

M. Sc. Chemistry
Semester I
SCHM11

Name of the course: Organic Reaction Mechanism - I

1. (a) Kinetics and non-kinetic methods of determination of reactions
(OR)
(b) Electrophilic substitution reactions
2. (a) Hammond Postulate
(OR)
(b) Topicity and prostereoisomerism.

SCHM12

Name of the Course : Structure and Bonding in Inorganic Compounds

1. (a) M.O. diagrams of hetero nuclear diatomic molecules (CO, NO, HF)
(OR)
(b) Born-Lande equation for Ionic compounds
2. (a) Wade's Rule - Predict the structure and bonding of Boron clusters.
(OR)
(b) Crystal growth methods - Principles and examples.

SCHE11

Name of the Course : Nanomaterials and Nanotechnology

1. (a) Classification of nanomaterials
(OR)
(b) Synthesis of nanomaterials by CVD and microwave assisted methods.
2. (a) Synthesis of metal and metal oxide nanomaterials.
(OR)
(b) Principle, instrumentation and applications of SEM and TEM.

SCHE12

Name of the course : Molecular Spectroscopy

1. (a) i) Classification of molecules based on moment of inertia.
ii) Effect of isotopic substitution.
(OR)
(b) Ionization techniques in Mass spectrometry.
2. (a) AB and AX type of coupling in NMR spectroscopy.
(OR)
(b) Principle, instrumentation and applications of PES

Semester II

SCHM21

Name of the Course : Organic Reaction Mechanism - II

1. (a) Mechanisms of E2, E1, and E1cB
(OR)
(b) Oxidative and reductive coupling reactions.
2. (a) Baeyer-Villiger oxidation and Dakin rearrangements.
(OR)
(b) Organolithium reagents for carbonyl and unsaturated carbonyl compounds

SCHM22

Name of the course : Physical Chemistry - I

1. (a) Fermi Dirac & Bose-Einstein Statistics.
(OR)
(b) Enzyme catalysis.
2. (a) Onsager reciprocal relationships
(OR)
(b) Acid- Base Catalysis

Sub Code: SCHE21

Name of the Course: Green Chemistry

1. (a) Twelve principles of green chemistry with examples.
(OR)
(b) Supercritical carbon dioxide- properties, advantages and drawbacks.
2. (a) Phase transfer catalysis in green synthesis
(b) Micro wave induced green synthesis - Instrumentation, Principle and applications.

SCHE22

Name of the Course : Bioinorganic Chemistry

1. (a) Structure of Vitamin B12 coenzyme and cytochrome 450.
(OR)
(b) Structure and classification of Rubredoxin and Ferredoxin .
2. (a) Photosynthesis: photosystem-I and photosystem-II
(OR)
(b) Enzyme catalysis - Michelis - Menton equation.

SCHS21

Name of the course : Industrial Chemistry

1. (a) Methods of preparation and properties of pigments.
(OR)

(b) Manufacture and processing of glass.

2. (a) Types of cement. - Manufacture of Portland cement
(OR)

(b) Management and treatment of wastes

Semester III

SCHM31

Name of the course : ORGANIC SYNTHESIS AND PHOTOCHEMISTRY

1. (a) Functional Group interconversion. Example with examples.
(OR)
(b) Stereo selective and stereospecific reactions.
2. (a) FMO approach of sigma tropic rearrangements of 1,5 – hexadiene, photochemically allowed or forbidden process.
(OR)
(b) Norrish Type I & II cleavage reactions..

SCHM32

Name of the course : Coordination Chemistry-I

1. (a) Explain Jahn-Teller Distortion with examples.
(OR)
(b) Crystal Field Stabilization Energy for Octahedral and Tetrahedral complexes.
- 2.(a) Trans Theories (pi-bond and polarization theory)
(OR)
(b) Inner sphere and outer sphere mechanism with examples.

SCHE31

Name of the Course : PHARMOCOGNOSY AND PHYTOCHEMISTRY

1. (a) General methods of extraction and give the types
(OR)
(b) Structure Elucidation of Papavarine
2. (a) Structure Elucidation of Morphine
(OR)
(b) Isolation and synthesis of quercetin.

SCHS31

Name of the course: Forensic Chemistry

1. (a) Blood types and Characterization of Blood stains
(OR)
(b) Finger Print Detection
2. (a) Methods and procedure of DNA typing
(OR)
(b) Investigation of computer related crime.

