Avesta-Pahlavi (87)

Introduction

Persian and Arabic have been regarded as Indian Classical Languages and also as modern foreign languages learnt, spoken and retained in India. It is their association with Indian society and culture spanning centuries, even a millennium that has made them the link languages of medieval India and India of the modern era. it is the cultural impact of these languages on other languages that has helped to develop a composite culture which Indian society is proud of. Even in the modern era the study of these languages may open new avenues to develop relations with Afro Asian countries for culture and trade. Due to the cultural impacts of these two languages there is a growing tendency and urge to learn them at a higher level too. With this urge in view, the objectives of learning these languages at+2 level are quite specifically laying emphasis on the comprehension and conversational.

Objectives

To enable the students to

1. become acquainted with sentence structures in order to comprehend text material.
2. comprehend the speeches relayed by the media.
3. read journals and newspapers published in this language.
4. develop oral skills as well as applied usage of the language.
5. convey the spirit of Indian culture and the message of love and peace to all the citizens of the world through this language.
6. provide an opportunity to Indian students and the students returning to India from a foreign land after a long stay and students from abroad to continue their studies in persuit of knowledge and research.
7. develop the love for literary activities and academic studies through the spirit of research in these languages.

Std. XI

1. Text-Book AVESTA :

Uzirin Gah Sroch Yasht Hadoxt PAHLAVI: The Pahlavi Karnamag-i-

Artaxsir Papakan by D.P.SANJANA, Mumbai (1896) Chapters 2-4.

2. Composition :

Translation of simple sentences from Avesta and Pahlavi into English or medium of instruction offered and English into Avesta.

3. Grammar AVESTA :

Alphabet with transcription- Sandhi, Guna and Vriddhi - Roots and Formation of Nouns- Degrees of Adjectives-

General case Terminations- Declensions of Nouns and Adjectives-

10 Classes of Verbs, Conjugational and non-Conjugational Tenses and moods. Prefixes and Suffixes-Cardinal and Ordinal Numerals.

PAHLAVI : Alphabet with transcription-Joining of letters-Nouns- ronouns Adjectives-Prepositions, Prefixes and Suffixes-Verbs

(Pretorite and Present)

Reference Avesta Grammar by K.E.KANGA and Avesta Texts for University Students publilshed by the Trustees of the Parsi Panchayat, Mumbai (1954)

4. Oral/Conversational Skills.

Std. XII

1. Text-Book

AVESTA : Hormazed Yasht.

PAHLAVI: The Pahlavi Dadestani i Mengog i.

Xrad by D.P.SANJANA], Mumbai 1981 Chapters 3-20.

2. Composition Translation of unseen simple sentences from Avesta and Pahlavi into English or medium of instruction offered and English into Avesta.

3. Grammar AVESTA :

Alphabet with transcription- Sandhi, Guna and

Vriddhi - Roots and Formation of Nouns- Degrees of Adjectives- General case Terminations- Declensions of Nouns and Adjectives-10 Classes of Verbs, Conjugational and non-Conjugational Tenses and moods. Prefixes and Suffixes-Cardinal and Ordinal Numerals. PAHLAVI: Alphabet with transcription-Joining of letters-Nouns-Pronouns-Adjectives-Prepositions, Prefixes and Suffixes-Verbs (Pretorite and Present)

Reference Avesta Grammar by K.E.KANGA and Avesta Texts for University Students publilshed by the Trustees of the Parsi Panchayat, Mumbai (1954)

4. Oral/Conversational Skills

Oral Skills

Listening activities : develop the sub-skills of listening, provide practice in ear-training.

Loud-reading : following the features of loud reading, provide practice in loud-reading.

Speaking : creating confidence in speaking. Using narration and description.

Conversation : ability to converse confidently and effectively, provide practice in conversation.

Formal testing in oral skills will be administered.

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(B) Elective Subjects

मराठी साहित्य

प्रास्ताविक

ज्या विद्यार्थ्यांना मराठी साहित्याच्या अभ्यासात अधिक रस आहे त्यांच्यासाठी हा विषय शिकविला जाईल. मराठी हा विषय 'आधुनिक भारतीय भाषा' म्हणून वैकल्पिक स्वरूपात सध्याच्या अभ्यासक्रमात उपलब्ध आहे. तो तसाच राहील. मात्र त्यात व्याकरण, उपयोजित मराठी यांचा समावेश आहे; तसा मराठी साहित्य या विषयाच्या अभ्यासक्रमात करता येणार नाही.

