COURSE FOR Sr Secondary

A.COMPULSORY SUBJECT

First Language

201 – English

202 – Hindi / Regional language

203 – Environmental Awareness

B. OPTINAL SUBJECT

Choose any Three Subject from any group

ARTS GROUP

211 - History

212 – Political Science

213 – Economics

214 – Sociology

215 – Geography

216 – Home Science

217 – Art & Craft

218 – Fashion Technology

219– Psychology

2. COMMERCE GROUP

221 - Business Study

222 - Accounts

223 – Computer Application

224 – Economics

225 – Business Mathematics

226– Management

3. SCIENCE GROUP

231 – Mathematics

232 – Physics

233 – Economics

234 – Computer Science

235 – Biology

236 – Biotechnology

237 – Electricity & Electronics

238 – Engineering Science

239 – Fashion Technology

CERTIFICATE CRITERIA

In order to pass get a certificate in Secondary / Senior Secondary courses, the criteria laid down by NBOSI are given below:

Course	**Pass Criteria**	**Certification Criteria**
Senior Secondary Course (Class XII)	A minimum of 33% marks in the aggregate as well as separately in theory and Practicals in the public Examination.	Pass in 5 subjects including at least one but not more than two languages.

Unfair means

In case of use of unfair means in the examination, your examination will be cancelled and you could be further debarred from appearing in they future examination. Even your admission can be cancelled.

Admission

Admission in open to one and all. Since the admissions through Study Centre are limited, these will be offered on First come First served basis, subject to availability of the capacity of enrolment allotted them by the NBOSI.

Procedure

For admission, you must apply in duplicate on the prescribed application form given at the end of this Prospectus through any NBOSI Study Centre. Please read the instruction carefully before filling up the application form.

· Submit your filled application form along with relevant documents and requisite fee to the Study Centre of your choice at the earlist seats in the Study Centre are limited.

· The Study Centre will give you provisional admission on receiving the filled up application form along with the fee. Your admission remain provisional till the time it is confirmed NBOSI through the Study Centre.

· No application form shall be accepted by NBOSI directly at its Headquarter / Regional Centres.

Re admission and Transfer of Credit (TOC)

The ex- NBOSI students, whose validity period of five years of admission has expired of five years of admission has expired but could not complete the course, are allowed to seek re admission with the transfer of credit up to four subjects. The admission fee and TOC fee will be payable also provide the facility of transfer of credit up to two subject in respect of ex-CBSE and State

Fee

Fee payable for SENIOR Secondary courses is 2500/-. Admission fee payable for the courses include changes for registration, personal contact programmes, Identity Cards etc.

For TOC/Dual Enrolment Part admission, please pay fee as per the fee structure.

· Fee once paid is not refundable or adjustable in future.

· Don't pay extra amount apart from the requisite fee.

How to pay the Fee.

Admission Fee should be paid to the Study Centre in the form of Bank Draft drawn in favour of University of Technology and Science. The Study Centre will issue you acknowledgement for receipt of Application Form and Fee: Deposite the admission fee as per fee structure only.

Confirmation of Admission and Issue of Identity Card.

Your admission to a particular course will be confirmed by NBOSI by issuing an Identity Card and confirmation letter giving your admission particulars as these exist in NBOSI website. Do check the particulars given in the confirmation letter. Discrepancies, if any, may be brought to the notice of the Study Centre immediately. Identity Card will be issued only once and no modified Identity Card will be issued on subsequent changes/ corrections of admission particulars.

In case of loss identity Card:

Duplicate Identity Card can be issued. For obtaining Duplicate Identity Card,

- Lodge an FIR with the concerned Police Station.
- Apply on a plain paper, along with (i) the copy of FIR, (ii)Bank Draft of Rs.50/-drawn in favor of the University of Technology and Science payable at Raipur a photograph along with specimen signatures duly attested by the Coordinator of study Centre, to the concerned regional Centre of NBOSI.

Changes of subject / Additional Subject

During the admission period of five years, you can change one or more subject(s) or take one /two additional subject(s), provided the total number of subjects does not exceed seven. However, such a change is permissible within four years of your Registration, so that you can appear in Public Examinations within the validity period of admission. No changes / addition of subjects will be allowed for the first examination. Subject(s) passed cannot be changed.

Dates for applying for the change of subjects of for additional subjects during the course of study are:

The fee is payable through Bank Draft drawn in favor of NBOSI payable at the concerned Regional Centre. This is applicable to all categories of learners. No applicable in this regard will be accepted in the NBOSI Headquarters.

About your Study Centre

The study Centre chosen by your at the time of Admission, will serve as your Study Centre. You have to go to this particular Study Centre for:

- Submitting admission form with fee and documents;
- If Correction of errors in your name, father's/mother's name, subjects and other particulars which are required to be within one month of the issue of Identity Card;
- Changes of subject(s) or additional subject(s).
- Finding out the dates of payment of fees, examination date sheet,
- Exam. Centre and other important information;
- Knowing results of Public Examinations and Collecting Marksheet / Certificate.

Change of Study Centre will not be permissible. So you must choose your Study Centre very carefully.

For Detail Log On to www.nbosindia.com

CORE MODULE 201-ENGLISH

COURSE CONTENTS

The course in divided into four modules

Module 1. Reading and functional grammar.

This module emphasizes the development of different reading skills, enhancement of vocabulary and functional grammar.

Module 2. Functional writing and study skills.

This module id designed to equip the learner with the ability to write clearly and correctly.

Module 3. Listing and speaking skills

This Module provides the learners with opportunities to develop their listening and speaking skills. This will be done through two audio tapes accompanies by worksheets.

Module 4. English for specific purpose

This module would help the learner to develop skills that are needed for academic and vocational purposes.

(i) English for Science

(ii) English for Receptionists

(iii) English for Office use

Total study time

An approximate breakup of the total reading time of 240 hours for the four sections is as follows:

(i) Reading and functional grammar 100 hrs.

(ii) Functional writing and study skills 70 hrs.

(iii) Listening and speaking skills 30 hrs.

(iv) English for specific purposes 40 hrs.

Distribution of marks

The total marks for English is 100. There will be one paper of 3 hrs duration. The allocation of marks is as follows:

1.	Prescribed texts	20marks
2.	Functional grammar	15marks
3.	Functional writing skills	25 marks
4.	Comprehensive (unfamiliar passages)	20marks
5.	Optional module	20marks
6.	**Total**	**100marks**

Course Description

Module 1. Reading comprehension (prescribed texts) and functional grammar.

Study time 100hrs

A variety of genres shot stories, expository pieces, biographies, poems, plays, news paper and magazine excerpts have been included. Teaching of grammar has been integrated with the reading texts. The emphasis is on functional grammar.

The following ten prose texts and five poems have been selected for development of different reading skills.

Prose texts (prescribed)

(1) A warmer or a colder earth (popular science) Arthur C Clark.

(2) The tiger in the tunnel (narrative) Rustin Bond.

(3) First two or four pages from Sunny days (autobiographical) by Sunil Gavaskar.

(4) Case of suspicion (narrative)

(5) Big brother (narrative) Shekhar joshi.

(6) Father, dear father (news paper article from the Hindu).

(7) Face to face (autobiographical) Ved Mehta.

(8) I must know the truth (narrative) Sigrun srivastava.

(9) If I were you (play) Douglas James.

(10) India, her past and her future (speech) jawahar Lal Nehru.

Poems

(1) Leisure W.H.Davies.

(2) The road not taken Robert Frost.

(3) Where the mind is without fear Tagore.

(4) My grandmother's house Kamla Das.

(5) The night of the scorpion Nissim Ezekiel.

Non Prescribed

In this section learners will be exposed to news paper, articles, tables, diagrams, advertisements etc. which they to read carefully and interpret, in the examination similar piexes will be used.

Grammar and usage

The following points of grammar and usage have been selected from the reading passages.

1. Agreement / concord: number gender etc.

2. Tenses: simple past negatives / interrogatives) present perfect, past perfect continuous, past perfect, expressing future time (will and going to).

3. Passive voice (perfect tenses and modals).

4. Modals (must, should, ought to, would).

5. Linking words(to like because although, instead of, if, as, since, who, which that, when however, inspite of).

6. Reported speech, statements, questions (yes / no).

Module 2

Functional writing and study skills

This module helps the learners to write descriptive and narrative paragraphs, letters, reports, notices etc. and also practice skills of note making.

1. Paragraph writing

Describing objects.

Describing people.

Narrating events, stories.

2. Letter writing

   Application for leave

   Application for jobs

   Asking for information from various agencies (e.g. last date for getting

   Prospects; price of items before placing orders etc.)

3. Note making

4. Editing (punctuation, spelling, appropriate vocabulary, structures)

Module 3

Listening and speaking skills

In this module the learners will be exposed to a variety of listening activities recorded on audio tapes. These will be samples of good Spoken English which the learners can use as modules. Work sheets will accompany the listening material.

<u>This module will include the following:</u>

1. Introduction yourself / friends in formal and informal situations.

2. Inviting people (over the phone and face to face) giving details of occasion, time place and date. Acceptance and refusal of invitation formal and informal.

3. Seeking and supplying information (example opening an account in a bank, applying for loans etc.) and conveying messages (over the phone and face to face).

4. Taking and conveying messages (over the phone and face to face).

5. Giving directions / instruction.

6. Discussing contemporary issues related to environment, child labor, gender bias etc.

7. Listening to excerpts from television and radio.

8. Listening to poems / plays (prescribed)

9. Listening to speeches / talks.

10. Listening to songs like “We shall overcome”.

Module 4-6

English for specific purpose

Three modules are being offered. A learner has to opt for any one. The first is for academic purposes and the next two are for vocational purposes. The focus is not on the teaching of the subject matter like science and literature but on the ways in which language is used in the different subjects.

Module 4

English for science

This course will introduce learners to some interesting pieces of popular science.

1. Health and hygiene.
2. Conservation of (nearly extinct) animals.
3. Plant life.
4. Bio gas / Solar energy.

These pieces illustrate the use of English in scientific writing: giving

information factually, logically and objectively.

Module 5

English for receptionists

This module will introduce the learners to a variety of exercises, tasks and meaningful activities related to the receptionists uses of English. The printed course materials will be supported by tapes.

The following competencies be developed:

1. Receiving messages, making request etc.
2. Supplying information
3. Giving advice and making suggestions.
4. Dealing with complaints.
5. Making entries in an appointment book, register etc.

Module 6

English for Office Use

This course will help the learner to use English effectively and appropriately in the office environment. The following competencies will be developed.

1. Using the telephone taking and passing messages.
2. Receiving messages.
3. Marking noting on files and circular.
4. Writing office notes, memos, notices, agendas for meetings.
5. Telegrams and fax messages.
6. Writing business letters, application enquires, complaints.
7. Filling in forms, cheques, pay in slips etc.

CORE MODULE 211- HISTORY

PART A – ANCIENT INDIA

Unit 1: Introduction

Tradition of History writing – Beginning of the Modern Historiography- Significance of tradition as Related to the History- Traditional History of India- Sources of Ancient India- Literary-Archaeological-Foreign Accounts-Geological and Geographical background of Indian history.

Paleolithic Cultures and Beginning of Settled Life

Paleolithic Cultures of India- Neolithic Age – beginning of the settled life- agriculture and Domestication of animals- Copper and bronze Age.

Unit 2: The Harappan Civilization

Phases, extent and Antiquity- Town Planning- Buildings, Drainage, Great bath, Granaries, Fortification- Economic Activities: Weights and Measures, Tools and Implements, Trade and Commerce, Industries like Spinning, Potteries, Seals, metals and Stones. Religious Life Yogic Figurines- Mother Goddess- Shivalinga Worship- Nature and Animal Worship, Fire Alters-Funerary Customs- Art and Aesthetics -Dress-Ornaments-Harappan Script-Contracts with other Contemporary Civilizations- The Vedic Connection and Legacy of Harappan Civilization.

The Rig Vedic India

The Vedic literature- The antiquity of Vedas-Rig Vedic India- Geographical Extent of Rigvedic Civilization – Spiritual and Religious Traditions of Rig Vedic *India –Political Organization- Sabha, Samiti, Rashtra Society and Economy: Mathematics and Science.*

Unit 3 Chalcolithic Cultures

Later Vedic Phase and Iron Age

Later Vedic Civilization- Geographical Extent Society and Economy- Archaeological Correction- Settlements in Ganga Plains- Antiquity of Iron in

Northern India.

Unit 4: South and North-East India

South India from megalithic Culture to Sangam Age – The Archaeological Cultures of North- Eastern India- Antiquity of Iron, in South India.

Evolution of Upanishadic Philosophy

The Spiritual and Philosophical thought as described in Brahmans, and Upanishads Upanishadic Thought as Predecessor to and its Link with Jain and Buddhist Philosophies and other New Streams of Thoughts- The Contribution of India to the Philosophical Thought of the World – The Contribution of India to the Philosophical Thought of the World- The Legacy and Significance.

***Unit 5: Jainism, Buddhism and other* Brahmanical Sects**

Mahajanapadas

The Sixteen Mahajanapadas- The Republics-Rise and Expansion of Magadhan Empirelranian and Macedonian Invasion and their Impact.

