TAMIL NADU OPEN UNIVERSITY

Chennai - 15

School of Sciences

Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE - 11 & Organic Chemistry - I**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Discuss about the following reactions with suitable examples.
   - (i) Dienone-phenol rearrangement
   - (ii) Chichibabin reaction
   - (iii) Wagner–Meerwein rearrangement
   - (iv) Ullmann reaction
   - (v) Sandmeyer reaction

2) Write notes on the following reactions with suitable examples.
   - (i) Cope elimination
   - (ii) Reformatsky reaction
   - (iii) Knoevenagel condensation
   - (iv) Hofmann degradation

3) Explain about Aromaticity of heterocyclic compounds with examples.

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Explain about the synthetic applications of DMP, CAN, $Mn(OAc)_3$, NOCl, BF_3, NBS, $NaBH_4$ and $LiAlH_4$.

2) Discuss in details about the following with suitable examples.
   (i) Retron & Synthon
   (ii) Disconnection
   (iii) Synthetic equivalents
   (iv) Protection and Deprotection of functional groups
   (v) Target molecule

3) Describe about the following reactions with suitable examples.
   (i) Allenes
   (ii) Spirane
   (iii) Biphenyls
   (iv) Stereoselective synthesis
   (v) Stereospecific synthesis
   (vi) Molecular chirality

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Describe the following with suitable examples.
   (i) Elements of symmetry
   (ii) Aromaticity of Benzenoid compounds
   (iii) Nucleophilic substitution reactions
   (iv) Hammett Equation and Taft Equation

2) Explain the following reactions with suitable examples.
   (i) Dienone-phenol rearrangement
   (ii) Sandmeyer reaction
   (iii) Chichibabin reaction
   (iv) Wagner–Meerwein rearrangement
   (v) Ullmann reaction

3) Give the synthetic applications of NBS, $NaBH_4$, $LiAlH_4$, DMP, CAN, $Mn(OAc)_3$, NOCl and BF_3.

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Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE - 12 & Inorganic Chemistry - I**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Explain about characteristics and electronic configuration of Lanthanides.

2) Discuss in details about the VB theory and VSEPR theory.

3) Write short notes on the following reactions with suitable examples.
   (i) Trans effect theory
   (ii) Chelate effect
   (iii) Marcus theory
   (iv) Reactions of coordinated ligands

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discuss about the Complementary/Non-complementary reactions, Racemisation reaction and Solvolytic reaction with examples.

2) Explain about the following with suitable examples.

   (i) Spectrochemical Series of Ligands
   (ii) Tanabe-Sugano diagrams
   (iii) Orgel Diagrams
   (iv) Splitting of d orbitals
   (v) Chelate effect

3) Describe the following with suitable examples.

   (i) Magnetic and Spectral properties of Lanthanide complexes
   (ii) Lanthanide complexes as Shift reagents
   (iii) 4f and 5f Orbital comparison

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discuss about characteristics and electronic configuration of Actinides.

2) Explain in details about Hybridization and Structure of molecules.

3) Describe the following with suitable examples.

   (i) Hard and Soft ligands
   (ii) Resolution of Optically active complexes
   (iii) Linkage Isomerism
   (iv) Macrocycles
   (v) Prussian Blue and related structures

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School of Sciences

Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE - 13 & Physical Chemistry - I**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Explain about the following with suitable examples.
   - (i) Orthogonization and Normality
   - (ii) Rigid Rotor
   - (iii) Black body radiation
   - (iv) Harmonic Oscilattors
   - (v) Photoelectric effect

2) Discuss in details about the following
   - (i) Schrodinger wave equation.
   - (ii) Phase, Component, and Degrees of Freedom

3) Describe the following with suitable examples.
   - (i) Gibbs-Duhem Equation
   - (ii) Reversible and Irreversible processes
   - (iii) Free energy
   - (iv) Partial molar quanities
   - (v) Chemical potential

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Describe the following.
   (i) Steady State Theory
   (ii) Lindmann's theory of Unimolecular reaction
   (iii) Transition State Theory
   (iv) Activated Complex Theory

2) Explain about Phase diagrams. Give phase diagrams for H_2O and CO_2.

3) Discuss the following with suitable examples.
   (i) Over potentials
   (ii) Debye- Huckel limiting law
   (iii) Tafal equation
   (iv) Double layers
   (v) Butler-Volmer equation

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discusss in detail about a particle in a box.

