

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Chemistry
Paper-I (Physical Chemistry)
Code- BSCB(Y-301)

UNIT – I

- A. Elementary Quantum Mechanics:** Black-body radiation, Planck's radiation law, photoelectric effect, heat capacity of solids, Bohr's model of hydrogen atom (no derivation) and its defects, Compton effect.
De-Broglie hypothesis, the Heisenberg's uncertainty principle, Sinusoidal wave equation, Hamiltonian operator, Schrodinger wave equation and its importance, physical interpretation of the wave function, postulates of quantum mechanics, and particle in a one-dimensional box.
- B. Molecular orbital theory:** Basic ideas-criteria for forming M.O. from A.O., construction of M.O.'s by LCAO-H₂ ion, calculation of energy levels from wave functions, physical picture of bonding and antibonding wave functions, concept of σ , σ^* , π , π^* orbitals and their characters. Hybrid orbitals sp, sp², sp³; calculation of coefficients of A.O.'s used in these hybrid orbitals. Introduction to valence bond model of H₂ ion, comparison of M.O. and V.B. models.

UNIT – II

Spectroscopy:

Introduction: Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom.

Rational Spectrum: Diatomic molecules, energy levels of a rigid rotor (semi-classical principles), selection rules, spectral intensity, distribution using population distribution (Maxwell-Boltzmann distribution) determination of bond length, qualitative description of non-rigid rotor, isotope effect.

Vibrational Spectrum: Infra-red spectrum : Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies, effect of an harmonic motion and isotope on the spectrum. Idea of vibrational frequencies of different functional groups.

UNIT- III

Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules.

Electronic Spectrum: Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck-Condon principle.

Qualitative description of σ , π and n M.O. their energy levels and the respective transition.

UV Spectroscopy: Electronic excitation, elementary idea of instrument used, application to organic molecules, Woodward-Fieser rule for determining λ_{\max} of enes, polyenes and α,β unsaturated carbonyl compounds.

UNIT – IV

Photochemistry

Interaction of radiation with matter, difference between thermal and photochemical processes, Laws of photochemistry: Grothus-Draper law, Stark-Einstein law, Jablonski diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radioactive processes (radioactive processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions energy transfer processes (simple examples.)

UNIT – V

Physical properties and Molecular Structure:

Optical activity, Polarization (Clausius – Mossotti equation), orientation of dipoles in an electric field, dipole moment, induced dipole moment measurement of dipole moment, temperature method and refractive method, dipole moment and structure of molecules, magnetic properties paramagnetic, diamagnetism and ferromagnetism.

Suggested Textbook & reference Books:

- Physical Chemistry – Puri, Sharma and Pathania – Vikas publications, New Delhi
- Physical Chemistry – G M Barrow, International student Edition McGraw hills.
- The elements of physical chemistry – PW Atkins, Oxford University press
- Physical Chemistry – R A Alberty, Willey Eastern Limited
- Physical Chemistry Through problems, S K Dogra and S Dogra, Wiley Easter.

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Chemistry
Paper-II (Inorganic Chemistry)
Code- BSCB (Y-301)

UNIT – I

1. Hard and soft acids and bases (HSAB)

Introduction, classification of hard and soft acid-base, Hard and soft acid-base concept of Pearson, application of hard-soft acid base theory, Symbiosis, acid-base strength and hardness and softness; theoretical basis of hardness and softness, electronic theory, π -bonding theory, and dragowayland theory, electronegativity and hardness and softness, limitations of hard soft acid-base concept.

2. Silicones and Phosphazenes

Introduction: Silicones-methods of preparation, classification, properties and application (uses), phosphazenes (Phosphonitrilic chloride)-method of preparation and properties: structure of triphosphazenes, some other phosphazenes and uses of phosphazenes.

UNIT – II

1. Metal Ligand Bonding in Transition Metal Complexes:

Introduction, limitations of valence bond theory, crystal field theory, and crystal field splitting of d-orbitals, d-orbital splitting and stabilization energy in octahedral, tetrahedral and square planer complexes; factor affecting the crystal field parameters, Application of crystal field theory and limitations of crystal field theory.