Unit 6: Mauryas

The political Conditions-Rise of Chandragupta Maurya- Ashoka and his Conquests-Ashokan Inscriptions –Ashoka and spread of Buddhism- Extent of Mauryan Empire Arthashastra- Mauryan Administration- Society- Economy-Religion- Art and Architecture- language- Science and Technology- Crafts, Artisans and their Organization- Trade and Commerce – The Decline of Mauryas.

Post – Mauryan India

The political situation in Post-mauryan period: the Shungas and Satavahanas- Chedis-Cholas-Pandyas- Cheras-Pallavas-Kanvas- The Yavanas-Sakas and the Parthians- The Kushanas-The beginning of the Vikram Samvat and Saka Samvat. The Rise of powers in North and East- Satrapsk Of Western India.

Unit 7: The Social Life as reflected in contemporary literature from 300 BC and 300 AD

The Literature- the Dharmashatras and Smritis- The Sangam and other Literature- Social Conditions- Four stages of Life- Family Life- Institution of Marriage and status of Women-Dress and Ornaments, Food and drink-Science and Technology- Trade and commerce – India and her relations with outside World.

India from Guptas to Harsha

The emergence of the Guptas-Chandragupta I, Samudragupta and Chandragupta II,- Expansion and Consolidation of Gupta Empire-Gupta Polity- Administration- the later Gupatas and the Decline of the Dynasty-Hunas-India after the Decline of Guptas- Rise of vallabhis—Gauda Pallavas, Gangas, Chalukyas, Kadambas, Rashtakutas- the rise of Maukharis –Other Dynasties of Deccan and the South.

Unit 8: The Society and Culture in the age of Guptas and Harsha

Literature –Sanskrit-Tamil-Foreign accounts –Buddhism Jainism –Vaishnavism- Shaivism-Minor Religious Sects –Art and Architecture- Science and technology- Social Conditions – Education- Economic conditions- Trade and Commerce-India and Outside World-Cultural Interaction with Outside World with Special Reference to South East Asia.

India after Harsha: The Rise of Small Kingdoms The contemporary Political Condition and the Rise of small Kingdoms.

Unit 9: Society and Culture in Post-Harsha Period

Language and Literature- Religion and Philosophy-Social and Economic life –Art and Architecture –Science and Technology- Trade and Commerce-Arts and Crafts-Spread of Indian Culture Abroad with Special Reference to South East-Asia and East Asia.

Project work and map Work

PART B- MEDIEVAL INDIA

Unit 10: Medieval Period

Transition from Ancint to medieval period. Sources of Medieval Indian History- Historiographiacal Debate.

Rise of Islam

Rise of Islam in Arabia-Arab expansion in West Asia, North Africa and Europe. Arab invasions of Kabul, Sindh, Resistance by Shahis and others.

Unit 11: North India between 800 AD -1000 AD

Emergence of Gurjara-Pratiharas-Struggle. For empire between Pratoharas, Palas and Rashtrakutas. Other Dynasties of North India-Chandelas, Parmaras, Chahamans and Kalchuries, Gahadvalas. Dynasties of Eastern and North-Eastern India: Senas, Gangas and others; Rulers of Kamrupa.

South India between 900 AD -1200 AD

The Chola empire-Rise of Chola Empire, Their conquests, administration, cultural activities- Pandyas of Madurai- other Dynasties of South India-Chalukyas, Yadavas, Kakatiyas and Hoysalas.

Unit 12: Advent of the Turks

The Gazhnavids- Subuktagin- Mahmud Gazhnavi: Nature and Impact of his Invasions Resistance by Shahis-Conquests of Lahore, Thaneshwar, Mathura, kannauj, and Somnath-Alberuni, Ghazi Salar masud.

Establishment of Delhi Sultanate

Political Condition of India in Twelfth century A.D- Founding of Delhi Sultanate- Ghoris-Mameluk Sultans- Balban- Shamsi Dynasties-Khaljis-Aladdin Khalji's Invasions of Malwa, Rajputana, Gujarat and Devgiri-Expedition into South India- Political map of South India in 1300 A.D.

Unit 13: Tughlaq Dynasty

Expansion of Empire, Conquest and Policies and Administrative Reforms.

Timur's Invasion.

Rise of Vijaya Nagar and Bahmani Kingdoms

The Vijayanagar Empire – Bahmani Kingdom-Power Struggle between the Two-Climax of Vijayanagar Empire –religious and Cultural life of Vijaynagar.

Unit 14: Emergence of Independent States

Emergence of Regional States- Sindh, Gujarat, Malwa, Bahmani and its five Successor States, Sharkis of Jaunpur, Bengal, Mewar, Orissa, Gond. Sayyids, Lodhis and Afghans. Disintegration of Delhi Sultanate.

Socio Economic and Cultural Development during the Sultanate Economic, social, religious and administrative changes during the Sultanate Economic, Social, religious and administrative changes during the Sultanate. Bhakti and Sufi Movements- Cultural development- Languages and Literature.

Unit 15: Advent of the Mughals

Founding of the Mughal Empire; Babur's invasion-First battle of Panipat 1526 –Battle of Khanwa –Afghans at Delhi-Humayun-Shershah struggle. Akbar- Second battle of Panipat.

Expansion and Consolidation of Mughal Empire

Akbar, Jahangir and Shahjahan-Expansion and consolidation Mughal Empire religious reforms and Rajput policy- Reorganization of Administration and Army.

Aurangzeb and Disintegration of Mughal

Struggle for Succession- Aurangzeb-Religious and Administrative Policies-Sikhs Founding of Khalsa, Bundelas, Jats, Satnamis and rajputs. Beginning of Downfall and Disintegration of Mughal Empire.

Unit 16: Rise of Maratha Power

Shivaji and the rise of Marathas-Shivaji and Aurangazeb-Bijapur, Golconda, Ahmadnagar and Bidar-mughal- Maratha struggle- Death of Aurangzeb. Maratha expansion upto 1761. Shivaji's Administration and Achievements.

Coming of Europeans

Corning of Europeans-Portuguese, Dutch, French and British Socio-Cultural and Religious Developments under the Mughals Society and Culture-Art and Architecture Religious movements – Literature.

Map and. Project work

PART A-MORDEN INDIA

1. India in the late Eighteenth Century

2. Coining of the Europeans and the Rise of the British

3. India under East India Company

4. Uprising of 1857

5. Aftermath of 1857

6. Social and Religious Awakening

7. Indian National Congress (1885-1905)

8. Partition Bengal and Swadeshi Movement

9. Political Development among Muslims (1857-1909)

10. Developments during 1907-1916

11. Rise of Gandhi in Indian Political scene (1915-20)

12. British constitutional reforms

13. National Movement between 1939 and 1947

14. Making of constitution

15. Map work

PART B MORDEN INDIA

16. Introduction

17. The World from 1919 to 1939

19. The Second World War

20. The World after the Second World War

21. Development in Asia and Africa

22. Khurschev Era in U.S.S.R

23. Contemporary political situation in Eastern and Western Asia and Africa

24. Polity, Economy and Society in the contemporary world

25. Developmente in science and technology

26. Art, literature, Media, and Culture

27. Map work

Unit 1: India in the Late Eighteenth century

Disintegration of Mughal Empire and Rise of Marathas –Maratha Expansion under the Peshwas –Emergence of Regional Subash, Awadh, Bengal, Hyderabad Mysore, Kerala Rajputs- factionalism in Mughal Court-Irani, Turani, Hindustani, and Rohillas-Invasion of nadir shah and Ahemad Shah Abdali-Third Battle of Panipat (1761) and its importance Punjab under the Sikhs-socio economic conditions in India in the late eighteenth century.

Unit 2: coming of the Europeans and Rise of British

European settlement in India Portuguese-Dutch –British-French, Anglo-French Revalry in South india-british successes in Bengal (plassey 1757)-Buxer (1764) Dual administration in Bengal, Anglo-Maratha wars –British Paramountcy (1818) Tipu Sultan, Nizam-Expantion from 1818 to 1856

Unit 3: India under East India Company

Administrative, Judicial, Revenue Organization-Education and language- Religious and Social policy-economic policy towards agriculture and craft technology innovations-Steamer, telegraph, Railways.

Unit 4: Uprising of 1857

Causes- Long Term and immediate-its nature, Extent- Causes of the failure.

Unit 5: Queen's Proclamation and End of East India company Rule- reorganization of army Indian council Act 1861-policy towards princely state-divided and rule rewards and punishments-repression of vernacular Press-Racial Discrimination-Competitive Examination-Introduction of European constitution Methods- organization of Decennial Census, Ethnographic and linguistic surveys-Gazettees. Armed Revolts-Kukas-Vasudev Phadke-Santhals-Wahabis and others

Units 6: Social and Religious Awakening

Raja Rammohan Ray-bankim Chandra chatterjee-brahmos under Debendra Nath Tagore-Ishwar Chandra Vidyasagr-Ramakishna Paramahans and Vivekananda-Swami Dayanand and arya samaj-Jyothiba Phule. Social reforms and other regions.

Unit 7: Indian National Congress (1885-1905)

Its Character, Demand and methods-Rise Nationalist School led by Tilak and Lajpat Rai and Bipin Chandra pal-1893, A Turning point, Vivekananda, G.K. Gokhale, Aurobindo and Gandhi.

Unit 8: Partition of Bengal and Swadeshi movement

Lal-bal-Pal-Bandemataram and Sri Aurobido-National Education movements –Boycott boycott and passive Resistance. Revolutionary movements-Baroda-Bengal-Maharashtra-England and Europe –America.

Unit 9: Political developments among Muslims (1858-1909)

Sri Sayyid 'Ahmed-Deoband-Muslims league separate Electorates in government of India act 1909.

Unit 10: Development of during 1907 and 1916

Congress split at Surat (1907)-Repression of Nationalists and Revolutionaries Annulment of Bengal Partition (1911)-Transfer to capital of Delhi-Delhi Darbar-Outbreak of first World War- Release of Tilaak form Mandalay-Annie Besant's Home Rule Movement-lucknow Pact between Congress and Muslim League (1916)-Gadar Party-Harding Bomb case.

Unit 11: Rise of Gandhi in Politics (1915-1920)

Return from South Africa with new ideology-Ahisa and satyagraha-Hind Swaraj (1909)-Constructive programme –Swadeshi and swaraj-Opposition to Council Entry .Gandhiji's Satyagrahas-local Experiment-Champaran, Kheda and ahmedabadJallianwala Bagh Massacre-non-cooperation (1940)_Khilafat and swaraj-civil Disobedience (1930)-Individual Satyagraha (1940).

Unit 12: British constitutional Reforms

Government of India Act of 1909- Government of India Acts 1919 and dyarchy in provinces-formation of swaraj party-revival of revolutionary activities-Simon commission-Nehru Report-Round Table conference- communal Award-Gandhi –Ambedkar Poona pact Government of India act 1935-fedalisam-provincial dence autonomy-1937 Election congress minister.

Unit 13: National Movement between 1939 and 1947

Outbreak of Second World War (1939) congress ministries Resign-Muslim League Observes Day of deliverance-Pakistan resolution 1940-individual satyagraha-Cripps mission 1942-qiut India movement roll of communists. Subhash Chandra Bose and INA difference with Gandhi escape from India –rase behari –Formation of INA Jai hind –trail of INA. End of second world war British prepare to withdraw –Negotiations for Transfer of power simla conference 1945 Elections-cabinet mission plan- interim government –Direct action cal by Muslim league –Calcutta –carnage-reaction in Bihar- Mountbatten plan of partition-Bloodshed in noakhali and Rawalpindi- independence act-15 August 1947-lapse of British paramountcy partition of India and it consequences.

Unit 14: Making of the constitution

Integration of state-rehabilitation of refugees-National goals as defined in the preamble and directive principals of the constitution-republic based on adults franchise-Economic developments- social justices ,religious equality and freedom of expression-liberation of Pondicherry and goa.

Unit 15: Map Work

PART B- CONTEMPORARY WORLD

Unit 16: Introduction

Contemporary period in world history-Distinction between contemporary history and modern history –characteristic features of contemporary history a survey of the historical background of the contemporary world.

Unit 17: The world from about the end of the Nineteenth Century to end of First World War

Developments leading to the first world war-consequences and its impact on India –The Russian Revolution.

Unit 18: The world from 1919 to 1938

League of nations-Fascism in Italy-Economic depression-Its economic, social and political consequences-Nazism in Germany-the New Deal-Growing importance of the U.S.A-developments in Britain and France-emergence of the U.S.S.R-developments in Africa and Latin America-Nationalist movements-Japanese invasion of china-Italian invasion of Ethiopia-Germany's role in world affairs –antiComintern Pact-munich pact.

Unit 19: the Second World War

Causes of the second world war-German, invasion of Poland and outbreak of war-Fall of France-invasion of the USSR-US in the war .The atom Bomb-End of the war-destruction caused by the war-plans of the post-war reconstruction-United National-UN Declaration of Human Rights.

