Baeyer strain theory. Write its limitation and modification. [4+2]
11. What are electrophilic substitution reactions? Discuss the orientation of electrophilic substitution in monosubstituted benzene. [4+2]
12. Write short notes on:
 - a. Aldol condensation
 - b. Resonance theory of structure of benzene [3.5+3.5]

OR

Discuss the acid catalyzed and base promoted halogenation of acetone. Indicate the position of a catalyzed and based promoted halogenation in Butanone.

Physical Chemistry

Group-A

Answer any Seven questions in very short.

[7X2=14]

1. Define rate law and rate constant.
2. Differentiate between order and molecularity of reaction?
3. The activation of any reactive is very low? What does it mean?
4. Show your acquaintance with positive and negative catalysis?
5. What is Langmuir's adsorption theory?
6. Differentiate between thermo-chemical and photo-chemical reaction
7. What is fluorescence process? give example
8. Define the following term equivalent conductance and specific conductance
9. What is quantum yield? What are the condition for low quantum yield

Group-B

Short questions. (Attempt all questions)

10. Derive the rate equation for first order reaction? The half life period of a first order reaction is 15 minutes? calculate the rate constant and the time taken to complete 80% of the reaction? [6]
11. What is enzyme catalysis. write the mechanism of enzyme catalysis by lock and key theory [6]
12. Sketch the conductometric titration of [8]
 - a. strong acid and strong base
 - b. strong acid and weak base
 - c. weak acid and strong base
 - d. weak acid and weak base

OR

Write short notes on (ANY TWO)

- a. Kohlraush law of independent migration
- b. Grothus drapper law
- c. Collision theory

THE END