2. Thermodynamic and Kinetic Aspects of Metal Complexes.

Introduction: Thermodynamic aspects of metal complexes, factors affecting thermodynamic stability of complexes, kinetic aspects of metal complexes, stabilization reactions of square planer complexes and factors affecting the rate of substitution reactions in square planar complexes.

UNIT- III

Magnetic Properties of Transition Metal Complexes

Introduction, types of magnetic behavior, diamagnetisms, Paramagnetism, Ferromagnetism, Antiferromagnetism, Ferrimagnetis, Origin and calculation of magnetism, methods of determining susceptibility- Guoy, Bhatnagar Mathur, Quincke's Curie and Nuclear magnetic Resonance method, Magnetic moment; L-S coupling, Determination of ground state term symbol, correlation of μ_s and μ_{eff} values, Orbital contribution to magnetic moments and application of magnetic moment data for 3d-model complexes.

UNIT – IV

A. Electronic Spectra of Transition Metal Complex

Introduction: Type of electronic transition, Selection rules for d-d transition; spectroscopic ground states-Notations, Spectroscopic states and spectroscopic ground states in complexes; Spectrochemical series; Orgal energy level diagram-Uses in octahedral and tetrahedral complexes having d^1 to d^9 states: Electronic spectrum of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ complex ion.

B. Organometallic Chemistry

Introduction: Nomenclature and classification of Organometallic compounds, General methods of preparation: Alkyl and aryl organometallic compounds of Lithium-preparation, Properties, Bond nature and application; organometallic compounds of Al, Hg, Sn and Ti-Preparation, properties, bond nature and applications.

UNIT – V

A. Bio-Inorganic Chemistry

Introduction: Essential and trace elements in biological processes, Biological function of the bio-elements, Availability of bio-metals and bio-non-metals: Metalloporphyrins, Hemoglobin structure and biological function, Myoglobin-mechanism of oxygen transfer through hemoglobin and myoglobin: Relation between hemoglobin and myoglobin and chemical reaction of hemoglobin and myoglobin; Biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+} ; Nitrogen fixation.

B. Metal Nitrosyl Complex

Nitrosylating agent, Synthesis, structure, properties and Bonding,

Suggested Textbook & reference Books:

- Inorganic Chemistry, Mac Murray, Pearson Education.
- Inorganic Chemistry – J D Lee, John Wiley
- Inorganic Chemistry – Cotton and Wilkinson, John Wiley
- Inorganic Chemistry – Huheey, Harper Collins pub, USA
- Inorganic Polymer – G R Chhatwal, Himalaya Publication.

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Chemistry
Paper-III (Organic Chemistry)
Code- BSCB (Y-301)

UNIT – I

Structure and Bonding

Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond inclusion compounds, clathrates, Charge transfer complexes, resonance, hyper conjugation, inductive, electrometric, mesmeric and steric effect.

Mechanism of Organic Reactions

Hemolytic and heterotypic bond fission, types of reagents- electrophiles and nucleophiles, Types or organic reaction, energy consideration.

Reactive intermediates (carbonations, carbanions, free radicals, arynes and nitrene with examples.)

Methods of determination of reaction mechanism (active intermediate products) isotope effects, kinetic and stereo chemical studies.

UNIT – II

Alkanes and cycloalkanes

IUPAC nomenclature of branched and unbranched alkanes, classification of alkanes, Isomerism in alkanes, methods of formation (with special reference to Wurtz reaction, Kolbe reaction, Corey- House reaction and decarboxylation of carboxylic acids), physical properties and chemical reactions of alkanes, conformation of alkanes, Mechanism of free radical halogenation of alkanes, Cycloalkanes nomenclature, methods of formation, chemical reaction, Baeyer strain theory and its limitation, Theory of strainless rings, The case of cyclopropane ring: Banana bonds, conformation of cycloalkanes.