Unit 20: the world after the Second World War

General features-political composition of the world after the second world war-disintegration of the colonial system-Neocolonialism-emergence of the U.S.A. and U.S.S.R. as world powers-formation of Israel-formation of N.A.T.O. and Warsaw pact-cold War-socio-economic impact of cold war in Europe-Bandung conference-Formation of N.A.M.-Nuclear weapons.

Unit 21: Development in Asia and Africa

Revolution in china-Tibet and Indo-china relations –success of the movements of national independence-National liberation movements in Africa-struggle against apartheid.

Unit 22: Khurschev Era in U.S.S.R.

Sino-soviet relationship, china's invasion of India-turmoil in Eastern: Europe-Poland, Czechoslovakia and Romania-Mikhail Gorbachev and disintegration of soviet union-decline of communism and its impact.

Unit 23: contemporary political situation in Eastern and western Asia

U.S.A and U.S.S.R.s interest in eastern Asia-Korean war-Vietnam war-turmoil in kampuchia-china's role end of British colony in Hong Kong-china's Entry in U.N.O- Taiwan's position china's road to capitalism. Western- Asia and Africa- formation of OPEC-Arab-Israel conflict-Iran-Iraq conflict-change of power in Iran –formation of organization of Islamic countries –invasion of Kuwait and the gulf war- rise of fundamentalism and terrorism – movements in north Africa.

Unit 24: Polity, Economy and society in the Contemporary World

Main forms of states in the contemporary word-The process of industrialization and its impact-Impact on non-industrialized countries- Problems of development, Globalization (GATT and WTO)-- Environment Movements.

Unit 25: Developments in science and Technology

Major developments in science and technology. New sources of energy-industrial production-Transport and communications-Means of destruction-Developments in biological sciences--information technology.

Unit 26: development of Culture and Medias

Literature and art in the contemporary world. Impact of the revolution in communications- The mass media-Newspapers, Radio, Cinema, television and Computers- Impact on culture.

CORE MODULE 211- POLITICAL SCIENCE

PART A: SOCIETY, STATE AND GOVERNMENT

Unit 1: Political Science: An Introduction

(a) Significance of the study of Political Science.

(b) Changing meaning, nature and scope.

(c) Relation with History, Economics, Ethics and Sociology.

Unit 2: Society, State and Citizen

(a) Society, state and citizen meaning.

(b) State and Society.

i. Need for the State and its elements.

ii. Concept of state India, Liberal and Marxist.

iii. Relationship between State and Society, State and Government, State and nation, State and Citizen.

(c) State and Associations

i. Meaning, Need and Kinds of Association.

ii. Coordination of Loyalties and the National Identity.

Unit 3: Political System

(a) Political System the Concept.

(b) Constitution: Meaning and types: Rigid and Flexible, written and Unwritten.

(c) Forms of Government:

i. Democratic and Non- Democratic

ii. Parliamentary and Presidential

iii. Unitary and Federal

Unit 4: Organs of Government

(a) Legislature

(b) Executive

(c) Judiciary

(d) Bureaucracy

Note: Examples from the Indian Scenario to be given for comprehension in all the above units.

PART B: INDIAN CONSTITUTION AND ADMINISTRATION

Unit 5: Constitution: Background and Salient Features

(a) Landmarks in the Constitutional Development

(b) Indian National Movement and its Heritage.

(c) Preamble to the Indian Constitution.

(d) Indian Constitution Salient Features.

(e) Indian federation and working of Centre-State relations.

Unit 6: Fundamental Rights, Fundamental Duties and Directive Principles of State Policy

(a) Fundamental Rights

(b) Fundamental Duties

(c) Directive Principles of State Policy

Unit 7: Government at the Centre and in the States

(a) Government at the Centre Legislature, Executive (including Emergency Provisions) and Judiciary.

(b) Government in the States Legislature, Executive and Judiciary.

Unit 8: Indian Administration: Organization and Functions

(a) Centre and State Administration.

(b) District Administration

(c) Local Government Institutions Urban and Rural and their Functions.

PART C: THEORIES AND CONCEPTS OF POLITICAL SCIENCE

Unit 1: Key concepts: Indian and Western Perspectives

(a) Law

(b) Liberty

(c) Equality

(d) Justice

(e) Dharma

Unit 2: State and the Citizen

(a) Rights and Duties: Meaning and Relationship.

(b)Changing nature of state activity: from Laissez faire to welfare.

Unit 3: Comparative Politics

(a) Approaches to Comparative Politics: Traditional and Modern.

(b) Concepts Political Socialization, Political Participation and Political Development.

Unit 4: Major Political Theories

(a) Liberalism

(b) Socialism

(c) Marxism

(d) Fascism

(e) Gandhism

(f) Humanism

Note: Examples from the Indian Scenario to be given for comprehension by students in all the above units.

PART D: DEMOCRACY IN INDIA

Unit: Elections in India

(a) Systems of electoral representation

(b) Adult Franchise and Electoral Participation

(c)Election Commission and Election Procedure

(d) Electoral reforms

Unit 6: Party System, Public Opinion and Interest Groups

(a) Meaning and types of party system

(b) Nature of Party System in India

(c) Role of Opposition

(d) Formation of Public Opinion

(e) Interest Groups and Pressure Groups Meaning and Role.

Unit 7: development and Democracy

(a) Socio-economic development/ Planning for Development in India: Machinery and Processes.

(b) Role of District Development Agencies.

(c) Development of Scheduled Castes, Scheduled tribes and OBC.

(d) Empowerment of women

Unit 8: Challenges to Indian Democracy and Responses.

(a) Inequality: Social and Economic

(b) Illiteracy

(c) Regional imbalances regionalism and Linguism

(d) Communalism, Casteism, Seperatism, Political Violence.

Unit 9: India and the World

(a) Foreign Policy of India: (i) Determinates, (ii) basic Principles.

(b) India and her Neighbours: Nepal, Srilanka, China, Bangladesh, Pakistan.

(c) India's relation with USA and Russia.

(d) India and the United Nations.

(e) India's Role in Non-aligned Movement

(f) India and SAARC.

(g) India's Approach to Major World Issues: Human Rights, Disarmament and Globalization.

CORE MODULE 213- ECONOMICS

PART A: INTRODUCTION TO STATISTICS

Unit 1: Introduction

(a) Meaning, Scope and Importance of Statistics in Economics

Unit 2: Collection and Organization of data

(a) Collection of data census and sampling methods: sources of data-primary and secondary

(b) Organization of data-frequency array and frequency distribution

Unit 3: Presentation of Data

(a) Tables

(b) Diagrams Geometric forms (bar-diagrams, pie-diagrams), Frequency diagrams (histogram, polygon and ogive). Arithmetic line- graphs (time series graph).

Unit 4: Condensation of Data

(a) Measures of Central Tendency mean (simple arithmetic mean), median, quartile, mode.

(b) Measures of Dispersion absolute (range, quartile deviation, mean deviation, standard deviation); relative dispersion (coefficient of quartile-deviation, co-efficient of mean deviation, Co-efficient of variation).

(c) Correlation meaning, scatter diagram.

(d) Measures of correlation Karl Pearson's method (two variables ungrouped data) Spearman's rank correction.

(e) Introduction of index Numbers meaning, Types- wholesale price index, consumer price index and index of industrial production, uses of

index numbers

Unit 5: project for appliaction of statistics in economics

Preparation of a project report on:

Consumers awareness amongst households through collection of primary data by designing a questionnaire.

OR

Productivity awareness amongst enterprises through use of statistical data from statistical tables from newspaper from Newspaper/ Economics survey /RBI Bulletin /government budget of the stat/ the nation/census report/NSS Reports, etc.

Unit 6: Economic growth and development

(a)concepts of economic growth , economic development , sustainable development and quality of life .

(b) Indicators of development: per capita income; quality of life index, human development index.

Unit 7: Structural changes in the Indian economy since independence

(a)structure of the indian economy at time of independence occupational structure , relative contribution of sectors (agriculture , industries and service sector) to national income, infrastructure economic (energy, transport and communication) and social (education , health and housing).

(b) Development strategies till 1991: econimic planning meaning, main objectives; main features economic policies; main achievement and failures.

(c) Economic reforms since 1991: need and main features liberalization, globalization, privatization.

Unit 8: current challenges facing Indian economy

(a)population size , rate of growth and its implication for development ;main measures taken to check the high rate of growth .

(b) Poverty absolute, and relative (inequalities), main programmes for poverty alleviation.

(c) Unemployment types, magnitude.

(d)infrastructure energy , transport and communication , health , education .

(e) Other emerging issues environment, gender, and migration (internal and international).

PART A: INTRODUCTORY MICRO ECONOMIC THEORY

UNIT 1: introduction

(a) What economics is all about?

(b) Central problems of an economy, production possibility curve and opportunity cost.

(c) Micro economics meaning.

UNIT 2: consumer behavior and demand

(a) Consumer's equilibrium utility maximization case of a single commodity.

(b)demand , market demand , determinants of demand , demand schedule , demand curve , movement along and shifts in demand curve , concepts of price elasticity of demand , measurement of price elasticity of demand percentage , total expenditure and geometric methods .

UNIT 3: produce behavior and supply

(a) Production function returns to factor and returns to scale.

(b)supply , market supply , determinants of supply, supply schedule , supply curve , movement along and shifts in supply curve, price elasticity of supply , measurement of price elasticity of supply percentage and geometric method.

(c) cost of revenue concepts of costs, short -run costs ; fixed and variable costs ; total, average marginal costs ; concepts of revenue , total , average , marginal revenue and their relationship.

(d) producer's equilibrium with the help of total costs and total revenue.

UNIT 4: Forms of market and price determination

(a) Forms of market perfect competition, monopoly, monopolistic competition their meaning and features.

(b) Price determination under perfect competition equilibrium price, effects of shifts in demand and supply.

PART B: INTRODUCORY MACRO ECONOMICS

UNIT 5: INTRODUTION

(a)Macro economics meaning, difference between micro and macro economics.

UNIT6: National income and related Aggregates: basic concepts and measurement

(a)circular flow of income , concepts of GDP, GNP, NDP, NNP(at market price and factor cost), private income , personal income and personal disposal income , national disposal income (gross and net).

(b) Measurement of national income value added method, income method and expenditure method.

UNIT 7: Determination of income and employment

(a) Aggregate demand, aggregate supply and their components.

(b) Propensity to consume and propensity to save (average and marginal).

(c) Meaning of involuntary unemployment and full employment.

(d) Determination of income and employment.

(e) Concept of investment multiplier and it's working.

(f) Problems to excess and deficient demand.

(g) Measures to correct excess and deficient demand availability of credit change in government spending.

UNIT 8: Money and banking

(a)Money meaning and functions

(b) Money supply meaning

(c) Commercial banks meaning and functions

(d) Central bank meaning and functions.

UNIT 9: Government budget and the economy

(a) Government budget meaning and its components .

(b) Classification of receipts revenue and capital; classication of expenditure revenue and capital, plan and non plan, and development and development.

(c) Balanced budget, surplus budget and deficit budget revenue?>e deficit, fiscal deficit and primary deficit meaning and implications.

(d) Objectives of government budget.

UNIT10: Balance of payments

(a) Foreign exchange rate meaning and determination.

(b) Balance of payments accounts its meaning and components.

CORE MODULE 214 - SOCIOLOGY

UNIT I

A: ***Sociology as a discipline***

- *Origin, nature and scope of sociology.*

- *Relationship with other social sciences history. Political science and economics.*

B: Basic concepts

- *society*
- *social groups*
- *social control*
- *culture*

C: Social institutions

- *Marriage, family and kinship*
- *Economy and polity*
- *Religion and culture*
- *Education*

UNIT II

A: Culture, personality & society

- *interpretation of cultures*
- *individual and socialization*
- *culture and personality formulation*

B: Methods of research and techniques of data collection

- *Methods: historical, comparative and functional.*
- *Techniques: observation, case study; and questionnaire.*

UNIT III

UNDERSTANDING SOCIETY

A: Social structure and stratification

- *System, structure and function.*
- *Caste, class, power, ethnicity and gender.*

B: Social processes and social change

- *Social processes: cooperation, accommodation, assimilation, competition and conflict.*
- *Social change: evolution, progress and revolution*

UNIT IV

A: Social ecology

. Environment and society

.rural urban nexus

B: Contribution of:

- *Karl Marx*
- *Max Weber*
- *Emile Durkheim*

UNIT V

A: Contributions of:

- *G.S.Ghurye*
- *D.P.Mukherji*
- *Radhakamal mukherjee*
- *B.K.Sarkar*

B: Projects work

Concerning different problems of the Indian society and other related aspects

UNIT VI

STRUCTURE OF INDIAN SOCIETY

A: Unity and diversity:

B: Structure of society:

- *Society demography*

- *Rural-urban divides and linkages*
- *Social, economic and cultural differentiations: caste, class and tribe.*

UNIT VII

A: Institutional structure

- *Marriage, family and kinship*
- *Religious , educational and cultural institutions*
- *Political institutions*

B: Deprived groups

- *The schedule tribe, the schedule castes and other backward classes*
- *Women*
- *Minorities*

UNIT VIII

A: Approaches to the study of Indian society

- *Indological / cultural*
- *Structural / historical*

UNIT IX

Social change in India

A: Processes of social change in India: nature and direction

- *Structural processes of change: industrialisation, urbanization and modernization*
- *Cultural processes of change: sanskritisation, westernization and secularization.*

B: State and social change

- *Constitutional provisions*
- *Plan and social change*
- *Panchayati raj institutions*

- *Legislation and social change*

UNIT X

A: Economic development and social change

- *Land reforms and green revolution*
- *Globalization and liberalization*
- *Emergence of new groups and classes*

B: Culture, education and mass media

- *Education and social change*
- *Mass media and culture change*
- *Globalization and local cultures*

C: Dissent and social change

- *Major types of social movements*
- *Patterns of social deviance: crime and violence.*

CORE MODULE 215 GEOGRAPHY

PART A: Fundamentals of physical geography

UNIT 1: Geography as a discipline

a) Geography as an integrating discipline, as a science of spatial attributes.

b) Branches of geography: importance of physical geography.