सध्याच्या काळात भाषांच्या अभ्यासाचे महत्त्व कमी होत चालले आहे. भाषांच्या अभ्यासाकडे होणाऱ्या दुर्लक्षाचे परिणाम काही वर्षांनी तीव्रतेने जाणवू लागणार आहेत. मानवजातीने सर्व ज्ञान आजवर भाषेच्या माध्यमातून जोपासले व वाढविले आहे, जतन केले आहे. भाषेचा व्यावहारिक उपयोग शिकविण्याची जी गरज आहे, ती भागविण्यासाठी सध्याचा नववी व दहावीचा मराठीचा अभ्यासक्रम व इ. ११ वीचा नवा प्रस्तावित 'उपयोजित मराठी' हा अभ्यासक्रम सक्षम आहे. परंतु मराठी साहित्य हा विषय उपलब्ध व्हावयास हवा, याची काही वेगळी कारणे आहेत.

साहित्य किंवा ललित वाङ्.मय हे मानवी जीवनाचे सर्व अंगांनी चित्रण करीत असते. प्रत्येक माणूस जीवनाच्या विविधांगी स्वरूपाचा अनुभव घेऊ शकेल, असे नाही. एका माणसाचा जीवनानुभव मर्यादितच असतो. पण साहित्य त्याला मानवी जीवनाचा, भावनांचा, विविध अनुभवांचा पट उलगडून दाखविते व त्याची जीवनविषयक जाणीव समृध्द करते. सध्याच्या काळात जीवनातील गुंतागुंत व जीवनाचा वेग वाढतच चालला आहे व माणूस माणुसकीला पारखा होत चालला आहे. साहित्याच्या अभ्यासाने हे थोपविता येऊ शकेल. साहित्य माणसाचे जीवनाच्या गुंतागुंतीविषयीचे आकलन वाढविते व त्याला अधिक चांगला नागरिक, सुसंस्कृत माणूस बनविण्यास हातभार लावते. त्याला दुसऱ्याच्या भावना जाणून घेणारी सदय, सहिष्णू व्यक्ती बनविते. शिक्षण प्रक्रियेचे अंतिम साध्य किंवा ध्येय माणसाचे व्यक्तिमत्त्व घडविणे, सुसंस्कृत माणूस निर्माण करणे हेच असते. साहित्याचा अभ्यास या दृष्टीने अनन्यसाधारण महत्त्वाचा ठरतो.

प्रचलित अभ्यासक्रमात कला शाखेच्या विद्यार्थ्यांना पदवीसाठी 'मराठी साहित्य' हा विषय अभ्यासता येतो. अकरावी-बारावीच्या स्तरावर या विषयाची पूर्वतयारी झाल्यास त्यांना सोयीचे होईल. वाणिज्य व विज्ञान शाखांच्या विद्यार्थ्यांना मात्र पुढील वर्षांमध्ये मराठी साहित्याच्या अभ्यासाची संधी उपलब्ध नसते. या शाखांमध्ये शिकणाऱ्या अनेक विद्यार्थ्यांना मराठी साहित्यात रस असतो. पुढील आयुष्यात 'रसिक वाचक' म्हणून जडणघडण होण्यासाठी त्यांना या स्तरावर मराठी साहित्याचा पायाभूत अभ्यास खूपच मोलाचा ठरेल, अशी धारणा आहे.

उद्दिष्टे :

१. साहित्य म्हणजे काय, साहित्याची भाषा कशी असते? त्याची ओळख करून देणे.
२. साहित्यातील संकल्पना स्पष्ट करणे.
३. समीक्षेची तत्त्वे स्पष्ट करणे.
४. साहित्यप्रकारांचा सखोल परिचय करून देणे.
५. आकलन, विश्लेषण, अर्थनिर्णयन, मूल्यमापन या क्रमाने अभ्यासाची पद्धत समजावून देणे.
६. विद्यार्थ्यांच्या स्वतंत्र लेखनक्षमतेचा विकास करणे.
७. विद्यार्थ्यांची आकलनशक्ती व वैचारिक क्षमता वाढविणे.
८. सुसंस्कृत व उदार विचारसरणीचा माणूस घडविणे.