2) Explain about the Theories of reaction rates.

3) Describe the following with suitable examples.
   (i) Phase diagram for three component systems
   (ii) Phase Transition classifications
   (iii) One/Two pair partially miscible liquids

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Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE - 14 & Analytical and Environmental Chemistry**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Discuss in details about the principle and instrumentation of NMR spectroscopy.

2) Explain the following with suitable examples.
   (i) Parent ion & Base peak
   (ii) Metastable ion & isotopic ion
   (iii) McLafferty rearrangement
   (iv) Retro Diels-Alder reaction

3) Discuss in details about the principle and instrumentation of IR spectroscopy.

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discuss the following with suitable examples.
   (i) Chemical shift, Coupling constants & Peak area
   (ii) Spin-spin coupling
   (iii) Double resonance techniques
   (iv) Shift reagents

2) Explain about the principle and instrumentations of UV-Vis and Mass spectroscopy.

3) Describe the following.
   (i) Electrochemical cells & Electrodes
   (ii) Amperometry
   (iii) Potentiometry
   (iv) Biosensors
   (v) Coulometry

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discuss in details about Paper, Thin Layer and High Performance Liquid Chromatography.

2) Explain about the following.
   (i) Octant rule
   (ii) Cotton effect & Curves
   (iii) Circular birefringence
   (iv) Principles of ORD & CD
   (v) ORD curves

3) Write short notes on storage and handling of Carcinogenic, Poisonous, Easily vaporisable and Inflammable chemicals.

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TAMIL NADU OPEN UNIVERSITY

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Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE - 15 & Chemistry of Bio-molecules and Green Chemistry**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Describe in details about the Petrochemicals.

2) Discuss in details about the classification of Amino acids.

3) Explain about the following compounds

(i) Carotenoid

(ii) Citrol

(iii) Terpinol

(iv) Santonin

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Describe the following compounds with examples.

(i) Pesticides

(ii) Analgesic

(iii) Anaesthetic

(iv) Antipyretic

(v) Anti-inflammatory

2) Discuss in details about the Fertilizers.

3) Explain about the synthesis of Cholesterol and Estrone.

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Describe about the Definition, Occurrence and Isolation of Alkaloids.

2) Explain about the following.
   (i) Antipyretic
   (ii) Anti-inflammatory
   (iii) Analgesic
   (iv) Anaesthetic
   (v) Pesticides

3) Write about the reproductive Hormones

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15

School of Sciences

Department of Chemistry

HOME / SPOT ASSIGNMENT

Programme Code No : **282**

Programme Name : **M.Sc. Chemistry**

Course Code & Name : **MCHE-16 & Polymer Chemistry**

Batch : **AY 2019-20 [1st Year]**

No. of Assignments : **3 [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 question not exceeding 1000 words

1) Explain about the following

   (i) Number Average Molecular Weight (Mn)

   (ii) Weight Average Molecular Weight (Mw)

   (iii) Viscosity Average Molecular Weight

2) Discuss in details about the classification of Polymers.

3) Describe in details about the analysis and testing of polymers.

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ASSIGNMENT-2

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Explain about the the following.

   (i) Electroluminescent polymers

   (ii) Biodegradable polymers

   (iii) Biomedical polymers

2) Discuss about stereoisomerism in polymer molecules.

3) Describe the following.
   (i) Fire retarding polymers
   (ii) Commercial polymers
   (iii) Functional polymers

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ASSIGNMENT-3

Max: 25 marks

Answer ANY ONE of the question not exceeding 1000 words

1) Discuss about the following.
   (i) Electrically conducting polymers
   (ii) Natural polymers
   (iii) Bio polymers

2) Explain in details about the techniques of polymerisation.

3) Describe the following
   (i) Commercial polymers
   (ii) Polymer blend
   (iii) Polyelectrolytes

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Important Instructions

1.	Date of Publication	:	07.01.2020
2.	Last date of submission of answer script by the student to the study centre /LSC	:	05.04.2020
3.	Last date of submission of marks by the examiner to the study centre/LSC	:	12.04.2020
4.	Last date of submission of marks by the study centre/LSCs to the office of C.O.E. on or before	:	25.04.2020