UNIT 2: The earth

a) Origin and evolution of the earth, continents and oceans; interior of the earth; Wegener's continental drift theory of plate tectonics; earthquakes and volcanoes.

b) Rocks and minerals: their characteristics, major type of rocks; soils-formation, major types and characteristics.

UNIT 3: Landforms

a) concept of evolution of landforms ; typology of landforms .

b) Geomorphic processes - weathering and mass wasting, erosion and deposition.

UNIT 4: Climate

a) Atmosphere -composition and structure ; elements of weather and climate .

b) Insolation -angle of incidence and distribution ; heat budget of the earth -heating and cooling of atmosphere , condition , terrestrial radiation , advection ;temperature -factors controlling temperature ;distribution of temperature horizontal and vertical ;inversion of temperature.

c) Pressure - pressure belts; winds -planetary, periodic and local; air masses, fronts and cyclones.

d)precipitation -evaporation ; condensation - dew , frost , fog , mist and cloud ; rainfall - convectional , orographic and cyclonic ; world distribution of rainfall .

e) Old climates -classifications (trewartha); greenhouse effect, global warming and global climatic changes.

UNIT 5: WATER (OCEANS)

a) Distribution of water bodies on the earth's surface, hydrological cycle.

b) Oceans -submarine relief; distribution of temperature and salinity: moments of ocean water - waves, tides and currents.

UNIT 6: Life on the earth

Biosphere - its functioning: important of plants and other organisms; biodiversity and conservation; ecosystems, energy flow and ecological balance.

UNIT 7: Map work (1-6)

PART B India - physical environment

UNIT 8: Introduction

a) Location - as a factor in shaping India's place in the world.

b) Geological history

UNIT 9: Physiographic

a) Geological structure and relief features

b) Drainage systems - the Himalayan and the peninsular; concepts of water sheds.

c) Physiographic divisions.

UNIT 10: Climate, vegetation and soil

a) Weather and climate - spatial and temporal distribution of temperature, pressure, winds and rainfall; Indian monsoon: mechanism, onset and withdrawal of monsoon and variability of rainfall - spatial and temporal; climatic types.

b) Natural vegetations - biotic resources; forest - types and distribution; wild life; conservation and management; biosphere reserves.

c) Soils - major types (ICAR's classification) and their distributions, soil, deterioration, conservation and management.

UNIT 11: Natural hazards disasters; causes and consequences

a) Earthquakes

b) Landslides

c) Droughts

d) Floods

e) Cyclones

UNIT 12: Map work (relating to units 8-11 for filling only)

C.PRACTICAL WORK

Unit 1: Fundamentals of Maps

1. Maps- types; scale- types; construction of linear scales, measuring distance, finding directions and use of symbols.

2. Latitudes, Longitudes and time.

3. Map projection: types; construction and properties of conical with one standard parallel and Mercerator's Projection. (Periods 10)

Unit 2: Topographic and Weather maps

a) Study of topographic maps (1:50,000 or 1:25,000, Survey of India maps) :

Contour cross-section and identification of land forms: hills, valleys, waterfalls, cliffs; Distribution of settlements.

b) Air-photos and satellite imageries: identification of physical and cultural features on the basis of tone and shape.

c) Use of weather , instruments and weather charts : thermometer , wet and dry - bulb thermometer , barometer , wind wave , rain gauge ; use of weather charts describing pressure , wind and rainfall distribution .

A. FUNDAMENTALS OF HUMAN GEOGRAPHY

Unit 1: human geography: nature and scope

Unit 2: People

a) Population of the world - number, growth and density.

b) Population change - spatial patterns and structure; determinants of population change.

c) Age-sex ratio; rural -urban composition.

Human development - concept; selected indicators, international comparisons.

Unit 3: Human activities

a) Primary activities - concept and changing trends; gathering, pastoral, mining, subsistence agriculture, modern agriculture, people engaged in agriculture and allied activities.

b) Secondary activities - concept; manufacturing: agro - processing, household, small scale, large - scale; people engaged in secondary activities.

c) Tertiary activities - education, health, business, transport and communication; people engaged in services.

d) Quaternary activities - concept ; specialized knowledge - based activities .

Unit 4: Transport, communication and trade

a) Land transport - roads, railways - rail network; Trans - continental railways.

b) Water transport -inland waterways; major ocean routes and ports.

c) Air transport and the shrinking world intercontinental air routes.

d) Oil and gas pipelines.

e) Mass communication; satellite communication including computer networking internet; cable and wireless communication.

f) International trade - its basis and changing patterns; ports as gateways of international trade, role of WTO in international trade.

Unit 5: Human settlements

a)settlement types - rural and urban ; problems of human settlements in developing countries ; distribution of large cities .

B. INDIA - People and economy

Unit 6: people

a) The people of India - ethnic linguistic and religious composition - unity in diversity.

b) Population: distribution and density; population change through time regional variations.

c) Demography patterns in terms of rural - urban, age - sex, workers and non workers, occupation.

d) Human development selected indicators and regional patterns .

e) Population, environment and development.

Unit 7: human settlements

a) Rural settlements - house types, types of rural settlements, distribution pattern.

b) Urban settlements - distribution, census and functional classification.

Unit 8: resources and sustainable development

a) Resources - concepts of resources; types and distribution: utilization of resources; conservation of natural resources, sustainable development

b) Water resources - availabity and utilization - irrigation and other uses; scarcity of water and conservation methods - water harvesting and water shed management.

c) Land use; general land use; agriculture land use - wet and dry; major crops; intensity of cropping, agriculture issues and development.

d) Mineral and energy resources distribution, utilization and conservation of resources; major metallic and non - metallic minerals distribution; convectional and non - convectional energy resources.

e)industries - types and distribution ; industrial location and clustering ; changing pattern of selected industries - iron and steel , cotton textiles , sugar , petrochemicals and knowledge based industries ; impact of liberalization , privatization and globalization on industrial location .

f) Planning in India; need for sustainable development.

Unit 9: Transport, communication and international trade

a) Transport and communication - roads , railways , waterways and airways ; oil and gas pipelines ; national electric grids ; communication networking , radio , television , satellite and computers .

b) International trade - changing pattern of Indian's foreign trade ; sea ports and airports as gateways of international trade.

c) Urbanization - growth of cities; rural migration; problems of slums; urban waste disposal.

B.PRATICAL WORK

Unit 1: processing of data and thematic mapping

a) Data analysis, diagrams and maps.

b) Tabulating and processing of data matrix; uses and calculation of average,

Deviation measures and correlation.

c) Representation of data - construction of diagram; bars, circles and flow charts; preparation of thematic maps; dot, choropleth and isopleth.

d) Use of computers in data processing and mapping.

Unit 2: Field study or spatial informations technology

Field visit and study : map orientation , observation and preparation of sketch ; survey on anyone of the local concerns , (i)population (ii) ground water changes (iii)land use and land use changes (iv)poverty (v)energy issues (vi)land degradation (vii) drought and flood .

Note: 1.in study observations and questionnaire method may be adopted for data collection.

2.(anyone topic of local concern may be taken up for the study ; observation and questionnaire survey may be adopted for data collection ; collected data may be tabulated and analyzed with diagrams and maps).

OR

Spatial information technology

Use of computers: components of computers, roster and vector data, data sources, data entry, data manipulation, construction of diagram and data mapping.

CORE MODULE 222 - ACCOUNTS

FINANCIAL ACCOUNTING -I

Unit 1: introduction to accounting

a) Accounting meaning, objectives, types of accounting information, advantages and limitations.

b) Qualitative characteristics of accounting information: reliability, relevance, understandability and comparability.

c)basic accounting terms : business transactions , capital , drawing , liability , asset , revenue , expenditure , expense , income , looses of gains , purchases , sales , stock , debtors , receivable , creditors , payables .

Unit 2: Theory base accounting

(a) Basics assumptions: accounting entity, money measurement: going concern, accounting period.

(b) Basic principles: duality, verifiability and objectivity of evidence, historical cost, revenue recognition, matching, full disclosure.

(c) Modifying principles: maternity, consistency, prudence, timeliness, substance over form, variations in accounting practices.

(d) Accounting standards: meaning, nature and need.

Unit 3: generation of vouchers and recording of transactions

a) Origin of transactions source documents and vouchers, preparation of vouchers.

b) Accounting equation meaning and analysis of transactions using accounting equation.

c) Rules of debit and credit: for assets, for liabilities, for capital, for revenue, and for expense.

d)double entry book keeping , books of origin entry , meaning , format and recording of entries ; journal , special purpose books : meaning , utility , format and recording therein:

i) Cash book simple cash book with bank column and petty cashbook.

ii) Purchase book, sales book, purchase returns book, sales returns book, bills receivable book and bills payable book.

e) Ledger meaning, utility, format, posting from journal, cash book and other purpose books, balancing of accounts.

f) Bank reconciliation statement: meaning, need and preparation.

Unit 4: trial balance and rectification of errors (period 20)

a) Trial balance: meaning, objectives and preparation.

b) Errors: types of errors, errors effecting trial balance and errors not effecting trial balance.

c) Detection and rectification of errors.

d)suspense account meaning , utility , preparation and treatment of suspense account balance.

Unit 5: depreciation, provisions and reserves

a) Depreciation: meaning and need for charging depreciation, factors effecting depreciation,

Methods of depreciation, straight line method, written down value method (excluding change in method), method of recording depreciation: by changing to assets account, by creating provision for depreciation / accumulated depreciation account. Asset disposal account.

b) Provision reserves: meaning and importance need for provision for doubtful debts, provision for discount on debtors, difference between provision and reserves.

c) Types of reserves: revenue reserve, capital reserve, general reserve and specific reserve.

Unit 6: bills of exchange

a) bills of exchange and promissory note: definition , features , parties , specimen , distinction .

b)important terms : terms of bill and days of grace , date of maturity , bill at sign , bill after date , negotiated , endorsement , discounting of bill , dishonor of bill , noting of bill , insolvency of acceptor , retirement and renewal of a bill .

c) Accounting treatment of bill transaction.

FINANCIAL ACCOUNTING - II

Unit 7: financial statements

a) Financial statements: meaning and users

b) Profit and loss account: gross profit, operating profit and net profit.

c) Balance sheet: need, grouping, marshalling of assets and liabilities.

d)adjustments in preparation financial statements with respect to closing stock , outstanding expenses , prepaid expensed accrued income , income received in advance , depreciation , bad debts , provision for bad debts , provision for discount on debtors , managers commission , abnormal loss , goods sent for approval and in transit .

e) Preparation of profit and loss account and balance sheet of sole proprietorship concerns.

Unit 8: Financial statement of not - for - profit organization

a) Not for profit organization: meaning and examples

b) Receipts and payments account, income and expenditure account: meaning and concept of fund based and non - fund based accounting.

c) Preparation of income and expenditure account and balance sheet from receipts and payments account with additional information.

Unit 9: Accounts from incomplete records

a) Incomplete records: meaning, user and limitations.

b) Ascertainment of profit /loss by statement of affairs method.

c)preparation of training and profit and loss account and balance sheet (with reference to missing figure in total debtors account , total creditors account , B/R , B/P and cash book and opening statement of affairs).

Unit 10: computers in accounting

a) Introduction to computers: meaning, capabilities and components of computer systems.

b) Data base concepts for accounting.

c) Retrieval of accounting information - basic queries.

A. PARTNERS AND COMPANY ACCOUNTS

Unit 1: Accounting for partnership

a) Nature of partnership firm: partnership deed meaning, impact.

b) Special aspects of final accounts of partnership: fixed v/s fluctuating capital, division of profit among partners, past adjustments and guarantee of profits. Accounting for joint life policy.

Unit 2: Reconstitution of partnership

Change in profit sharing ratio among the existing partners sacrificing ratio and gaining ratio.

a) Accounting for revaluation of assets and liabilities and distribution of reserves and accumulated profits. Goodwill: nature, factors affecting and methods of valuation: average profit, super profit, multiplier and capitalization, accounting treatment of goodwill.

b) Admissions a partner: effect of admission of partner, change in profit sharing ratio sacrificing ratio, accounting treatment of goodwill. Accounting treatment for revaluation of assets and liabilities. Accounting treatment of reserves and accumulated profits, adjustment of capital accounts.

c) Retirement / death of a partner: change in profit sharing ratio gaining ratio, accounting treatment of accumulated treatment of goodwill. Accounting treatment for the revaluation of assets and liabilities. Adjustment of accumulated profits and reserves, adjustment of joint life policy and capital accounts.