UNIT- III

Alkenes, Cycloalkanes, Dienes

Nomenclature of alkenes, methods of formation mechanism of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration, The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes-mechanism involved in hydrogenation, electrophilic and free radical addition, Markownikoff's rule, hydroboration-oxidation, oxymercuration reduction, Epoxidation, ozonolysis, Polymerization of alkenes, Substitution at the allylic and vinylic positions, industrial application of ethylene and propene, Methods of formation, conformation and chemical reactions of cycloalkanes, Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes, structure of allenes and butadiene, methods of formation, polymerisation, chemical reaction – 1,2 and 1,4 addition, Diels- Alder reaction.

UNIT – IV

Alkynes and Alkyl Halides

Nomenclature, structure and bonding in alkynes, methods of formation, Chemical reactions, acidity of alkynes, Mechanism of electrophilic and nucleophilic addition

reaction, hydroboration oxidation, metal-ammonia reduction, oxidation and polymerization

Nomenclature and classification of alkyl halides, methods of formation; chemical reactions, Mechanisms of nucleophilic substitution reaction of reaction of alkyl halides, S_N^1 and S_N^2 reaction with energy profile diagrams, Elimination reaction Polyhalogen compounds: methods of preparation and properties of chloroform and properties of Chloroform and carbon tetrachloride.

UNIT – V

Stereochemistry of Organic Compounds

Concept of isomerism, types of isomerism, Optical isomerism elements of symmetry, molecular chirality, enantiomers, stereogenic centers, diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization.

Relative and absolute configuration, sequence rule, D & L and R & S systems of nomenclature, Geometrical isomerism- determination of configuration of geometric isomers, E & Z system of nomenclature, geometric isomerism in oximes and alicyclic compounds.

Suggested Textbook & reference Books:

- Organic Chemistry, F A Carey McGraw hills Inc.
- Introduction to Organic Chemistry Streitwieser, Heathcock and Kosover, MacMillan.
- Vogel's Qualitative and Quantitative analysis, Vol I, II, III, ELBS
- Advanced organic chemistry, I.L. Finar, ELBS
- Basic Concepts of analytical chemistry, S.M. Khoper, New age International Publishers.

PRACTICAL
CODE-BSCB (Y-301D)

Inorganic Chemistry:

- I. Gravimetric analysis:
Barium as Barium sulphate, Copper as cuprous-thiocyanate.
- II. Complex compound preparation
 - a. Potassium chlorochromate (IV)
 - b. Tetra mine copper (II) sulphate monohydrate
 - c. Hexamminenickel (II) chloride
- III. Effluent water analysis, Identification of cations and anions in different samples.
- IV. Water analysis, to determine dissolved oxygen in water samples in ppm.

Physical Chemistry:

- I. To determine the velocity constant (specific reaction rate) of hydrolysis of methyl acetate/ ethyl acetate catalyzed by hydrogen ions at room temperature and water:
- II. Determination of partition coefficient of iodine between carbon tetra chloride and water.
- III. Job's method
- IV. pH-metric titrations, conduct metric titrations

Organic Chemistry:

- I. Binary mixture analysis containing two solids:
Separation, identification and preparation of derivatives
- II. Preparation
 - a. Acetylation
 - b. Benzoylation
 - c. Meta dinitro benzene
 - d. Picric acid

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Botany
Paper-I (Plant physiology and Bio chemistry)
Code- BSCB (Y-302)

Unit-I

Plant water relation- Properties of water, importance of water in plants life, Diffusion ,osmosis, ascent of sap, structure of stomata and its mechanism ,transpiration –its mechanism ,factors affecting rate of transpiration.

Unit II

Plant Nutrition and Bio molecules- Mineral Nutrition and essential macro & micro nutrients and their role, absorption of mineral nutrients, hydroponics, Tran's location of organic solvents Bio molecules- structure and function of carbohydrate, amino acids, proteins, lipids.

Unit III-

Photo synthesis, chloroplast, concept of two photo system, dark reaction, light reaction, red drop ,emerson effect, calvin, hatch and slack cycle, CAM pathway, factors effecting rate of photo synthesis.