ब. सदर विषयाची अंमलबजावणी पुढीलप्रमाणे–

१. 'मराठी साहित्य'हा विषय वैकल्पिक म्हणून कला, वाणिज्य, विज्ञान शाखेतील विद्यार्थी घेऊ शकतील.
२. एकाच वेळेस विद्यार्थी 'मराठी' व 'मराठी साहित्य' हे दोन्ही विषय घेऊ शकतील.
३. 'मराठी साहित्य' हा विषय शिकविण्यासाठी शिक्षकांची किमान अर्हता एम.ए. (संपूर्ण मराठी) ही असावी.
४. 'मराठी साहित्य' या विषयासाठी तोंडी परीक्षा नसेल. तीऐवजी विद्यार्थी वीस गुणांकरिता दीर्घ निबंध (सुमारे २५ ते ३० पृष्ठे) लिहितील. ऐंशी गुणांकरिता लेखी परीक्षा असेल.

इयत्ता अकरावी

भाग १: साहित्याचा अभ्यास

१) साहित्याचे वाचन व साहित्याचा अभ्यास
२) साहित्याचा अभ्यास का करावयाचा ?
३) साहित्य व इतर ललित कलांचा परस्परसंबंध
४) साहित्याची भाषा (अलंकार, प्रतिमा, प्रतिके इ.)
५) साहित्याच्या अभ्यासातील संज्ञा व संकल्पना

भाग २ : सूक्ष्म वाचन

१) कविता – (सुमारे ४०० ओळी –सुमारे २० कविता)
प्रामुख्याने आधुनिक कविता, नवकविता व साठोत्तरी कविता.
२) कथा – ५ लघुकथा – सुमारे ४० पाने
३) निबंध – २ वैचारिक, २ ललित– सुमारे १५ पाने
४) एकांक/एकांकिका – सुमारे १५ पाने
(भाग १ व भाग २ साठी पाठ्यपुस्तक तयार केले जाईल.)

भाग २ : स्थूल वाचन

१) एक लघुकादंबरी
किंवा
२) एक प्रवासवर्णन
(शिफारस केली जाईल.)

इयत्ता बारावी

भाग १: मराठी साहित्याचा अभ्यास

१) मराठीतील विभिन्न साहित्यप्रकार
२) साहित्यकृतीचा अभ्यास व साहित्यकृतीची भाषा (उदा. कविता,नाटक,कादंबरी इ.)
३) साहित्याची समीक्षा व समीक्षेच्या विविध पद्धती
सामाजिक – सांस्कृतिक चळवळी व मराठी साहित्य

भाग २: सूक्ष्म वाचन

१) कविता –
सुमारे २० कविता – अभंग, ओवी, लावणी, पोवाडा, भारूड, गवळण, भूपाळी, फटका, सुनीत, गझल, हायकू.
२) कथा –
सुमारे ४० पाने –दोन दीर्घकथा
३) ललित गद्य –
सुमारे २० पाने –प्रवासवर्णन,व्यक्तिचित्रण इ.
४) आत्मचरित्रातील उतारे –
सुमारे २० पाने
(भाग १ व भाग २ साठी पाठ्यपुस्तक तयार केले जाईल.)

भाग २: स्थूल वाचन

१) एका लेखकाचा एक वैचारिक लेखसंग्रह
किंवा
२) एक नाटक
(शिफारस केली जाईल.)

शिकविण्याचे तंत्र व पद्धती

राष्ट्रीय व आंतरराष्ट्रीय स्तरावर साहित्याच्या अध्यापनपद्धतीत झालेले बदल व शासनाचे धोरण विचार करता, शिक्षक –विद्यार्थी आंतरक्रिया व सुसंवाद घडेल, अशा पद्धतीने वर्ग चालावा, अशी शिफारस आहे.

१) अभ्यासक्रमाच्या आकलनास मदत होईल,अशा प्रकारे विद्यार्थ्यांना बोलण्यास व लिहिण्यास उद्युक्त करणे.
२) विद्यार्थ्यांना गट करून समीक्षण,रसग्रहण करण्यास सांगणे.
३) दृकश्राव्य माध्यमांचा उपयोग करून एकांकिका,नाटक इ. वाङ्मयप्रकारांचा परिचय करून देणे.