Unit 3: Dissolution of partnership firm

a) Meaning, settlement of accounts: preparation of realization account and related accounts (excluding placement distribution, sale to a company and insolvency of a partner).

Unit 4: Accounting for share capital

a) Share and share capital: meaning, nature and types.

b) Accounting for shares capital: issue and allotment of equity and preference shares. Private placement and public subscription of share capital. over subscription and under subscription , issue at par , premium and at discount , calls in advance , call in arrears , interest on calls in advance and arrears and under subscription , issue of shares for consideration other than cash .

c) Forfeiture of shares: accounting treatment, re- issue of forfeited shares.

d) Disclosure of share capital in company's sheet.

Unit 5: Accounting for debenture

a) Issue of debentures: meaning of debentures, issue of debentures at par, at a premium, issue of debentures for consideration other than cash, debentures as a collateral security.

b) Redemption of debentures: meaning, sources of funds for redemption of debentures: from the proceeds of fresh issue of share capital and debentures, out of accumulated profits and sinking fund.

c) Methods of redemption of debentures: in lump - sum at the end of stipulated period, by draw of lots, by purchasing in the open market, by conversion into new debentures or shares.

ANALYSIS OF FINANCIAL STATEMENTS

Unit 6.1: Analysis of financial statement

a) Financial statement of company: balance sheet of a company in the prescribed form with major heading only (schedule VI).

b) Financial analysis: meaning, significant and purpose, limitations.

c) Tools for financial analysis: comparative statement, common size statement.

d) Accounting ratios: meaning and objectives .types of ratios: liquidity ratios: current ratio, liquid ratio. Solvency ratio: debt to equity, total asset to debt, proprietary ratio. Activity ratio: inventory turnover, debtors turn over, working capital turn over. Profitability ratio: gross profit, operating ratio.

Unit 6.2: Statement of changes in financial position

a) Cash flow statement: meaning and objectives, preparation, adjustments related to depreciation, dividend and tax, sales and purchase of noncurrent assets (as per revised standard issued by ICAI).

b) Statement of changes in financial position on working capital concept.

Unit 6.3: Project work

OR

6.1 Computerised accounting

a) Data base design for accounting

b) Entity relationship model and its enhancements.

c) Relational data model

d) Concept of normalization of need and practical rules.

e) Structured query language (SQL).

Unit 6.2: overview of computerised accounting systems

a) Fundamental computerised accounting system

b) Concept of grouping of accounts

c) Codification of accounts, maintaining the hierarchy of ledger.

Unit 6.3: Application of computers in financial accounting

a) Accounting procedures used in practice for recorded cash, bank, and journal transaction using appropriate vouchers.

b) Preparation of ledger accounts, cash book, bank book.

c) Trial balance.

Unit 6.4: practical

CORE MODULE 231- MATHEMATICS

COURSE CONTENTS

Complex numbers and - Quadratic Equations

Complex Numbers, Algebra of complex Numbers, Modulus and Argand Diagram, quadratic Equations

Sequences and series

Arithmetical Progression, Geometrical Progression Series, Exponential and Logarithmic- series

Differential Calculus

Limit, Continuity, derivatives, Algebra of Derivations, Derivative of trigonometric-functions , derivatives of exponential and - logarithmic functions , increasing and decreasing function , application of derivatives ,

Determinants and matrices

Determinants, matrices, algebra of matrices, inverse of matrix, solution of a system of linear equations.

Trigonometry

Functions, trigonometric ratios (other than graphs) , graphs of trigonometric functions , inverse trigonometric function , addition and multiplication of T-ratios .

Integral calculus

Integration, techniques of integration, integration by parts, definite integrals, differential equations.

Formutations, combinations and binomial theorem

Principle of mathematical induction, permutations, combinations, binomial theorem.

Co-ordinate geometry

Coordinate geometry (straight line I), general equation of 1st degree and line (straight line II), straight line III, circle conic sections.

OPTIONAL MODULES

(You have to choose any one of the following books)

Statistics and probability

Measures of dispersion, random experiments and events, probability I, probability II, conditional probability, probability distribution.

Linear programming

Introduction to linear programming, linear programming problem: a geometric approach, simplex method, duality , assignment problems , transportation problems .

Vectors and analytical solid geometry (3D)

Vectors (including algebra and resolution), the plane, the straight line, the sphere.

COURSE CONTENT

CORE MODULES

Part 1

Unit 1: Motion, Force and Energy

1. Dimensional Analysis and Vectors
2. Motion in a Straight Line
3. Newton's Laws of Motion
4. Motion in a Plane
5. Gravitational Motion
6. Work, Energy and Power
7. Rotational Motion

Unit 2: Properties of Matter

8. Properties of Solids
9. Hydrostatics and Surface Tension
10. Viscosity and Bernoulli's Theorem
11. Properties of Gases

Unit 3: Heat and Thermodynamics

12. Laws of Thermodynamics
13. Transfer of Heat

Unit 4: Electricity and Magnetism

14. Electric Change and Electric Current
15. Electric Potential and Capacitor
16. Electric Current
17. Chemical and Thermal Effects of Electric Current

18. Magnetism Effect of Electric Current
19. Magnetism
20. Electromagnetic Induction and Alternating Current
21. Electric Power Generation and its Transmission

Part 2

Unit 5: Oscillations and Waves

22. Simple Harmonic Motion
23. Elastic waves
24. Electromagnetic Waves

Unit 6: Optics and Optical Instruments

25. Reflection and Refraction of Light
26. Dispersion and Scattering of Light
27. Wave Properties of Light
28. Optical Instruments

Unit 7: Atoms and Nuclei

29. Structure of Atom
30. Photoelectric Effect and Matter Waves
31. Nuclei and Radioactivity
32. Optical Instruments

Unit 8: Semiconductors and their Applications

33. Basics of Semiconductors
34. Semiconductor Devices
35. Applications of Semiconductor Devices

PART 3

OPTIONAL MODULES

(You have to chose any one of the following module)

Optional UNIT1: Astrophysics

36A. Sun and its Family

37A. Astronomical Instruments

38A. Stars

39A. Universe

Optional UNIT 2: Electronics in Daily Life

36B. Measuring Instruments in Electronics

37B. Power Supply and Single Generating System

38B. Microprocessor and its Applications

39B. Circuit Breaker, Timer and Power Control

Optional UNIT 3: Photography and Audio –Videography

36C. Photography- Camera

37C. Film Exposing and Processing

38C. Audio-Video Recording

39C. Compact Disc for Audio-Video Recording

Core Modules

Unit 1: Some basis Concepts of Chemistry

Importance of studying chemistry, physical quantities and their SI units, dimensional analysis, precision and significant figures, classication of matter,

Laws of chemical combination, Dalton's atomic theory, mole concept, atomic, molecular and molar masses. Percentage composition and formula, stoichiometry of chemical reactions.

States of Matter

States of matter, Gaseous state-measurable properties, the gas law, idealgas equation-

Kinetic molecular theory, deviation of real gages from ideal behavior; liquefaction of gases, critical temperature and its importance. Liquid state-properties of liquids, qualitative description of vapour pressure, surface tention, viscosity; solid state classification of solids based on different binding forces.

Unit II: Atomic Structure

fundamental particals, Rutherford's model of an atom, nature of electromagnetic radiation, emission spectrum of hydrogen atom, concept of energy levels [orbits], weaknesses of bohn's model, modern concept of atom [elementary idea only], idea of shells, subshells and orbitals, the

four quantum numbers, electronic configurations of elements, aufbau principle [pauli's exclusion principle and hund's rule].

Classification of elements and periodicity in properties

the need for classification; the significance of [i] Mendeleev's periodic law, [ii] atomic number and periodic low, present from of the periodic table, the IUPAC nomenclature for the elements with Z >100, electronic configuration of the elements and periodic table, types of elements :s,p,d and f blocks, periodic trends in properties; ionization energy, electron affinity, atomic radil, valency.

Unit III: first law of thermodynamics and chemical energetic

Some basic concepts - systems surroundings, types of system, types of processes, intensive and extensive properties, state function, irreversible process. Zeroth low, first law of thermodynamics - internal energy, enthalpy, work, heat capacity, specific heat capacity, molar heat capacity, enthalpy changes during phase transitions, enthalpy change in chemical reactions - standard enthalpy of formation, Hess's low of constant heat summation, bond enthalpy, measurement of enthalpy of reactions, energy of combustion reactions, sources of energy - sun as primary source of energy, alternative sources of energy.

Chemical bonding and molecular structure

Kossel - Lewis approach to bonding, ionic bond - lattice energy, born - Haber cycle, covalent bond - Lewis structure of covalent bond, resonance structures, geometry of molecules, VSEPR model, polarity of bond, electro negativity, valence bond approach, concept of resonance, directional properties of bond, hybridization [qualitative treatment sp,sp2,sp3].

Unit IV: equilibrium-I-equilibrium processes and phase equilibrium

dynamic nature of equilibrium, equilibrium in physical processes, equilibrium in chemical processes, low of chemical equilibrium, derivation of relationship between Kp and Kc, Le-chatelier's principle.

Equilibrium - II - Ionic equilibrium in solutions

equilibrium involving ions, various concepts of acids and bases - Arrhenius, bronsted lowery and Lewis, dissociation of acids and bases, acid-base equilibrium, ionization of water, ph scale, hydrolysis of salts, ph calculation of salt solutions, acid-base titration using indicator. Solubility equilibria - solubility of sparingly soluble salts, solubility equilibrium and solubility product, common ion effect, elementary idea of buffer solutions.

Unit V: Redox Reactions

· *Oxidation and reduction – election transfer concept, redox reactions in aqueous solution, oxidation number, balancing of chemical equations in redox reactions by oxidation number method and ion- electron method or half equation method, simple idea of electrode potential, standard electrode potential, stoichiometry of redox reactions in solutions.*

Principles and Processes of extraction of Elements

· *Modes of occurrence, chemical principles underlying – concentration of ores, reduction / oxidation (electronation/de-electronation), refining of meals.*

Unit VI: Hydrogen

· *Unique position in Periodic Table, occurrence, isotopes, dihydrogen – preparation (including commercial preparation), properties, reactions and uses , Hydrides – molecular, saline and interstitial. Water: structure and aggregation of water molecules, physical and chemical properties, hard and soft water, water softner. Heavy water, hydrogen peroxide, hydrogen economy, use of liquid hydrogen as a fuel.*

S- Block Elements

· *General introduction to s-block elements- abundance, occurrences, anomalous properties of the first elements in each group, diagonal relationship. Alkali metals – occurrence, electronic configuration, trend in atomic and physical properties (including IE, atomic and ionic radii), reactivity and electrode potential, reactions with oxygen, hydrogen, halogens and liquid ammonia. Basic nature of oxides and hydroxides, halides, Li and Na – occurrence, extraction, properties and uses, Na2C03. The Alkaline earth Metals – occurrence, electronic configuration, trends in atomic and physical properties (including IE, atomic and ionic radii), Reactivity and electrode potential, reactions with non-metals, oxides, hydroxides and halides. Solubility and thermal stability of their oxo salts. Magnesium – occurrence, extraction, properties and uses. Compounds of alkaline earth metals CaO Ca (OH) 2, Plaster of Paris and MgSO4, industrial uses of lime and limestone, cement.*

Unit VII: Some p-Block elements

· *Boron – occurrence, Isolation, physical and chemical properties, borax, boric acid, boron hydrides, halides (elementary idea of boron and its compounds.*

· *Carbon - terrestrial abundance and distribution, allotropes (graphite, diamond, elementary idea of fulerences). Atomic and physical properties, chemical properties, oxides, carbides, halides, sulphides, uses of carbon.*

· *Nitrogen – terrestrial abundance and distribution, dinitrogen – isolation, atomic and physical properties, chemical reactivity, fixation of nitrogen – industrial and biological.*

· *Ammonia – industrial preparation, Heber's process only, important properties and reactions.*

· *Oxides of nitrogen – preparation, structure (skeletal only)- pp-pp bonding. Nitric acid, industrial production (Ostwald process). Uses of nitrogen, and its compounds.*

· *Oxygen – terrestrial abundance and distribution; dioxygen, isolation, atomic and physical properties, chemical reactivity, oxides, acidic, basic and amphoteric.*

· *Ozone – preparation, structure and some oxidizing properties.*

Unit VIII: Organic Chemistry – some basic Principles

· *Tetracvalency of carbon, hybridization, (p and s) bonds, shapes of simple molecules, functional groups :- C =C,C. C and functional groups containing halogen, oxygen, nitrogen and sulphur, homologous series, isomerism (structural).*

· *General introduction to naming organic compounds – trivial names and IUPAC nomenclature, illustration with simple examples.*

