TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about the Addition reactions with suitable examples.

2) Explain about Enantiomers and Diastereomers with suitable examples.

3) What are PCC and PDC? Give their synthetic applications.

4) Discuss about D,L & R,S configurations.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Discuss in details about the following reactions with suitable examples.

- Knoevenagel condensation
- Reformatsky reaction
- Hofmann degradation
- Cope elimination

2) Explain about Aromaticity of heterocyclic compounds with examples.

3) Explain the following reactions with suitable examples.

- Ullmann reaction
- Sandmeyer reaction
- Chichibabin reaction
- Wagner–Meerwein rearrangement
- Dienone-phenol rearrangement

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TAMIL NADU OPEN UNIVERSITY
Chennai – 15
School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No : 282

Programme Name : M.Sc. Chemistry

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

Batch : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks : 100

Weightage : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) What is Huckel's rule of Aromaticity? Give suitable Examples.

2) Describe the concept of Homoaromaticity.

3) What are Saytzeff rule and Hofmann rule? Explain with suitable examples.

4) Explain about Neighbouring Group Participation (Anchimeric Assistance).

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Explain the following reactions with suitable examples.

- Stereoselective synthesis
- Stereospecific synthesis
- Molecular chirality
- Allenes
- Spirane
- Biphenyls

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

3) Discuss in details about the following with suitable examples.

- Disconnection
- Retron & Synthon
- Synthetic equivalents
- Target molecule
- Protection and Deprotection of functional groups

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name : M.Sc. Chemistry

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

Batch : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks : 100

Weightage : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Nucleophilic substitution reactions with suitable examples.

2) Discuss about the Aromaticity of Benzenoid compounds.

3) Discuss about Hammett Equation and Taft Equation

4) Explain about Elements of symmetry and Aromaticity.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

5) Explain the following reactions with suitable examples.

- Dienone-phenol rearrangement
- Sandmeyer reaction
- Chichibabin reaction
- Wagner–Meerwein rearrangement
- Ullmann reaction

6) Describe the following with suitable examples.

- Retron & Synthon
- Synthetic equivalents
- Disconnection
- Target molecule
- Protection and Deprotection of functional groups

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

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TAMIL NADU OPEN UNIVERSITY

Chennai – 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No   : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Bond order, Bond length and Bond energy with suitable examples.

2) Describe the Geometrical and optical isomerism in octahedral complexes.

3) What are Electron transfer reaction and Atom transfer reaction? Give examples.

4) Discuss about Jahn-Teller distortion and Nephelauxetic effect.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

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

2) Explain about characteristics and electronic configuration of Lanthanides.

3) Explain the following reactions with suitable examples.

- Marcus theory
- Reactions of coordinated ligands
- Chelate effect
- Trans effect theory

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No   : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Write about Crystal Field Stabilization Energy and Ligand Field Splitting Energy.

2) Describe the Term Symbols for lanthanide ions.

3) Explain about the properties of ionic compounds.

4) Explain about Associate and Dissociate reaction mechanisms.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Explain the following with suitable examples.

- Splitting of d orbitals
- Orgel Diagrams
- Tanabe-Sugano diagrams
- Chelate effect
- Spectrochemical Series of Ligands

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

3) Describe the following with suitable examples.

- Lanthanide complexes as Shift reagents
- 4f and 5f Orbital comparison
- Magnetic and Spectral properties of Lanthanide complexes

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TAMIL NADU OPEN UNIVERSITY

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School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name : M.Sc. Chemistry

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

Batch : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks : 100

Weightage : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Lattice energy calculations by Born-Lande equation.

2) Discuss about the Symmetry and Overlapping of Orbitals.

3) Discuss about Lanthanide Contraction

4) Write notes on Crown ethers.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Explain about characteristics and electronic configuration of Actinides.

2) Describe the following with suitable examples.