शिकविण्याचे तंत्र व पद्धती

१) दीर्घोत्तरी प्रश्न विचारले जातील. वस्तुनिष्ठ किंवा लघूत्तरी प्रश्न विचारण्यात येणार नाहीत..
२) निव्वळ स्मरणशक्तीची परीक्षा करण्याच्या दृष्टीने प्रश्न विचारले जाणार नाहीत.
३) विद्यार्थ्यांना लेखनस्वातंत्र्य दिले जाईल.
उदा. तुम्हाला आवडलेल्या एकांकिकेचे समीक्षण करा.
किंवा
तुम्हाला न आवडलेल्या कवितेचे विश्लेषण करा.

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हिंदी (व्यावहारिक हिंदी)

प्रस्तावना

वर्तमान युग सूचना प्रौद्योगिकी का युग है । आज संपूर्ण संसार एक होता जा रहा है। अत: संप्रेषण हेतु भाषा का महत्व बढ रहा है। हिंदी संपर्क भाषा है अत: संचार के विविध क्षेत्रों में हिंदी की भाषिक प्रयुक्तियाँ महत्वपूर्ण होती जा रही है। उच्च माध्यमिक कक्षाओं के छात्रों को उनसे परिचित कराने की दृष्टि से प्रस्तुत पाठ्यक्रम तैयार किया गया है।

पाठ्यक्रम के उद्देश

१. श्रवण, भाषण, पठन एवं लेखन क्षमताओं का विकास करना।
२. आकलन एवं विचार-विनिमय करने की क्षमता का विकास करना।
३. रेडियो, दूरदर्शन, विविध चैनल्स समाचार पत्र, पत्रिकाएँ, विज्ञापन माध्यम आदि में प्रयुक्त लिखित, मौखिक भाषा से परिचित करना।
४. विविध सरकारी स्वायत्त संस्थाओं में प्रयुक्त विशिष्ट पारिभाषिक शब्दावली से परिचित कराना।
५. कार्यालयीन एवं व्यावसायिक पत्राचार से परिचित कराना।
६. पत्रकारिता के विविध रुपों से परिचित कराना।
७. कँप्यूटर की जानकारी देना।
८. अनुवाद के लिए प्रेरित करना।
९. विज्ञापनों की भाषिक प्रयुक्ति की जानकारी देना।
१०. संभाषण कौशल विकसित करना आदि.....

कक्षा ग्यारहवीं

पाठ्यक्रम

१) हिंदी भाषा का स्वरुप - हिंदी भाषा का संक्षिप्त इतिहास हिंदी का संवैधानिक रुप- राष्ट्रभाषा, राजभाषा

२) मानक लेखन- मानक वर्तनी, देवनागरी लिपि वर्ण एवं आंतरराष्ट्रीय अंक लेखन

३) पारिभाषिक शब्दावली - सरकारी कार्यालयों में प्रयुक्त शब्द, विधी, बँक, वाणिज्य, विज्ञान आदि क्षेत्रोंसे संबंधित प्रत्येकी ५० शब्द- अथवा व्यवहारोपयोगी संवाद तथा जानकारी

४) अनुवाद - स्वरुप, प्रक्रिया, प्रकार। अंग्रेजी से हिंदी में अुनवाद (एक या दो परिच्छेद)

५) विज्ञापन - स्वरुप, आवश्यकता, प्रकार। विज्ञापनोंकी हिंदी ।

६) पत्राचार- सरकारी पत्र-६
व्यावसायिक पत्र -४

७) व्यावहारिक हिंदी- सामान्य व्यवहार में प्रयुक्त शब्द (संपादक मंडळ निमंत्रक के साथ विचार-विमर्श करके पाठ्यक्रम में संशोधन कर सकता है।)

कक्षा बारहवीं

पाठ्यक्रम

१) पत्रकारिता का स्वरुप - हिंदी पत्रकारिता के विविध रुप- प्रिंट मीडिया (समाचार पत्र),
रेडियो की पत्रकारिता, दूरदर्शन की पत्रकारिता

२) जनसंचार माध्यम - स्वरुप, कार्य, उद्देश

३) जनसंचार माध्यमों के विविध हिंदी भाषा रुप - समाचार की भाषा, विज्ञापन की भाषा, कृषि तथा बच्चों के कार्यक्रम की भाषा।

४) हिंदी से संबंधित तकनिकी ज्ञान - कँप्यूटर, एम.एस. वर्ड, डी.टी.पी., इंटरनेट, वेबसाईट, ई-कॉमर्स आदि की प्राथमिक जानकारी -अथवा संबंधित विषय पर आधारित संवाद