UNIT IV-

Respiration- Mitochondria, aerobic and anaerobic respiration, Krebs cycle, MP pathway, electron transport system. Factors affecting rate of respiration

Unit V

Enzymology and plant hormone- classification and nomenclature of enzymes, concept of holo enzyme, coenzyme, apoenzyme, cofactors Plant hormones- discovery ,structure, mode of action, role of auxin, gibberellins, cytokinin, ethylene, abscisic acid.

Suggested readings:

- 1 Verma Plant physiology, emkey publication
- 2 Salisbury and ross –Plant physiology
- 3 Das, dutta & gangully- College botany vol II , Central Book Agency

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Botany
Paper-II (Cell Biology Genetics & Bio Technology)
Code- BSCB (Y-302)

Unit I

Cell envelopes & cell organelles- Plasma membrane, lipid bilayer structure, functions of cell wall, Golgi complex, mitochondria, vacuole, and chloroplast.

Unit II

Chromosome organization- structure and function of chromosome, centromere and telomere, nucleosome model, special types of chromosome, variation in chromosome numbers, deletion, duplication, translocation and inversion, euploidy and aneuploidy, DNA structure, DNA genetic material, DNA replication

Unit III

Genetic Inheritance- Mendelism; laws of segregation, independent assortment, linkage, interaction of genes, cytoplasmic inheritance, Mutation; spontaneous and induced mutation, DNA DAMAGE REPAIR

Unit IV

Gene - structure of gene, genetic code, transfer of genetic information, transcription translation, protein synthesis, tRNA & ribosomes, regulation of gene expression in protein synthesis.

Unit V

Biotechnology Definition, basic aspects of plant tissue culture, cellular totipotency, differentiation and morphogenesis, important achievements of biotechnology in agriculture.

Suggested reading:

- 1 P.k .Gupta Text book of cell and molecular biology Rastogi publication.
- 2 Sinha & Sinha Cytogenetic and Plant Breeding, vikas publication.
- 3 P.K.Gupta Genetics Rastogi publication.

Practical-Botany

CODE-BSCB (Y-302C)

- 1 Exercise based on Physiology- 10
- 2 Bio chemical test-05
- 3 Exercise based on cytology-10
- 4 Ex based on genetic problem- 05
- 5 Spotting-10
- 6 VIVA VOICE- 05
- 7 Sessional- 05

Faculty of Science
Class: B.Sc. (Biology)
Third Year
Subject- Zoology
Paper-I (Biotechnology, Immunology, Biological Tools and Techniques)
Code- BSCB (Y-303)

Unit-I

Biotechnology: Genetic Engineering (concept and recombinant DNA technology) and its application in agriculture & medical areas and energy production. Biotechnology of food processing, pharmaceuticals (e.g. use of microbes in insulin production) and fermentation.

Unit-II

Immunology. Concepts of immunity, types of immunity, Antigen and Antibodies, vaccines of different diseases and immunological reactions.

Unit-III

Biological Tools and Techniques: Principles and uses of instruments: pH Meter, Calorimeter, Microtome, Spectrophotometer & Centrifuge. Microscopy (light, transmission and scanning electron microscopy) Chromatography and Electrophoresis.

Unit-IV

Biostatistics: Sampling, Measures of central tendency (mean, median and Mode) and dispersion (variance, standard deviation and standard error); Correlation and Regression

Unit-V

Animal breeding and culture: Aquaculture, Pisciculture, Poultry, Sericulture, Apiculture, Lac-culture. Wild Life of India: Endangered species. Important sanctuaries; national parks of India; Different projects launched for the preservation of animal species; in-situ and ex-situ conservation of wild life.

Books References:

1. Invertebrates: R.L. Kotpal
2. Vertebrates: R.L. Kotpal
3. Ecology: PD Sharma
4. Zoology- Shivalal agrawal & company.
5. Ayush Aggarwal. Animal Biochemistry, 2013
6. Pelzar Jr, M.J. Chan, E.C.S. and Krieig N.R (Microbiology)

Faculty of Science
Class: B.Sc. (Biology))
Third Year
Subject- Zoology
Paper-II (Ecology, Animal Behavior and Pollution, Microbiology and Toxicology)
Code- BSCB (Y-303)

Unit- I

Ecology: Ecosystem: Concept, components, fundamental operations, energy flow, food-chain, food webs and trophic levels, ecological niche, abiotic and biotic factors. Population: Characteristics and regulation. Ecological succession. Adaptation: Aquatic, terrestrial, aerial and arboreal.