- Resolution of Optically active complexes
- Linkage Isomerism
- Hard and Soft ligands
- Macrocycles
- Prussian Blue and related structures

3) Discuss in details about Hybridization and structure of molecules.

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No   : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

5)   Give notes on Schrodinger wave equation.

6)   Write notes on rate laws, rate constants and order of reaction.

7)   Explain about Phase, Component, and Degrees of Freedom.

8)   Discuss about Classical thermodynamics.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

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

2) Explain the following with suitable examples.

- Reversible and Irreversible processes
- Free energy
- Partial molar quanities
- Chemical potential
- Gibbs-Duhem Equation

3) Discuss the following with suitable examples.

- Rigid Rotor
- Harmonic Oscilattors
- Black body radiation
- Photoelectric effect
- Orthogonization and Normality

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TAMIL NADU OPEN UNIVERSITY
Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No   : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Discuss about thermodynamics of ideal and non-ideal solutions.

2) Describe about Kinetic Isotopic Effect.

3) Explain about Wave-Particle duality/de Broglie's hypothesis.

4) Write notes on Gibbs' phase rule.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Discuss the following with suitable examples.

- Debye- Huckel limiting law
- Tafal equation
- Over potentials
- Double layers
- Butler-Volmer equation

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

3) Describe the following.

- Steady State Theory
- Lindmann's theory of Unimolecular reaction
- Transition State Theory
- Activated Complex Theory

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Stokes Roozeboom plot.

2) Write notes on Entrophy

3) Discuss about Collision theory

4) Write notes on Quantum numbers.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Explain about the Theories of reaction rates.

2) Describe the following with suitable examples.

- Phase Transition classifications

- One/Two pair partially miscible liquids

- Phase diagram for three component systems

3) Explain in detail about a particle in a box.

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TAMIL NADU OPEN UNIVERSITY
Chennai – 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

9) Give notes on the following in IR spectroscopy

- Stretching/Bending vibrations
- Combination of bands
- Overtones
- Fermi resonance

2) Write notes on homotopic, enantiotopic and diastereotopic relationship.

3) Explain about σ-σ*, n-σ*, n-π and π-π* transitions.

4) Discuss about Laboratory hygiene and safety rules.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

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

2) Explain the following with suitable examples.

- Parent ion & Base peak
- Metastable ion & isotopic ion
- McLafferty rearrangement
- Retro Diels-Alder reaction

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

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TAMIL NADU OPEN UNIVERSITY
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School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No   : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Discuss about the frequency absorption for nitrate, sulphate, chlorate and ammonia

2) Describe about UV spectra of Dienes, Polyenes and Carbonyls.

3) Explain about Conductometric titrations.

4) Write notes on comparison of H & C NMR.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Discuss the following with suitable examples.

   - Chemical shift, Coupling constants & Peak area
   - Spin-spin coupling
   - Double resonance techniques
   - Shift reagents

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

3) Describe the following.

   - Electrochemical cells & Electrodes
   - Potentiometry
   - Biosensors
   - Coulometry
   - Amperometry

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TAMIL NADU OPEN UNIVERSITY
Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Broad band/Off resonance decoupling.

2) Write notes on Hooke's law in IR spectroscopy.

3) Discuss about Woodward-Fieser rule

4) Describe about Stripping Voltametry and Thermogravimetry.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Explain about the storage & handling of Carcinogenic, Poisonous, Easily vaporisable and Inflammable chemicals.

2) Describe the following.

- Circular birefringence
- Principles of ORD & CD
- Cotton effect & Curves
- ORD curves
- Octant rule

3) Explain in details about Paper, Thin Layer and High Performance Liquid Chromatography.

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No : 282

Programme Name : M.Sc. Chemistry

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

Batch : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks : 100

Weightage : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

10) Give notes on the Structure of Carbohydrates

2) Write notes on Antibiotics and Penicillins.

3) Explain about the synthesis of Morphine and Quinine.