५) परिभाषिक शब्दावली- सरकारी, अर्धसरकारी, विविध संस्थाओं में प्रयुक्त पारिभाषिक शब्दावली -प्रत्येकी लगभग ५० शब्द

६) पत्राचार- सरकारी पत्र-६
व्यावसायिक पत्र -४
(संपादक मंडळ निमंत्रक के साथ विचार-विमर्श करके पाठ्यक्रम में संशोधन कर सकता है।)

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English Literature (22)

Introduction

The Maharashtra State Board of Secondary and Higher Secondary Education has laken a decision of introducing an optional course of English at the higher secondary level w.e.f. June 2009. The present course of English (Compulsory) will continue with no change. The optional course is being introduced for students who want to study English as literature. The title of the course will be English Literature. Any student of Std. XI/XII who desires to study English literature, can offer this course, in addition to the present course of English (Compulsory)

'Literature' occupies an important place in the lives of all human beings. Literary study helps in developing language skills and also in developing understanding of human life. It broadens our vision, sharpens our sensibilities and helps in our overall development as human beings.

This course will help students in understanding what literature is, why we should study literature and how we should study literature. The course will also help students in developing their understanding of literature as communication.

Objectives

To enable the student

- to read and appreciate literature as a unique form of communication
- to acquaint himself/herself with major forms of literary writing.
- to develop creativity in writing.
- to enhance literary sensibility and critical thinking.
- to understand literature in all its perspectives: literature as language, literature as experience, literature as communication/discourse.
- to develop humanistic and broad outlook.

Std. XI

Part one: Introduction to the Study of English Literature

i) 'Reading' and 'Studying' Literature
ii) Why should we study literature?
iii) How should we study literature?
iv) Terms used in literary studies.

Part Two: Detailed Reading

i) Poems: (About 400 lines) Number of poems about 20. Poems should be both Classical and Modern.
ii) Short stories: About 8 stories. About 60 pages.
iii) Essays: about 4 essay. About 20 pages.
iv) One Act Play: About 10 pages.
v) Biographical pieces: About two pieces. About 10 pages.

(A Coursebook will be prepared by the Board for Part One and Part Two)

Part Three: Non-detailed reading

i) A short novel (British or Indian)
ii) A Play (The Board will prescribe books for Part Three)

Std. XII

Part one: Introduction to the Study of English Literature

i) Literature as language
ii) Literature as experience
iii) Literary communication and non-literary communication
iv) Literature as discourse.

Part Two: Detailed Reading

i) Poems: (About 400 lines) Number of poems about 20. Poems should be both Classical and Modern.
ii) Short stories: About 8 stories. About 60 pages.
iii) Essays: about 4 essay. About 20 pages.
iv) One Act Play: About 10 pages.
v) Biographical pieces: About two pieces. About 10 pages.

(A Coursebook will be prepared by the Board for Part One and Part Two)

Part Three: Non-detailed reading

i) A short novel (British or Indian)
ii) A Play (The Board will prescribe books for Part Three)

Methods and Techniques of Teaching

Considering the changes in methods and techniques of teaching literature at the international levels and the policy of the Government of India, 'Interactive' approach to teaching' will have to be adopted. Following methods and techniques of teaching will be recommended.

i) 'Participative learning' involving students in the process, encouraging teacher-student interaction, involving pair/group work.
ii) Activities/Tasks that will help sharpen students' creative ability and critical thinking.
iii) A task based methodology with a learner centred approach.
iv) Promotion of the use of Audio-visual materials, CDs, short films, project work, review of literary texts.

Testing and Evaluation

The testing framework will be 'performance oriented', 'application oriented' and NOT memory based. There will be no scope for rote learning. Creativity, critical and independent thinking will be given credit.

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1. **A MODERN INDIAN LANGUAGE**
   (Any one other than one offered under compulsory subjects)
   The syllabus in these languages will be the same as that for Modern Indian Languages under compulsory languages.

2. **A MODERN FOREIGN LANGUAGE.**
   (Any one other than one offered under compulsory subjects)
   The syllabus in these languages will be the same as that for Modern Foreign Languages under compulsory subjects.

3. **A CLASSICAL LANGUAGE**
   (Any one other than one offered under compulsory subjects)
   The syllabus in these languages will be the same as that for Classical Languages under compulsory subjects.