· *Electronic displacement in a covalent bond: inductive effect, electrometric effect, resonance and hyper conjugation. Fission of a covalent bond: free radicals, electrophiles, nucleophiles, carbocations and carbanions.*

· *Common types of organic reaction: substitution, addition, elimination and rearrrengement reactions, illustrations with examples.*

Unit IX: Hydrocarbons

· *Classification of hydrocarbons, alkanes and cycloalkanes. Nomenclature, conformations of alkanes and cyclokanes (ethane, propane and cyclohexane), 3d structures and 2d projections (sawhorse and newmann).*

· *Alkenes and alkynes-nomenclature, geometrical isomerism in alkenes, stability of alkenes ,general methods of preparation , physical properties , chemicals reactions-reactivity , mechanism of electrophilic addition, reactions in alkens , markownikoff's rule , peroxide effect , acidic character of alkynes , polymerization reactions – dienes , concept of delocalization of electrons, addition reactions in dienes (1,2and1,4 addition).*

· *Aromatic hydrocarbons – benzene and its homogues, isomerism, nomenclature, sources of aromatic hydrocations (coal and petroleum), structure of benzene, resonance, delocalization, concept of aromaticity – an elementary idea. Chemical reactions of benzene- mechanism of electrophilic substitution reaction. Directive influence of substituents and their effect on reactivity, poly- nuclear hydrocarbons and their toxicity.*

· *Petroleum and petrochemicals – composition of crude oil, fractionation, uses of different fractions, quality of gasoline, LPG and CNG. Craking and reforming, petro- chemicals.*

Unit X: Purification and Characterization of Carbon Compounds

· *Purification of carbon compounds, filtration, crystallization, sublimation, distillation, differential extraction, chromatography.*

· *Qualitative analysis, detection of nitrogen, sulphur, phosphorus and halogens.*

· ***Quantitative analysis****– estimation of carbon, hydrogen, nitrogen, halogen, sulphur and phosphorus (basic principles only).*

· ***Determination of molecular mass****- silver salt method, chloroplatinate salt method, use of mass spectrometer for determining accurate molecular mass (elementary idea only), Calculations of empirical and molecular formulae.*

Organic Compounds with Functional Group containing halogens (Haloalkanes and Haloarenes)

· *Nature of C-X bond in haloalkanes and haloarenes, nomenclature, physical properties, chemical reactions with emphasis on mechanism of substitution reactions, difference in reactivity of C-X bond in haloalkanes and haloarenes.*

· *Some commercially important compounds- names and structures of some compounds with simple structures and their uses.*

Unit XI: Environmental Chemistry

· *Environmental pollutants; soil, water and air pollution: chemical reactions in atmosphere, kind of smog, major atmospheric pollutants; acid rain, Ozone and its reactions, effects of the depletion of ozone layer, Green house effect and global warming – industrial air pollution, green chemistry as an alternative tool for reducing pollution.*

Unit I: Atomic structure and chemical Bonding

· *Dual nature of matter and radiation , de – Broglie relation, Uncertainty principle, wave mechanical treatment of hydrogem atom (elementary), wave functions and quantum numbers, aromic orbitals and their shapes, Spin quantum Number, Electronic configuration and atoms,*

molecular- orbital method (homonuclear diatomic molecules only), Concept of bond order, Metallic bond,(simple qualitative treatment w.r.t.bond theory), Hydridisation involving s.p.and d-orbitals, Intermoleclar forces.

The solid State

· *Space lattice, unit cells, cubic crystal system, close packing in crystals, X-ray studies of crystals. Structure of simple ionic compounds (AB and AB2 type only), Imperfection in solids, Properties of solids, (electrical, magnetic and dielectric), Amorphous solids (elementary idea only).*

Unit II: solutions

· *Units of concentration, solubility of gases, Solubility of solids, vapour pressure of a solution, Colligative properties (Relative lowering of vapour pressure, elevation of boiling point, depression in freezing point, osmotic pressure), Determination of molecular mass, Abnormal molecular mass.*

Thermodynamics

· *First law (brief), second law of thermodynamics, Entropy (criterion of spontaneous and non- spontaneous processes), Gibb's free energy (criterion for spontaneity of a process), Standard entropies and free energy of formation, Free energy change and Chemical Equilibrium, Free energy change and non-mechanical work, Third Law of thermodynamics.*

Unit III: Electrochemistry

· *Electrolytic and Galvanic cells, Electrolysis and laws of electrolysis, Electrolytic conduction- conductance, conductivity, molar conductivity, Kolhrausch's law and its application, Galvanic cells- electrode potential, electromotive force, Nernst's equations, electrode potential and electrolysis, Primary and secondary cells including fuel cells, Correction and its Prevention, Commercial production of Chemicals – examples only, manufacture of NaOH, Na, Al, CI2 and F2.*

Chemical Kinetics

· *Average and instantaneous rate of a reaction, rate expression and order of reaction, Integrated rate expressions of zero and first order reactions and their derivations, half life period, determination of rate constant/ order of reaction (graphical method and Ostwald isolation method only), tempreture dependence of rate constant – Arrhenius equation, activation energy, Mechanism of reaction – elementary and complex reactions, reactions involving 2-3 steps only.*

Unit IV: Surface Chemistry

· *Adsorption – physical and chemical adsorption, Factors affecting adsorption – effect of pressure (Freundlich and Langmuir Isotherm) and effect of temperature (qualitative only), Cataysis – enzymes, zeolites, Colloids – distinction between true solution, colloids and suspensions,*

classification based on dispersion medium and dispersed phase. Types of Colloids – Lyophilic, multimolecular, macromolecular and associated colloids (micelles), Methods of preparation of colloids and their properties, Emulsions types of emulsions oil/water and water/oil emulsifiers.

P-Block Elements

· ***Group 13 Elements:***Introduction, occurrence and uses, Atomic and physical properties, Oxidation state, trends in Chemical reactivity,*Aluminum: Extraction from bauxite, reaction of Al with acid and alkali.*

· ***Group 14 Elements:*** Introduction, occurrence and uses, Atomic and physical properties, Oxidation state, trends in Chemical reactivity, forms of silica: uses and structure, Silicates (Preliminary treatment), Silicones: Structure and uses, Tin and Lead: extraction, halides and oxides (Preparation, properties and uses).

· ***Group 15 Elements:*** Introduction, occurrence and uses, Atomic and physical properties, Oxidation state, trends in Chemical reactivity, hydrides, oxides and halides, Phosphorus Production – allotropes. Phoshine: preparation, structure, PCl3, PCl5, P4O6, P4O6, P4O10 and oxoacids of Phosphorus (structure only).

· **Group 16 Elements:**General introduction, occurrence and uses, Atomic and physical properties, oxidation states, trends in chemical reactivity of the elements. Some important compound: oxides –oxoacids, hydrides and halides (structure and properties), Sulphur – production, allotropes oxides, sulphuric acid-manufacture and uses.

· ***Group 17 Elements:*** Introduction, occurrence and uses, Atomic and physical properties, Oxidation state, trends in Chemical reactivity of the element and compounds, Hydrides, oxides and oxoacids of chlorine. Bleaching powder – preparation and properties, Interhalogen compounds (types, formulae and shapes (Ax, AX2, AX3, and AX4).

· ***Group 18 Elements:*** *Introduction, Isolation and uses, Atomic and physical properties. Compounds on xenon – xenon fluorides, oxides and oxoacids (preparation, structure-reaction with water).*

Unit V: d and f-Block Elements

· ***D-block elements****: Electronic configuration and charteristics of the transition elements, general trends in the chemistry of first row transition elements(metallic character, IE, electrode potential, oxidation state, ionic radil, catalytic properties, colored ions, complex formation, magnetic properties, interstitial compounds, alloy formation).*

· ***Occurrence and principles of extraction:****Iron, copper, silver, zinc and mercury. Steel and some important alloys.*

· ***Compounds:****preparation, properties of CuSO4, AgNO3, silver and mercury halides, K2Cr207 and KMnO4.*

· *Photography (Chemistry of developing, fixing and printing).*

· ***F-block elements****: lanthanides – Introduction, oxidation state – Chemical reactivity, lanthanide contraction, Uses.*

· ***Actinides*** *– Introduction, Electronic configuration, ilgands and coordination Compounds and organometallics*

· *Coordination Compounds – introduction, ilgands and*

coordination number.

· *IUPAC formulation and nomenclature of mono-nuclear coordination compounds.*

· *Isomerism including stereoisomerisms.*

***Bonding**– V.B.approach, shapes, colour, magnetic properties, crystal field theory (qualitative idea only).*

· *Idea of stability of coordination compounds (a brief idea of stability constant of coordination compounds).*

· *Importance of coordination compounds in qualitative analysis, extraction of metals and biological systems (chlorophyll, Vitamin B12 and haemoglobin).*

Unit VI: Nuclear Chemistry

· *Natural and Artificial isomerism and recapitulation of geometrical isomerism and conformations, optical activity- discovery, determination using a polarimeter, specific rotation, chirality - chiral objects, chiral molecules, configuration and Fischer projections, asymmetric carbon, elements of symmertry, compounds containing one chiral centre, enantiomers, DL and R-S homenclature, racemic forms, racemisation. Compounds containing two chiral centres, diastereoisomers, mesoform, resolution, importance of stereochemistry.*

Unit VII: Organic Compounds with Functional Groups Containing Oxygen-I

(Alcohols, Phenols and Ethers)

· *Alcohols and Phenols: Electronic structure of functional groups, nomenclature, important methods of preparation, physical properties, chemical reactions- mechanism of dehydration of alcohols, acidity of phenols, in electrophilic substitution.*

· *Ethers: electronic structure of functional group, nomenclature, important methods of preparation, physical and chemical properties.*

· *Some commercially important compounds.*

Organic Compounds with functional Groups containing Oxygen-II, Aldehydes, Ketones, Carboxylic acids and their derivatives)

· *Aldehydes and Ketones: Electronic stracture of carbonyl group, nomenclature, important methods of preparation, physical properties, chemical reactions- reactivity of aldehydic and ketonic groups, acidity of a-hydrogen, aldol condensation, cross aldol condensation, cannizzarro reaction, Mechanism of nucleophilic addition reaction to C=O group.*

Carboxylic Acids: Electronic structure of – COOH, nomenclature, important methods of preparation, Physical properties and effect of substituents on a-carbon on acid strength, Chemical reactions-mechanism of esterification.

· ***Derivatives of Carboxylic acides:****Electronic structure of acid chloride, acid anhydride, ester and amide groups, nomenclature, important methods of preparation, comparation, comparative reactivity of acid derivatives.*

· *Some commercially important compounds.*

Unit VIII: Organic Compounds with Functional Group Containing Nitrogen

(Nitro, Amino, Cyano and Diazo Compounds)

· ***Nitro Compounds****: electronic Structure of NO2 group, nomenclature, important method of preparation, physical properties, Chemical reactions.*

· ***Amines:****Structure of amino groups (Primary, Secondary and Tertiary), nomenclature, important methods of preparation, physical properties- basic character of amines, Chemical reactions-separation of primary, secondary and tertiary amines.*

· ***Cyanids and Isocyanides:****Structure of cyanide and isocyanide groups, nomenclature, preparation, physical properties and chemical reactions.*

· ***Diazonium Salts:****Preparation and chemical reactions of benzene diazonium chloride, importance of diazonium salts in synthetic organic chemistry.*

· *Some commercially important compounds.*

Polymers

· ***Classification of polymers, general methods of polymerization****– addition and condensation: addition –free radical, cationic and anionic polymerization, copolymerization, natural rubber, vulcanization of rubber, synthetic rubbers.*

· *Condensation polymers, molecular mass of polymers (highlighting level of complexity only), Biopolymers and biodegradable polymers.*

· *Some commercially important polymers.*

Unit IX; Biomolecules

· *The cell, energy cycle.*

· ***Carbohydrates:****Classification, monosaccharides, structures of pentoses and hexoses, anomeric carbon, mutarotation, simple chemical reactions of glucose, Disaccharides: reducing and non-reducing sugers-sourose, maltose and lactose, Polysaccharides; Elementary idea of structures of starch and cellulose.*

· ***Proteins:****a-amino acid: sucrose, maltose and lactose, Polypeptides, primary structure of proteins, Simple idea of secondary and tertiary structures of proteins, Denaturation of proteins and enzymes.*

· ***Nucleic Acids:****Types of nucleic acids, primary building clocks of nucleic acids (chemical composition –DNA and RNA), primary structure of DNA and its double helix. Replication, transcription and Protein synthesis, Genetic Code.*

· ***Lipids:****Classification, structure, functions in biosystems.*

· ***Hormones:****Classification, structural features and functions in biosystems.*

· ***Vitamins****: Classification, functions of vitamins in biosystems.*

Unit X: Chemistry in everyday Life

· *Chemicals in medicine and health-care – Analgesics, Tranquillisers, antiseptics, disinfectants, anti-*

microbials, anti-fertility drugs, antihistamines, antibiotics, antacids.