Unit-II

Animal Behavior: Introduction to Ethology, Patterns of behavior (taxes, reflexes, instinct and motivation); biorhythms; learning and memory, Migration of fishes & birds.

Unit-III

Pollution and Toxicology: Concept, sources, types (air, water, soil, noise & radiation), and control of environmental pollution. Exposure of toxicants (routes of exposure, and duration and frequency of exposure); dose -response relationship categories of toxic effects.

Unit-IV

Microbiology: Morphology, physiology and infection (outline) of bacteria and viruses. Bacterial and viral diseases.

Unit-V

Parasitology: (a) Structure, life cycle, pathogenicity, including diseases, causes, symptoms and control of the following parasites of domestic animals and humans: Trypanosome, Giardia and Wuchereria, Vectors and pests: Life cycle and their control of following pests: Gundhi bug, Sugarcane leafhopper, Rodents. Termites and Mosquitoes and their control.

Books References:

1. Invertebrates: R.L. Kotpal
2. Vertebrates: R.L. Kotpal
3. Ecology: PD Sharma
4. Zoology- Shivlal agrawal & company.
5. Ayush Aggarwal. Animal Biochemistry, 2013

6. Pelzar Jr, M.J. Chan, E.C.S. and Krieg N.R (Microbiology)
7. Prescott L.M. Harley J.P and Klein D.A (Microbiology 5th Edition)
8. Balasubramanian D. Bryce, Concepts in Biotechnology

Zoology Practical

BSCB(Y-303C)

- Permanent Preparation of: Euglena, Paramecium and rectal protozoans from frog.
- Stool examination for different intestinal parasites.
- Study of prepared slides/ specimens of Entamoeba, Giardia, Leishmania, Trypanosoma, Plasmodium, Fasciola, Cotugnia, Taenia, Rallietina, Polystoma Paramphistomum, Schistosoma, Echinococcus, Dipylidium, Enterobius, Ascaris and Ancylostoma;
- Permanent Preparation of Cimex (bed bug)/ Pediculus (Louse), Haematopinus (cattle louse), fresh water annelids, arthropods; and soil arthropods.
- Larval stages of helminths and arthropods.
- Permanent mounts of wings, mouth parts and developmental stages of mosquito and house fly. Permanent preparation of ticks/ mites, abdominal gills of aquatic insects viz. Chironomus larva, dragonfly and mayfly nymphs, preparation of antenna of housefly.
- Collection and identification of pests.
- Life history of silkworm, honeybee and lac insect.
- Different types of important edible fishes of India.
- Prepared slides of plant nematodes.
- Demonstration of counting of cells (blood and protozoan) by haemocytometer, haemoglobinometer, pH meter, Colorimeter
- Microbiological Techniques: Media Preparation and sterilization, inoculation and Monitoring.
- Study of an aquatic ecosystem, its biotic components and food chain.
- Preparation of chromosomes, Test for carbohydrate Photochemical demonstration of proteins and lipids, using hand sections using hand sections, endocrine glands (Neurosecretory cells) of cockroach.
- Demonstration of developmental stages of chick.
- Project Report/ model chart making.

Dissections:

- Cockroach: Central nervous system

- Wallago: Afferent and efferent branchial vessels, Cranial nerves, Weberian ossicles.
- Practical exercises based on Biostatistics, Microbiology, Immunology, Biotechnology, Animal Behavior, Pollution & Toxicology.