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History (38)

According to new Education Policy it is essential to give vast knowledge of History of Maharashtra in Std. XI and of the new approach to study the history in Std.XII.

Therefore, students are to be made familiar with their subject matter and also gain profound knowledge of History.

In Standard XI they study events and movements that helps to create participation in all walks of life. In Standard XII the study of Applied History in 21st century entertainment and mass media will give them some brainwave so that they can understand that history is not only study of past but also present and future. It also gives ample opportunity for creativity. This subject also draws us from darkness to light. In the study of this subject students also develop some leadership qualities. Hence, it lays a strong foundation of modern India by creating amicable relationship among us.

Objectives

1) To widen and make comprehensive and innovative attitude of students towards history.
2) To appropriately relate the events of the past with the present in order to march towards a bright future.
3) To inculcate the spirit of curiosity and analytical reasoning in students and build their characters free from prejudices, dictatorial tendencies and communalism and to build in them scientific attitude combined with foresight.
4) To develop a comprehensive historical perspective in order to understand contemporary world, universal brotherhood, human rights, international understanding and the challenges of globalization.
5) To maintain the spirit of religious equality.
6) To create awareness about the protection of environment.
7) To build an awareness regarding the preservation of historical monuments and resources.
8) To create awareness about the empowerment of the weaker sections in the society and women.
9) To inculcate the values of unbiased nationalism, nutritional integration, democracy and socialism, etc. in students.
10) To enable students to make man humanitarian and community oriented through individual, social, moral and universal values.

Std. XI

Unit 1 **Background of Maharashtra:**

a) Ancient Maharashtra : Stone Age, Satvahana, Vakataka, Chalukya, Rashtrakutan, ------ Dyna----- and their political, social, cultural, religious contribution.

b) Medieval Maharashtra Political – Social – Economic, Religious 1) Yadav 2) Sultanate 3) Mughal 4) Maratha

Unit 2 **Renaissance in 19th century :**
Religious and Social Reform movements

Unit 3 Contribution of Maharashtra to Freedom Movement :
- a) 1818 to 1885
- b) 1885 to 1920
- c) 1920 to 1947

Unit 4 Equality Movements in Maharashtra :

Background of Movements

1) Labour 2) Dalit 3) Women

4) Adivasi (Tribal)

Unit 5 Post Independence Maharashtra 1947 to 1960 :
- a) Sanyukta Maharashtra Movement
- b) Marathwada Mukti Sangram

Unit 6 Progress of Maharashtra 1960-2000 :

Political, Economical, Educational, Social and Cultural progress

Std. XII

Unit 1 Applied History in 21st Century
- (a) Meaning of Applied History
- (b) Inter – relation of Past and Present
- (c) Contemporary History

Unit 2 Mass Media and History
- (a) Printing Press
- (b) Newspapers
- (c) Periodicals
- (d) Electronic Media

Unit 3 Entertainment Media and History
- (a) Radio
- (b) Television
- (c) Drama
- (d) Cinema

Unit 4 Tourism and History
- (a) Tourist Guides
- (b) Preservation of Historical Monuments

Unit 5 Museums
- (a) Significance and conservation
- (b) Archaeological Artifacts and Sculptures
- (c) Inscriptions and Numismatics
- (d) Available job opportunities

Unit 6 Historical Research
- (a) Archaeological
- (b) Archives

Unit 7 Encyclopedia
- a) Treasures of History
- b) Encyclopedia
- c) Biographies
- d) Dictionary of Culture

Unit 8 Administrative Services
- (a) State Government Service Examination
- (b) Central Government Service Examination
- (c) Interview Techniques

Unit 9 History Teacher and Teaching
- (a) Educational qualifications
- (b) Personality

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Geography (39)

Introduction

The 10+2 stage in the educational pattern is an important link in the chain of curricular work, where in it is insisted that the students should switch off for the branch of knowledge best suited for them, on the basis of the foundations laid in the first 10 years of schooling, devoted to general education. Accordingly, it would be necessary at this stage to broaden and deepen the students basic knowledge in geography, so that it may develop a keen and profound interest in the subject that is so useful in their everyday life as well as in their areas of specialization. Moreover, geography being a subject of interdisciplinary nature, it helps in the study of natural sciences and social sciences.

The course is based on the guidelines provided in NCF2005 and SCF 2010. Core elements such as protection of environment and inculcation of scientific temper as mentioned in NPE and POA have also been reflected in the course content of geography. The theoretical study of geography is complemented by practical work have been made a part of curriculum for 10+2 stage.