- *Dyes: classification with examples- Indigo, methyl orange, aniline yellow, alizarin, marlachite green.*
- *Chemicals in cosmetics (creams, perfumes, talcum powder, deodorants).*
- *Advanced materials – carbon fibers, ceramics, micro alloys.*
- *Chemicals in food – preservatives, artificial sweetening agents, antioxidants, and edible colours.*
- *Detergents – classification, some important examples.*
- *Insect repelients – Pheromones, sex attractants.*
- *Rocket Propellants – characteristics, chemicals used.*

PRACTICALS

Evaluation Scheme for Examination

Volumetric Analysis 10 marks

Mixture Analysis 8 Marks

Content Based Experiments 4 Marks

Project 4 Marks

Class Record and viva 4 Marks

Experiments

1. (i) Preparation of double salt of ferrous ammonium sulphate or alum.

OR

(ii) Preparation of potassium ferric oxalate.

2. (i) Preparation of one lyophilic and one lyophobic sol.

***Lyophilic sols**– starch, egg albumin and gum.*

***Lyophobic sols**– aluminium hydroxide, ferric hydroxide, arsenious sulphide.*

(ii) Dialysis of sols prepared in 2(i) above.

3. Study of the role of emulsifying agents in stabilizing the emulsions of different oils.

4. Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid.

5. Study of reaction rates of any one of the following:

(i) Reaction of Iodide ions with hydrogen peroxide at room temperature using different concentrations of iodide ions.

(ii) Reaction between potassium iodate, KIO3 and sodium sulphite; (Na2SO3) using starch solution as indicator (clock reaction)

6. (i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.

(ii) Separation of constituents present in an inorganic mixture containing two cations only constituents having wide difference in Rf values to be provided.

7. Determination of concentration/molarity of KmnO4 solution by titrating it against a standard solution of:

(i) oxalic acid

(ii) Ferrous ammonium sulphate.

(Student will be required to prepare standard solutions b by weighting themselves).

8. Analysis of Ca2+and Mg2+present in drinking water quantitatively by EDTA.

9. Qualitative analysis.

Determination of two cations and two anions in a given mixture;

Cations—Pb2+, Cu2+, As3+, Fe3+, Zn2+, Co2+, Mn2+, Ni2+, Ca2+, Ba2+, Sr2+, Mg2+,Mg2+, NH+4,

Anions – S2, SO23, SO24, Co23, No2, NO3, CI, Br, I, PO3-4, CH3COO

(Note: insoluble and interfering ions are to be excluded).

Also, (i) two cations of the same group and (ii) anions combinations such as

(SO24, +SO23), (NO2, + NO3) or (CI + Br), or (Br + 1), (CO23 + C2O24) should be avoided.

2. Study of carbohydrates, fats and proteins in pure form and detection of their presence in given foodstuffs.

3. Test for the functional groups present in organic compounds.

Unsatuation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups.

4. Preaparation of any one of the following compounds.

(i) Iodoform, (ii) Acetanilide, (iii) Di-benzal acetone, (iv) p-itroacetanilide, (v) Aniline yellow or a – Naphthol aniline dye.

5. Variation of cell potential in ZnIZn2 + IICu2 + ICu with change in concentration of electrolytes (CuSO4 or ZnSO4) at room temperature.

Investigatory Projects

Report on an investigatory project conducted by a student is to be submitted at the time of final examination.

Few suggested Projects

- *Study of diffusion of a solid into liquid.*
- *Determination of the minimum quantity of manganese dioxide required as a catalyst for the preparation of oxygen gas.*
- *Determination of rate of flow of solution and liquids horizontally.*
- *Investigation of the foaming capacity of different washing soaps and the effect of addition of sodium carbonate on them.*
- *Study of the acidity of different samples o f the tea leaves and reasons for the variation in their taste.*
- *Determination of the rate of evaporation of different liquids.*
- *Study of effect of metal coupling on the corrosion of iron.*
- *Study of the effect of acids and bases on the tensile strength of fibers.*
- *Analysis of fruit and vegetable juices for the contents (acides and minerals) present in them.*
- *Preparation of rayon threads from various cellulose sources.*
- *Study of dyeing fabric under various conditions.*
- *Determination of the dosage of bleaching powder required for disinfections of different samples of water (taken from different sources).*
- *Study of presence of oxalate ions in guava fruit at different stages of ripening.*
- *Study of the setting of mixtures of cement with lime, sand of different qualities, rice husk, etc.*

(With respect to time, volume and strength).

- *Study of the presence of insecticide/pesticide (nitrogen containing) in vegetables and fruits.*
- *Study of the dialysis of different sewage water samples and identification of different ions in resulting solutions.*
- *Study of quantity of casein present in different samples of milk.*
- *Preparation of soyabean milk and its comparison with natural milk with respect to curd formation, effect of temperature, taste, etc.*

· *Study of the effect potassium bisulphate as food preservative under various conditions (temperature, concertration, time etc.).*

· *Study of digestion of starch by salivary amylase and effect of pH and temperature on it.*

· *Comparative study of the rate of fermentation of following materials; wheat flour, gram flour, potato juice, carrot and orange juice.*

· *Extraction of essential iols present in Saunf (aniseed), Ajwain (carum), Iliachi (cardamom).*

· *Study of constituents of an ailoy (any sample easily available may be taken).*

· *Study of common food adulterants in fat, oil, butter, sugar, turmeric powder chilli powder and pepper.*

Note: Any other investigatory project can be performed which involves about 8 periods of work with the approval of the teacher.

CORE MODULES 234 – COMPUTER SCIENCE

UNIT 1: COMPUTER FUNDAMENTALS

Evolution of computers; Basics of computer and its operation: Functional

Components and their inter-connects, concept of Booting, Use of operating System for directory listing, hierarchical directory structure, renaming, deleting files/folders, formatting floppy, copying files, concepts of path and pathname, switching between tasks, installation/removal of applications;

Computer Science

Software concepts:

Types of software- System Software, Utility Software and Application Software;

System Software: Operating system, Compliers, Interpreters and Assembler;

Operating System: Need for operating system, Functions of operating System (Processor Management, Memory management, File management and Device management), types of operating systems interactive (GUI based), time Sharing, real Time and Distributed;

Note: The above- mentioned Operating System specific task can be illustrated and implemented using any operating system.

PROGRAMMING METHODOLOGY

General Concepts; Modular approach; Clarity and simplicity of expressions, Use of proper Names for identifiers, Comments, Indentation; Documentation and program in maintenance; running and Debugging programs, syntax Errors, Run-Time Errors, Logical Errors;

Problem solving Methodology and techniques; Understanding of the problem, Identifying minimum number of inputs required for output, Step by step solution for the problem, breaking down solution into simple steps. Identification of arithmetic and logical operations required for solution, using Control structure: Conditional control and looping (finite and infinite);

UNIT 2: INTRODUCTION TO PROGRAMMING IN C++

"object oriented technology is regarded as the ultimate paradigm for the modeling of information, be that information data or logic. The C++ has by now shown to fulfill this goal."

Programming by Example in C++ Language:

C++ character set, C++ Tokens (Identifiers, Keyword, Constants, Opertors), Structure of a C++ Program (including files, main function); Header files iostream.h, iomanip.h; cout, cin ; Use of I/O operators (<>), Use of endl and setw(), Cascading of I/O operators, Error Messages; Use of editor, basic commands of editor, compilation, Linking and execution; standard input/output operations from C language: gets(), puts() of stdio.h header file.

Data types, variables and Constants:

Concept of Data types; Built-in data types: char, int, float and double;

Constants: Integer Constants, character Constants (backslash Character constants-/n, /t), Floating Point Constants, String Constants; Access modifier: const; variables of built- in data types, eclaration/ Intialisation of variables, Assignment statement; Type modifier: signed, unsigned, long;;

Operators and Expressions:

Operators: Arithmetic operators (-,+,,/,%), unary operator (-), Increment and Decrement Operators (--,++), relational operators (>,>=,<=,==,!=), Logical operators (!,&&,II), conditional operator: ?:; Precedence of Operators; Expressions; Automatic type conversion in expressions, type casting; C++ shorthands (+=,-=,*=,/=,%=);*

Flow of control:

Conditional statements: If-else, Nested if, switch... Case... Default, Nested switch.. Case, break statement (to be used in switch..Case only); Loops. While , do –while, for and Nested loops;

Structured data type: Array

Declaratrion / initialization of one dimensional array, Inputting array elements, accessing array elements, manipulation of Array elements (sum of elements, product of elements, average of elements, linear search, finding maximum/ minimum value);

Declaration/ initilasation of string, string manipulations (counting vowels/ consonants / digits/ special characters, case conversion, reversing a string, reversing each word of a string); String and Character related library functions: isalnum(), isalpha(), isdigit(), islower(), isupper(), tolower(), toupper(), strcpy(), strcat(), strlen(), strcmp(), strcmpi();

Declaration/ initialization of a two-dimensional array, inputting array elements Accessing array elements, Manipulation of Array elements (sum of row element, column elements, diagonal elements, finding maximum/ minimum values);

User defined Functions:

Defining a function; function prototype, Invoking / calling a function, passing arguments to function, specifying argument data types, default argument, constant argument, call by value, call by reference, returning values from a function, calling functions with arrays, scope rules of functions and variables; local and global variables;

Mathematical and Other Functions:

Header Files-math.h, stdlib.h;

Functions: fabs(), log(), log10(), pow(), sqrt, sin(),cos(), abs(), randomize(), random();

Event programming: Games as examples

General Guidelines: Initial Requirement, Developing an interface for user (it is advised to use text based interface screen), developing logic for playing the game and developing logic for scoring points.

1. Memory Game: A number guessing game with application of 2 dimensional array containing randomly generated numbers in pairs hidden inside boxes.

2. Cross 'N Knots Game: A regular tic-tac-toe game

3. Hollywood/Hangman: A word guessing game

4. Cows 'N Bulls: A word/number Guessing game

UNIT-3 COMPUTER SYSTEM ORGANISATION

Number System: Binary, Octal, Decimal, Hexadecimal and conversion between two different number systems. Integer, Floating Point, 2's complement of number from base-2;

Internal Storage encoding of Characters: ASCII, ISCII (Indian scripts Standard Code for Information Interchange), UNICODE;

Microprocessor: Basic concepts, clock speed (MHz, GHz), 16 bit, 32 bit, 64 bit32bit, 64 bit processors; Types CISC, RISC: Concept of System Buses, Address bus, databus,

Concepts of Accumulator, Instruction Register, and program Counter;

Commonly used CPUs and CPU related terminologies: Intel Pentium Series, Intel Celeron, Cyrix, AMD Series, Xeon, Intel Mobile, Mac Series; CPU Cache; Concept of heat sink and CPU fan, Motherboard; Single, Dual and Multiple processor;

Types of Memory: Cache (L1, L2), Buffer, RAM (DRAM, SDRAM, RDRAM, DDRAM), Rom (PROM, EPROM), Access Time;

Input Output Ports/ Connections; Power Connector, Monitor Socket, Serial (COM) and Parallel (LPT) port, Universal Serial Bus port, PS-2port, SCSI port, PCI/MCI socket, keyboard socket, Infrared port(IR), audio/speaker socket, Mic socket; data Bus; external storage devices connected using I/O ports;

Power Supply: Switched Mode Power Supply (SMPS): Elementary Concept of Power Supply: Voltage, Current, Power (Volt, Ampere, Watt), SMPS supplies Mother Board, Hard Disk Drive, Floppy Disk Drive, CD/DVD Drive;

Power Conditioning Devices: Voltage Stabilizer, Constant Voltage Transformer (CVT), Uninterrupted Power Supply (UPS)- Online and offline.

Unit 4 PROGRAMMING IN C++

REVIEW: C++ covered in Class-XI,

Defining a symbol name using typedef keyword and defining a macro using # define directive;

Need for User Defined data type;

Structures:

Defining a Structure, Declaring structure variables, Accessing structure elements, Passing structure to Functions as value and reference argument/parameter, Function returning structure, Array of structures, passing an array of structure as an argument/ a parameter to a function;

Object Oriented Programming

Concept of Object Oriented Programming Data hiding, Data encapsulation, Class and Object, Abstract class and Concrete class, Polymorphism(Implementation of polymorphism using function overloading as an example in C++); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies.

