

Mid-West University
Examinations Management Office
Final Examinations -2078

Bachelor level/ B.Sc/ 1st Semester
 Time: 3hrs

Full Marks : 60
 Pass Marks.: 30

Subject : Fundamental of Chemistry I (CHEM415/315)

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

Very short Questions (5×2=10)

- 1) Define de-Broglie equation.
- 2) Write the quantum number of 3d electron and 17th electron of potassium atom.
- 3) Define nuclear fusion with suitable example.
- 4) What is solubility product?
- 5) What is electrolytic reduction?

OR

Discuss Mulliken scale of electronegativity.

Long questions (2×5=10)

- 6) Define common ion effect. How does it help in group separation for the qualitative analysis of metal ion (explain in brief with suitable example)?
- 7) Derive Schrodinger wave equation. Write the shape of p-orbital.

OR

Write short notes on:

- a. Radioactivity
- b) Electron affinity

Organic Chemistry

Very short Questions (5×2=10)

- 1) Differentiate between exothermic and endothermic reaction.
- 2) Sketch diagram of staggered and eclipsed ethane in Andiron formula.
- 3) Write the formula of Ethyl magnesium bromide .What happens when it reacts with ammonia (NH₃)?
- 4) Show the two steps of Oxymercuration and Demercuration Reaction.
- 5) Which is more acidic- ethene or ethyne and Why?

OR

Calculate the % of expected isomers during monobromination of butane. The relative rates of substitution per 3⁰, 2⁰, 1⁰ hydrogen are 1600:82:1.

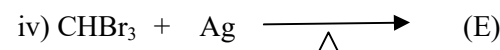
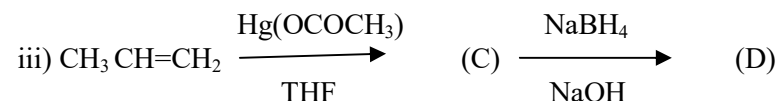
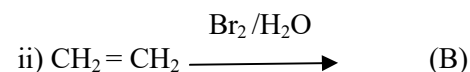
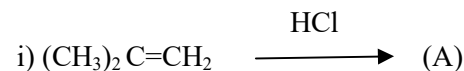
Long questions

(2×5=10)

- 6) What is E₁ reaction? Explain its kinetic, mechanism and orientation. (5)
- 7) What is halogenation? Explain the mechanism of halogenation of methane. (1+4=5)

OR

Identify the products of the following reactants. (5)



Physical Chemistry

Very short Questions (5×2=10)

- 1) How errors are eliminated or minimize on chemical analysis?
- 2) Define the term an error. How they are classified?
- 3) Deduce Charles law from kinetic gas equation.
- 4) Calculate the root mean square velocity of CH₄ gas at NTP.
- 5) A rain drop is spherical in shape. Describe why it has a spherical shape.

OR

How the solids are classified on the basis of dominant bonds?

Long questions (2×5=10)

- 6) Derive the van der Waal equation for real gas. Starting from van der Waals equation, derive the value of critical volume and critical pressure.
- 7) Describe viscosity and co-efficient of viscosity. Describe the method for determining the viscosity of liquid by Ostwald's viscometer.

OR

What is meant by liquefaction of a gas? Explain Linde's method for liquefaction of gas.

THE END