

(DCHE01)

ASSIGNMENT-1

M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

(First Year)

CHEMISTRY

General Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Explain the nature of radiation and their Quantization of energy in molecular spectroscopy.
- Q2)** Explain the basic instrumentation and working principle of electron spin resonance spectroscopy (ESR).
- Q3)** By taking a suitable, explain the electronic spectra of a diatomic molecule in UV visible spectroscopy.
- Q4)** Write about the radiation sources and detectors used in Infra Red spectroscopy.
- Q5)** Write the basic steps involved in the collection of water samples for analysis.
- Q6)** Explain student 't' test and its significance.
- Q7)** Explain the basic components of a computer and their functions.

(DCHE01)

ASSIGNMENT-2
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018
(First Year)
CHEMISTRY

General Chemistry
MAXIMUM MARKS:30
Answer ALL Questions

- Q1)** What do you understand by IF and GOTO statements?
- Q2)** a) Explain the theory, instrumentation and working principle of nuclear magnetic resonance spectroscopy (NMR).
b) By taking suitable examples, explain the microwave spectra of linear molecules.
- Q3)** a) By taking suitable examples, explain the vibrational spectra of diatomic molecules in Infra Red (IR) spectroscopy.
b) Discuss the rotational fine structure of electronic vibration transitions.
- Q4)** a) Explain the importance of control charts in the analysis of data.
b) Explain the method of least square analysis with an example.
- Q5)** a) Write a flow chart and computer program for solving Vander Waal's equation.
b) Write a flow chart and computer program for summing power series.



(DCHE02)

ASSIGNMENT-1
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

First Year

CHEMISTRY

Inorganic Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Explain what is planck's temperature radiation law?
- Q2)** Explain the wave equation for hydrogen?
- Q3)** Write notes on valence bond approach to H₂ molecule?
- Q4)** Discuss the types of solids?
- Q5)** What are the outer and inner orbital complexes?
- Q6)** Explain the elementary ideas on magnetism?
- Q7)** Describe the classification of labile and inert complexes on valence bond theories?

(DCHE02)

ASSIGNMENT-2
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

First Year

CHEMISTRY

Inorganic Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Explain the properties and structure of boranes?
- Q2)** a) What is Heisenberg's uncertainty principle and explain electron in box?
b) What is L-S and J-J coupling schemes and explain the atomic spectra of alkali metals?
- Q3)** a) Discuss the concept of hybridization and explain the different types of hybridization?
b) explain the simple ionic structures based on the concept of radius ratio?
- Q4)** a) Explain the crystal field splitting of d orbital's in octahedral complexes?
b) Explain the determination of stability constants of complexes by pH method?
- Q5)** a) Explain the following
i) Ligand substitution in octahedral complexes
ii) Electron transfer reactions.
b) Describe the synthesis, properties and structure of B-N, S-N, P-N cyclic compounds?

(DCHE03)

ASSIGNMENT-1
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

(First Year)

CHEMISTRY

Organic Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Write a note on hyper conjugation give examples.
- Q2)** Explain conformations of ethane.
- Q3)** Draw the potential energy diagrams for transition states and intermediate states with an example
- Q4)** Write a note on ambident nucleophiles give examples.
- Q5)** Discuss diazonium coupling reaction with an example.
- Q6)** Explain the following
- a) Auto-oxidation
 - b) Hunsdiecker reaction.
- Q7)** Explain hydrolysis of esters and amides.

(DCHE03)

ASSIGNMENT-2
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

(First Year)

CHEMISTRY

Organic Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Write a note on E₂ and E₁ reactions with an example.
- Q2)** a) Explain the following
- i) Fullerenes
 - ii) Huckel's rule
- b) Write the conformations of cyclohexane derivatives
- Q3)** a) Explain generation, structure, stability and reactivity of carbocation and carbanion
write a note on
- i) Nucleophilic substitution at aliphatic trigonal carbon
 - ii) S_N¹ reaction
- Q4)** a) Explain the following
- i) NBS
 - ii) Chemoselectivity
- b) i) Free radical addition reactions
- ii) Michael reaction
- Q5)** a) Write a note on
- iii) Benzoin condensation
 - iv) Perkin reaction.
- b) Explain factors affecting on elimination reactions.

(DCHE04)

ASSIGNMENT-1
M.Sc. DEGREE EXAMINATION, MAY - 2018

(First Year)

CHEMISTRY

Physical Chemistry

MAXIMUM MARKS:30

Answer ALL Questions

- Q1)** Explain the significance and concept of Gibb's-Helmholtz function.
- Q2)** Write about the entropy changes in irreversible processes.
- Q3)** Explain Radioactive secular equilibrium and transient equilibrium with one example each.
- Q4)** Write about Schottky and Frenkel defects in solids.
- Q5)** How do you measure the emf of an electrochemical cell.
- Q6)** Draw and explain Langmuir adsorption isotherm.
- Q7)** Draw and explain Jablonsky diagram.
- Q8)** Explain the effect of temperature on reaction rates.

(DCHE04)

ASSIGNMENT-2
M.Sc.(Previous) DEGREE EXAMINATION, MAY - 2018

First Year

CHEMISTRY

Inorganic Chemistry

MAXIMUM MARKS:30

Answer ALL

- Q1)** Draw and explain Jablonsky diagram.
- Q2)** Explain the effect of temperature on reaction rates.
- Q3)** a) Describe Classius-Clapeyron equation.
b) Explain the variation of chemical potential with respect to temperature and pressure.
- Q4)** a) Write the applications of radioisotopes in reaction mechanisms and medicine.
b) Make a comparison between the properties and applications of conductors and semiconductors.
- Q5)** a) Write the determination of concentration of a cell without transference.
b) How do you determine surface area of solids by BET method?
- Q6)** a) Explain Lindmann's theory of reaction rates.
b) Explain the mechanism of Acid-Base catalysis reaction with an example.

