TAMIL NADU OPEN UNIVERSITY

Chennai - 15

School of Sciences

Department of Chemistry

HOME ASSIGNMENT

Programme Code No : **182**

Programme Name : **B.Sc. Chemistry**

Course Code & Name : **BCHE - 31 & Inorganic Chemistry**

Batch : **AY 2019-20 [3rd Year]**

No. of Assignments : **4 [One Assignment for each 2 credits]**

Maximum CIA Marks : **25 [Average of total no. of Assignments]**

ASSIGNMENT-1

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Explain in details about the structure of ionic crystals with suitable examples.
2) Describe about the solvents and its classifications with suitable examples.
3) Discuss about the terminologies involved in Coordination Chemistry

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ASSIGNMENT-2

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the crystal defects with examples.
2) Explain about the classification of solids with examples.
3) Describe the following with examples.
   (i) Carbenes, Carbynes and Metallocenes
   (ii) Wilkinson's and Ziegler-Natta catalysts

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ASSIGNMENT-3

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the organo lithium compounds and organo boron compounds.
2) Explain about the chemical reactions with solvents such as Water, liq. NH_3, liq.

N_2O_4, liq. H_2S, liq. HF,

3) Describe the following
   (i) Arrhenius theory
   (ii) Bronsted-Lowry theory
   (iii) Henderson equations

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ASSIGNMENT-4

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Explain about the nuclear models.
2) Discuss the following
   (i) Nuclear fission
   (ii) Nuclear fusion
   (iii) half-life period
   (iv) threshold energy
3) Describe the following
   (i) Chelates and its medicinal applications
   (ii) Werner's and VB coordination theory

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ASSIGNMENT-1

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in detail about the Chemistry of Furan, Pyrrole, Thiophene, Pyridine, Indole.
2) Describe about the conformational analysis of ethane, propane, n-butane, cylopentane, and cyclohexane.
3) Discuss about the following
    (i) enantiomers and diastereomers
    (ii) Erythro and Threo
    (iii) D and L
    (v) eclipsed, staggered, gauche and anti

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ASSIGNMENT-2

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the Introduction, principle and terms involved in IR and NMR Spectroscopy.
2) Explain about the primary, secondary and tertiary structure of proteins and its properties.
3) Describe the following rearrangements with examples.
    (i) Wagner-Meerwein
    (ii) Claisen
    (iii) Lossen
    (iv) Schmidt
    (v) Pinacol-Pinacolone

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ASSIGNMENT-3

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the Geometrical isomerism.
2) Explain about the Aldol, Perkin, and Knoevenagel condensation reactions.
3) Describe the following reduction reactions.
    (i) MPV
    (ii) Birch
    (iii) Clemmensen
    (iv) Wolf Kishner

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ASSIGNMENT-4

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Explain about the terms involved in Retro synthetic analysis.
2) Discuss the following in NMR spectroscopy.
   (i) factors affecting chemical shift, number of peaks in the NMR spectra
   (ii) equivalent and non-equivalent protons
   (iii) peak area and proton counting
   (iv) splitting of signals
3) Describe the principle and terms involved in UV and Mass spectroscopy.

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HOME ASSIGNMENT

Programme Code No : **182**

Programme Name : **B.Sc. Chemistry**

Course Code & Name : **BCHE - 33 & Physical Chemistry**

Batch : **AY 2019-20 [3rd Year]**

No. of Assignments : **4 [One Assignment for each 2 credits]**

Maximum CIA Marks : **25 [Average of total no. of Assignments]**

ASSIGNMENT-1

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in detail about the types of systems.
2) Describe about the following
   (i) lyophobic and lyophilic colloids
   (ii) Zeta potential
   (iii) Tyndall effect
   (iv) Self Assembled Monolayers
3) Explain about the following

(i) cell e.m.f.

(ii) electrode potential

(iii) Nernst equation

(iv) applications of emf measurements

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ASSIGNMENT-2

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the symmetry elements and symmetry operations.
2) Explain about the thermodynamic processes.
3) Describe the following.

   (i) Selection rule of rotational and vibrational spectra

   (ii) rigid rotator

   (iii) harmonic and unharmonic oscillator

   (iv) vibrational spectra of H_2O and CO_2.

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ASSIGNMENT-3

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Discuss in details about the types of electrode and electrochemical cells.
2) Explain about the types of nanoparticles and their synthetic techniques.
3) Describe the following

   (i) Gibbs free energy

   (ii) Heimholtz free energy

   (iii) Gibbs & Helmholtz equations

   (iv) Joule - Thompson effect

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ASSIGNMENT-4

Max: 25 Marks

Answer any ONE of the following three questions in 1000 words

1) Explain in detail about the molecular spectroscopy
2) Discuss the following

   (i) Raoult's law

   (ii) Henry's law

(iii) Nernst distribution law

(iv) ideal and non-ideal solutions

3) Describe the following

(i) entropy of an ideal gas

(ii) absolute entropy

(iii) Gibbs free energy

(iv) Heimholtz free energy

(v) 0, I, II, and III law of thermodynamics

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