For 10+2, the geography course has complements of theory and practical work. The course is designed in such a way that students will be acquiring knowledge of the world as a whole with the new technologies the world is shrinking and new patterns of regional co-operations are emerging. At the same time world as a whole is facing problems like, global warming and climate changes. Different regions in the world having varied physiographic and social personalities are expected to respond to these global problems in different ways. Hence, it is necessary that the students understand the strengths and weaknesses of each region to face these problems.

Though regions have different personalities, none remains in isolation and they complement each other in different ways.

With the study of world as an entity and understanding the problems, will promote students to accept the concept of world as a home of man and to realize the need for conserving their home.

Field visits and practical work will be useful in developing necessary geographical skills.

Objective

The course in Geography will help learners to

1. understand the terms, key concepts and basic principles of Geography.
2. recognize and understand the processes and patterns of the spatial arrangement of natural as well as human features and phenomena on the earth's surface.
3. understand and analyse the inter-relationship between physical and human environment and their impact.
4. know about the scarcity of minerals and power resources and to understand the importance of its conservation and use of non-conventional power resources.
5. understand the causes of environmental pollution and its impact on life on the earth.

6. apply geographical knowledge and method of enquiry to new situations or problems at different levels : local, regional, national and global.
7. understand major types of human activities as influenced by geographical factors.
    1. develop geographical skills relating to collection, processing and analysis of data or information including grapics and use of computers wherever possible and preparation of a report.
    2. understand the effects of natural hazards and prepare them to help the affected persons.

Std. XI

World Geography – Physical

Unit 1: Physiography
- 1.1 Mountains
- 1.2 Plateaus
- 1.3 Plains

Unit 2: Movements of the earth
- 2.1 Rocks
- 2.2 Earthquakes
- 2.2 Volcanoes

Unit 3: Climate
- 3.1 Temperature
- 3.2 Pressure
- 3.3 Precipitation

Unit 4: Drainage System & Water resources
- 4.1 Main rivers
- 4.2 Lakes
- 4.3 Availability of water
- 4.4 Usage
- 4.5 Water scarcity

Unit 5: Oceans & Marine eco system
- 5.1 Structure of ocean floor
- 5.2 Archipelago group of Island
- 5.3 Marine eco system
- 5.4 Ocean resources

Unit 6: Natural Vegetation
- 6.1 Distribution
- 6.2 Importance of forests
- 6.3 Deforestation

Unit 7: Biomes and Biodiversity
- 7.1 Types of Biomes
- 7.2 Biodiversity

Unit 8 : Disaster
- 8.1 Natural disaster
- 8.2 Manmade disaster

Practicals

Unit 1: Projection
- 1.1 Types of projection

Unit 2: Methods of representing relief features & Slopes on a map

Unit 3: Topographical Map
- 3.1 Map reading (1:50,000)

Unit 4 : Remote Sensing – Aerial Photographs

Unit 5: Weather Charts
- 5.1 Reading
- 5.2 Weather instruments

Unit 6: Field study

Std. XII

Geography of World – Human

Unit 1 : Population
- 1.1 Growth, density, distribution
- 1.2 Sex ratio Literacy
- 1.3 Race, religion and Language

Unit 2 : Migration
- 2.1 Migration

Unit 3 : Agriculture
- 3.1 Types of agriculture
- 3.2 Crop distribution

Unit 4 : Minerals and energy resources

4.1 Distribution

Unit 5 : Industries

5.1 Agro-based

5.2 Mineral based

5.3 Other industries

5.4 Distribution

Unit 6 : Trade

6.1 International trade

6.2 International trade organisation

Unit 7 : Transportation and Communications

7.1 Types of Transportation

7.2 Modes of Communications

Unit 8 : Economic developments

8.1 Global situation

8.2 Human development

Geography : Practical - Part II :

Unit 1 : Map Scale

Types

Unit 2 : Graphs

2.1 Line graph

2.2 Bar graph

2.3 Two dimensional diagrams

2.4 Three dimensional diagrams

Unit 3 : Thematic Maps

3.1 Distributional map

Unit 4 : Surveying

4.1 Chain and Tape survey

4.2 Plane Table

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Mathematics & Statistics (40)

(For Arts and Science)

Std. XI & XII

Introduction

Mathematics is the language of all sciences and is perhaps the only subject which merits this distinction. Mathematics is the backbone of all sciences and it is an inseparable part of human life.