4) Discuss about the definition, principle and need of Green chemistry.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

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

2) Explain about the following

- Citrol
- Terpinol
- Santonin
- Carotenoid

3) Describe in details about the Petrochemicals.

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TAMIL NADU OPEN UNIVERSITY

Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Discuss about the Vitamins and Harmones

2) Describe about the synthesis of Conine and Nicotine.

3) Explain about Chloromycetin and Streptomycin.

4) Write notes on comparison of DNA and RNA.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Discuss in details about the Fertilizers.

2) Describe the following.

- Analgesic
- Anaesthetic
- Antipyretic
- Anti-inflammatory
- Pesticides

3) Explain about the synthesis of Cholesterol and Estrone.

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TAMIL NADU OPEN UNIVERSITY

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School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

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

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about the Phase Transfer, Bio and Green catalysts.

2) Write notes on the differences between Vitamins and Harmones.

3) Discuss about the structure of DNA and RNA.

4) Describe about the applications of Green chemistry.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

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

2) Describe the following.

- Analgesic
- Anaesthetic
- Antipyretic
- Anti-inflammatory
- Pesticides

3) Explain in details about the reproductive Hormones

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TAMIL NADU OPEN UNIVERSITY
Chennai - 15
School of Science
Department of Chemistry

ASSIGNMENT-I

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

Course Code & Name : MCHE-16 & Polymer Chemistry

Batch   : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

11) Give notes on the Morphology and Order in crystalline polymers.

2) Write notes on Step growth and Chain growth polymerisation.

3) Explain about the factors affecting Glass Transition Temperature (Tg).

4) Discuss about the polymer composites and nano compsites.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Discuss in details about the classification of Polymers.

2) Explain about the following

- Number Average Molecular Weight (Mn)
- Weight Average Molecular Weight (Mw)
- Viscosity Average Molecular Weight

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

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TAMIL NADU OPEN UNIVERSITY
Chennai – 15
School of Science
Department of Chemistry

ASSIGNMENT-II

Programme Code No : 282

Programme Name   : M.Sc. Chemistry

Course Code & Name : MCHE-16 & Polymer Chemistry

Batch   : AY 2018-19

No.of Assignment   : One Assignment for Each 2 Credits

Maximum Marks   : 100

Weightage   : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Discuss about the Configurations of polymer chains.

2) Give notes on the relationship between Tg and Tm.

3) Explain about the IPN polymers.

4) Write notes on Electrochemical and Ring opening metathesis polymerisation.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Describe the following.

   - Commercial polymers
   - Functional polymers
   - Fire retarding polymers

2) Explain about the stereoisomerism in polymer molecules.

3) Discuss about the following.

   - Biodegradable polymers
   - Biomedical polymers
   - Electroluminescent polymers

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School of Science
Department of Chemistry

ASSIGNMENT-III

Programme Code No : 282

Programme Name : M.Sc. Chemistry

Course Code & Name : MCHE-16 & Polymer Chemistry

Batch : AY 2018-19

No.of Assignment : One Assignment for Each 2 Credits

Maximum Marks : 100

Weightage : 25%

Part – A (4 x 10 = 40 Marks)
Answer the following in 200 words each. Each question carries 10 marks

1) Explain about Crystalline Melting point (Tm) and Glass Transition Temperature (Tg).

2) Write notes on the Isotactic, Syndiotactic and Atactic polypropenes.

3) Discuss about the molecular weight distribution in polymers.

4) Describe about the Stereo regular polymers and Ziegler Natta catalyst.

Part – B (2 x 30 = 60 Marks)
Answer **any two** of the questions given below in 1000 words each.

1) Describe the following.

- Natural polymers
- Bio polymers
- Electrically conducting polymers

2) Explain in details about the techniques of polymerisation.

3) Discuss about the following

- Polymer blend
- Polyelectrolytes
- Commercial polymers

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