Faculty of science
B.SC IIIrd year
Biology
Foundation Course
Paper-I (Moral Value and Language-III)
Code: FC(Y-304A)

इकाई -1

हिन्दी भाषा

1. मेरे सहयात्री (यात्रा व्रतांत) - अमृतलाल बेगड
2. मध्यप्रदेश की लोक कलाएं (संकलित)
3. लोकोक्तियां एवं मुहावरे (संकलित)

इकाई -2

हिन्दी भाषा

1. पत्रकररिता के विभिन्न आयाम (संकलित)
2. मध्यप्रदेश का लोक साहित्य (संकलित)
3. पत्र लेखन - आवेदन, प्रारूपण, आदेश परिपत्र ज्ञापन, अनुस्मारक

इकाई -3

नैतिक मूल्य

1. विश्व के प्रमुख धर्म एवं महत्वपूर्ण विशेषताएं (हिन्दू धर्म , जैन धर्म, बौद्ध धर्म, सिक्ख धर्म , ईसाह धर्म , इस्लाम धर्म)
2. सत्य के साथ मेरे प्रयोग (महात्मा गांधी की आत्म कथा का संक्षिप्त संस्करण)

UNIT – 4

1. Stopping by Woods on a Snowy evening: Robert Frost.
2. Cherry Tree: Ruskin Bond
3. The Axe: R.K. Narayan
4. The Selfish Giant: Oscar Wilde
5. On the rule of the Road: A.G Gardiner
6. The song of kabir: Translated by Tagore

UNIT – 5

Direct-Indirect speech, Active-Passive Voice, Similar words with different meaning. Report Writing, Narration of events and situations. Drafting of E- mails, Drafting CV.

Text Books and References Books:

1. हिन्दी ग्रंथ अकादमी की पुस्तकें

Faculty of science

B.SC IIIrd year

Biology

Foundation Course

PaperII: Basics of Computer App. & Information Technology

Code: FC(Y-304B)

Unit-I

PowerPoint-I Creating presentation using Slide master and Template in various Themes & Variants. Working with slides: New slide, move, copy, And delete duplicate, and slide layouts, Presentation views. Format Menu: Font, Paragraph, Drawing & Editing. Printing presentation: Print slides, notes, handouts and outlines. Saving presentation in different file formats.

Unit-II

PowerPoint-II Idea of Smart Art graphics, inserting text/data using SmartArt, Converting old style presentation into new style through Smart Art. Inserting objects (Video, Audio, Symbol, Equation, etc.), table & excel sheets, picture, chart, photo album, shapes and Smart Art; Trimming of audio/videos. Connecting slides through hyperlink and action button. Slide sorter, slide transition and animation effects. Presenting the slide show: Setup Slide Show, Rehearse Timing.

Unit-III

MS Excel Workbook & Worksheet Fundamentals: Concept of Row, Column & Cell; creating a new workbook through blank & template. Working with worksheet: Entering data into worksheet (General, Number, Currency, Date, Time, Text, Accounting, etc.); Renaming, Copying, Inserting, deleting & protecting worksheet. Working with Row & Column (Inserting, Deleting, Pasting, and Resizing & Hiding), Cell & Cell formatting, and Concept of Range. Charts: Preparing & editing different types of Charts, Inserting trend line, Backward & forward forecasting. Working with formulas: Formula bar; Types of functions; Syntax & uses of the following functions: SUM,

Unit-IV

Internet & Web Services Internet: World Wide Web, Dial-up connectivity, Leased line, VSAT, Broad band, Wi-Fi, URL, Domain name, Web Browser (Internet Explorer, Firefox, Google Chrome, Opera, UC browser, etc.); Search Engine (Google, Bing, Ask, etc.); Website: Static & Dynamic; Difference between Website & Portal-mail: Account Opening, Sending & Receiving Emails, Managing Contacts & Folders. Basics of Networking: Types of Networks (LAN, WAN, MAN); Network Topologies (Star, Ring, Bus, Hybrid). Elementary idea of - Cloud Computing & Office Web Apps, Mobile Computing & Mobile Apps.

Unit-V

Cyber Ethics, Security & Privacy• Email, Internet & Social Networking Ethics Types of viruses & antivirus Computer security issues & its protection through Firewall & antivirus

Suggesting Reading-

1. Computer Science And Information Technology- S.K.Vijay And Pankaj Singh-Books Of Hindi Granth Academy
2. Computer Study –Pankaj Singh