Implementation of Object Oriented Programming concepts in C++: Definition of a class, Members of a class – Data Members and Member Functions (Methods), Using Private and Public visibility modes, default visibility mode (private); Member Function definition: inside class definition and outside class definition using scope resolution operator(::); Declaration of Objects as instances of class; accessing members from object(s), Array of type class, Objects as function arguments – pass by value and pass by reference;

Constructor and Destructor:

Constructor: Special Characteristics, Declaration and Definition of a constructor, Default Constructor, Overloaded Constructors, Copy Constructor, and Constructor with default arguments;

Destructor: Special Characteristics, Declaration and definition of destrector; Inheritance (Extending Classes): Concept of Inheritance, Base Class, Derived Class, Defining derived classes, protected visibility mode; Single level inheritance, Multilevel inheritance and Multiple inheritance, Privately derived, Publicly derived and Protectedly derived class, accessibility of members from objects and within derived classes(es);

Data File Handling:

Need for data file, Types of data files Text files Txt file and Binary file;

Basic file operations on text file: Creating/ Writing text into file, Reading and Manipulation of text form an already existing text File (accending sequentially);

Binary File: Creation of file, Writing data into file, Searching for required data from file, appending data to a file, Insertation of data in sorted file, Deleting of data from file, modification of data in a file;

Implementation of above mentioned data file handling in C++;

Components of C++ to be use with file handling: header file: fstream.h; if stream, of stream, fstream, classes; Opening a text to the file in, out, and app modes;

Using cascading operators for writing text to the file and reading text from the file; open (), get (), put (), getline () and close () functions; Detecting end-of-file(with or without using eof() function);

Opening a binary file using in, out, and app modes;

Open (), read(), write() and close() function; Detecting end-of-file (with or without using eof() function); tellp(), seekg(), seekp() functions

Pointers:

Declaration and Initialization of Pointers; Dynamic memory allocation / deallocation operators: new, delete; Pointers and Array: Array of Pointers, Pointer to an array (1dimensional array), Function returning a pointer, Reference variables and use of alias; Function call by reference. Pointer to structures: Deference operator: *,->; self referential structure;

UNIT-5 DATA STRUCTURES

Arrays:

One and two Dimensional arrays: Sequential allocation and address calculation:

One dimensional array: Traversal, Searching(Linear, Binary Search), Insertion of an element in an array, deletion of an element from an array, sorting (Insertion, Selection, Bubble sort), concentration of two linear arrays, merging of two sorted arrays;

Two- dimensional arrays: Traversal, Finding sum/ difference of two NxMarrays containing numeric values, Interchanging Row and Column elements in a two dimensional array;

Stack (Array and Linked implementation of Stack):

Operations on Stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression;

Queue: (Circular Array and Linked Implementation):

Operations on Queue (Insert and Delete) and its Implementation in C++.

UNIT 6: DATABASES AND SQL

Database Concepts:

Relational data model: Concept of domain, tuple, relation, key, primary key, alternate key, candidate key; relational algebra: Selection, Projection, Union and Cartesian product;

Structured Query language:

General Concepts: Advantages of using AQL, Data Definition Language and Data manipulation language;

Data types: NUMBER, CHARACTER, DATE;

SQL commands:

CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATE… SET…., INSERT, DELETE;

SQL Functions: SUM, AVG, COUNT, MAX and MIN;

Note: Implementation of the above mentioned commands could be done on any SQL supported software.

UNIT -7 BOOLEAN ALGEBRA

EVOLUTION OF Boolean algebra, Binary-valued Quantities, Boolean Variable, Boolean Constant and Boolean Operators: AND, OR, NOT; Truth Tables; Closure Property Communicative Law, Associative Law, Identity law, inverse law, Principle of Duality, idempotent law, Distributive Law, Absorption Law, Involution law, DeMorgan's Law and their applications;

Obtaining Sum of product(SOP) and Product of Sum (POS) form from the Truth Table, Reducing Boolean expression (SOP and POS) to its minimal form, Use of Karnaugh Map for minimization of Boolean expressions (up to 4 variables);

Basic Logic gates (NOT, AND, OR, NAND, NOR) and their use in circuits.

UNIT 7: COMMUNICATION AND NETWORK CONCEPTS

Evolution of Networking: ARPANET, internet, Interspace;

Different ways of sending data across the network with reference to switching techniques;

Data Communication terminologies: Concept of Chanel, Baud, bandwidth (Hz, KHz, MHz) Data transfer rate (bps, kbps, Mbps, Gbps, Tbps);

Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.

Network devices: Modem, RJ45 connector, Ethernet Card, Hub, Switch, Gateway;

Different Topologies- Bus, Star, Tree; Concepts of LAN, WAN, MAN;

Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, Level-Remote Login (Telnet), Internet, Wireless/Mobile Communication, GSM, CDMA, WLL, 3G, SMS, Voice mail, Application Electronic Mail, Chat, Video Conferencing;

Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers;

Web pages: Hyper Text Markup Language (HTML), eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; protocol Address; Website, Web Browser, web Servers; Web Hosting.

(Practicals)

Duration: 3 hours

1. Programming in C++

One Programming problem in C++ to be developed and tested in Computer during the Examination. Marks are allotted on the basis of following:

Logic : 5 Marks

Documentation/Indentation : 2 Marks

Output Presentation : 3 Marks

Notes: The type of problems to be given will be application type from the following topics

Array of structure

Stack using arrays and linked implementation

Queues using arrays (circular) and linked implementation

Binary File operations (Creation, Displaying, Searching and Modification)

Text File operations (Creation, Displaying and Modification)

2. SQL Commands

Five Quary questions based on a particular table/ Reaction to be tested

Practically on Computer during the examination. The command along with the result must be written in the answer sheet.

3. Project Work

The project has to be developed in C++ language with Object Oriented Technology and also should have use of Data files.

Presentation on the computer

Project report (Listing, Sample, Outputs, Documentation)

Viva

4. Practical File

Must have minimum 20 programs from the following topics

Arrays (One dimensional and two dimensional, sorting, searching,

Merging, deletion & inserting of elements)

Arrays of structures, Arrays of Objects

Stacks using arrays and linked implementation

Queues using arrays (linear and circular) and linked implementation

File (Binary and Text) operations (Creation, Updating, Query)

Any computational based problems

15SQL commands along with the output based on any table/ realtion:3 Marks

5. Viva Voce

Viva will be asked from syllabus covered in class XII and the project development by student.

GUIDELINES FOR PROJECTS

1. Preamble

1.1 The academic course in Computer Science includes one project in each Year. The Purpose behind this is to consolidate the concepts and practices imported during the course and to serve as a record of competence.

1.2 A group of two students/ three student as team may be allowed to work on one project.

2. Project content

2.1 Project for class XI can be selected from one of the topics given in event programming.

2.2 Project for class XII should ensure the coverage of following areas of curriculum:

a. Problem Solving

b. Data Structure

c. Object Oriented programming in C++

d. Data File Handling

Theme of the project can be

Any subsystem of a System Software or Tool

Any scientific or a fairy complex algorithmic situation.

Business oriented problems like Banking, Library information system, Hotel or Hospital management system, transport query system

Quizzes/Games;

Tutor/Computer Aided Learning Systems

2.3 The aim of the projects is to highlight the abilities of algorithmic formation, modular programming , optimized code preparation, systematic documentation and other associated aspects of software development.

2.4 The assessment would be through the project demonstration and the Project Report, which should portray programming Style, Structured Design, Minimum Coupling, High cohesion, Good documentation of the code to ensure readability and ease of maintenance.

Reference Books

Computer Organisation and Boolean Algebra

1. Rajaraman, FUNDAMENTALS OF COMPUTERS, Prentice Hall of India.
2. C.W.Gear, COMPUTER ORGANISATION AND PROGRAMMING, McGraw Hill Publishing.
3. A.P.Malvino, DIGITAL COMPUTER FUNDAMENTALS, Tata McGrew Hill Publishing Co.Ltd.
4. J.Shelly & Roger Hunt, COMPUTER STUDIES, Arnold publishers.
5. C.S.French, COMPUTER STUDIES, Arnold Publishers.
6. Thomas C. Bartee, DIGITAL COMPUTER FUNDAMENTALS, McGrew Hill International.

Problem Solving and Programming in C++

Note: Prior knowledge of C is not required in the learning of C++, eventhough reference about C are made in some of the books.

1. Robert Lofore, OBJECT ORIENTED PROGRAMMING IN TURBO C++, Galgotia Publications Pvt. Ltd.
2. David Parsons, OBJECT ORIENTED PROGRAMMING WITH C++, BPB Publications.
3. Bjarne Stroutrup, THE C++ PROGRAMMING LANGUAGE, Adison Wesley.
4. Al Stevens, TEACH YOUR SELF C++ TECHNIQUES & APPLICATIONS, BPB Publications.
5. Scott Robber Ladd, TURBO C++ TECHNIQUES & APPLICATIONS, BPB Publications.

Operating Environment

1. Ritchi, Operating Systems, BPB publications.
2. James L. Peterson & Abraham S., OPERATING SYSTEM, Addison-Wesley Publishing Company.

Data Structures

1. M.A.weiss, data Structure and Algorithm Analysis in C++. The Benjamin/ Cummings Pub. Co., Inc.

2. Scott Rober Ladd, C++ COMPONENTS AND ALGORITHMS, BPB Publications.

Database Management System and SQL

1. Martin Gruber, UNDERSTANDING SQL, BPB Publications.

2. Sheldon M. Dunn x Base Cross Reference Handlook First Authorised Asian Edition 93, Tech. Publications Pvt.Ltd.

3. C.J.Data, DATABASE PRIMER, Adison Wesley.

Computer Network

1. A.S. Tanenbaum, Computer Network, Prentic Hall of India P.Ltd.

2. Williams Stalling, Data Communication and Networks, Prentice Hall of India P.Ltd.

3. Hancock, Network Concept and Architectures, BPB Publications.

Reference Magazines

PC WORLD, COMPUTERS TODAY, PC QUEST, DATA QUEST, COMPUTER WORLD.

Reference Manuals

OPERATING SYSTEM MANUAL, C++ COMPUTER MANUAL

CORE MODULES 235 – BIOLOGY

COURSE CONTENTS

Part 1

1. Principles of Classification and Viruses
2. The Groups Monera, Protista and Algae
3. Kingdom Fungi
4. Kingdom Plantae
5. Kingdom Animalae
6. Origin and Evolution of Life
7. Cell Structure
8. Cell Division Mitosis and Meiosis
9. Tissues and levels of Organization

Part 2

10. Roof Structure and Function
11. Stem Structure and Function

12. Leaf Structure and Function
13. Photosynthesis
14. Flower, inflorescence, fruits and families
15. Growth and Development

Part 3

16. The Skin, Skeleton and Movement
17. Digestive System
18. Circulatory System
19. Gaseous Exchange & Elimination of wastes
20. Nervous Coordination & Sense Organs
21. Chemical regulation (Endocrine System)
22. Reproductive System

Part 4

23. Reproduction in Non-Flowering Plants
24. Reproduction in Flowering Plants
25. Vegetative Reproduction in Plants
26. Patterns of Reproduction in Animals
27. Embryonic Development and Nutrition in Brids and Mammal
28. Some Special Aspects in Developmental Biology
29. Principles of Inheritance
30. Gene Express and Interaction
31. Physical and Chemical Basis of Heredity and Mutation

Part 5

32. Human Genetics and Society
33. Human Population, Family Planning and Family Welfare
34. Ecological Principles
35. Biogeography and Conservation of soil, water and wide life
36. Conservation and Use of Natural resources
37. Pollution and Radition Their Effects on Human Life

Part 6

38. Some common tool and Techniques

39. General laboratory Equipments

40. Some common Preservative, Stains & Reagents

41. Providing Organisms for laboratory work

42. Some Aids in Biology

Part 7

43. Agricultural, Forest and Medicinal Plants

44. Mushroom Culture, Toriculture and Hydroponics

45. Animal Husbandry

46. Fisheries

47. Apiculture, Lac Culture, Seri Culture and Vermi Culture

Part 8

48. Nutrition in relation of Health & disorders

49. Diseases Communicable and Non communicable

50. Sexually Transmitted Diseases

51. Health & Hygiene

52. Drug Addiction

Part 9

53. Biologically Important Molecules Structure and Function

54. Metabolism of macromolecules

55. Transcription of Translation

56. Immunobiology An introduction

57. Immune Disorders

58. Biotechnology and Industry

59. Genetic Engineering and Transgenic Animals

60. Gene Therapy

CHEMISTRY

COURSE CONTENTS

Part – 1

Measurement in Chemistry, Mole concept, Stoichiometry, Behaviour of Gases, Liquids and Solids.

Part- 2

Solutions, Colloidal Solutions, Some Basic Concepts of Thermodynamics, spontaneity of chemical reactions, Chemical equilibrium

Part-3

Electrochemistry, Rates of Chemical Reaction, Lonic Equilibrium, Atomic structure

Part 4

Periodic table and variation in Atomic properties, The Chemical Bond I, The Chemical Bond II, General Characteristics of main Group Elements, General Characteristics of Transition Elements, Chemistry of Main group Elements and their Compounds I, Chemistry of main Group Elements and Their Compounds II, Chemistry of some Important Compounds of Transition elements, general Metallurgical Principles

Part 5

General Principle, Classification and Nomenclature, Hydrocarbons, Preparation of Hydrocarbons I, Preparation of Hydrocarbons II, Compound of carbon containing Halogens, Compounds of Carbon Containing Oxygen, compounds of Carbon Containing Nitrogen

OPTIONALS

Part 6

Agricultural Chemistry: soil and Plant Nutrients, Manures and Fertilizers, pests and Pesticides, Biological Nitrogen, Fixation and Plant, Growth Hormones.

Part 7

Biochemistry: carbohydrates, Proteins, Fats and Lipids, Nucleic Acid, Enzymes

Part 8

Environmental Chemistry: Environment and its Pollution, Atmosphere, Oxygen and Air pollution, water Pollution, Heavy Metal contamination, Nuclear waste and Their Disposal