Higher Secondary is a launching stage from where students would go to either for academic education in Mathematics or professional courses like Engineering and Computer Technology, Physical and Biological Sciences. Hence to fulfil the needs of students, it is utmost important to make the study of Mathematics more meaningful by acquainting the student with many branches of mathematics. This will help them in developing Mathematical tools to be used in the professional education. Apart from motivating topics from real life situations and other subject areas, major thrust is also on application of various concepts.

The proposed syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students.

Objectives

To enable the students

1) to acquire knowledge and critical understanding, particularly by way of motivation and visualization of basic concepts, terms, principles, symbols and mastering the underlying processes and skills.
2) to apply the knowledge and skills in Mathematics and related problems from other subjects, by more than one method.
3) to develop positive attitude to think, analyze and articulate logically.
4) to develop interest in Mathematics by participating in various related competitions and self-learning.
5) to acquaint students with different aspects of Mathematics used in real life.
6) to develop an interest in students to study Mathematics as a discipline.
7) to develop awareness of the need for national integration, protection of an environment, removal of social barriers, elimination of sex biases and observance of small family norm.
8) to develop reverence and respect towards great mathematicians for their contribution to the field of Mathematics.
9) to develop interest in the subject by participating in related competitions.

Std. XI - PART – 1

1. Measurement of Angles

Need & concept, Revision of directed angle (+ve and –ve angles), zero angle, straight angle, angles in standard position, coterminal angles, angles in quadrant &

quadrantal angles. Sexagesimal system, circular system, relation between degree measure and radian measure. **Theorem:** Radian is a constant angle. Length of an arc of a circle ($s = r.\theta$, θ is in radians) (without proof). Area of the sector of a circle $A = \frac{1}{2} r^2.\theta$, θ is in radians (without proof).

2. **Trigonometric functions**
   Need & concept, Trigonometric functions with the help of standard unit circle, signs of trigonometric functions in different quadrants, trigonometric functions of particular angles (0^0, 30^0, 45^0, 60^0, 90^0, 180^0, 270^0, 360^0), domain and range of trigonometric functions, periodicity of functions, fundamental identities, graphs of trigonometric functions, Graph of $y = a \sin bx$, $y = a \cos bx$, trigonometric functions of negative angles.
3. **Trigonometric functions of compound angles**
   Introduction, trigonometric functions of sum and difference, trigonometric functions of multiple angles (upto double and triple angles only), trigonometric functions of half angles.
4. **Factorization Formulae**
   Introduction, Formulae for conversion of sum or difference into products, formulae for conversion of product into sum or difference, trigonometric functions of angles of a triangle.
5. **Locus**
   Introduction, Definition and equation of locus, points of locus, shift of the origin.
6. **Straight Line**
   Revision. Inclination of a line, slope of a line, equation of lines parallel to co-ordinate axes, intercepts of a line, revision of different forms of equations of a line, slope-point form, slope-intercept form, two point form, double intercept form, other forms of equations of a line, parametric form, normal form, general form, **Theorem 1 :** A general linear equation $Ax + By + C = 0$, provided A and B are not both zero, simultaneously, always represents straight line. **Theorem 2 :** Every straight line has an equation of the form $Ax + By + C = 0$, where A, B and C are constants (without proof), Reduction of general equation of a line into normal form, intersection of two lines, parallel lines, perpendicular lines, identical lines, condition for concurrency of three lines, angle between lines, distance of a point from a line, distance between two parallel lines, equations of bisectors of angle between two lines, family of lines, equation of a straight line parallel to a given line, equation of a straight line perpendicular to a given line, equation of family of lines through the intersection of two lines.
7. **Circle and Conics** : Revision, standard equation, centre-radius form, diameter form, general equation, parametric equations of standard equation, Conics Napees – Intersection of Napees of a cone and Plane, introduction, focus-directrix property of parabola, ellipse, hyperbola, parabola, standard equation (different forms of parabola), parametric equations, ellipse, standard equation, hyperbola, standard equation, parametric equations. Application of conic section.
8. **Vectors**
   Definition, magnitude of a vector, free

and localized vectors, types of vectors, zero vector, unit vector, equality at vectors, negative of a vector, collinear vectors, coplanar vectors, coinitial vectors, like and unlike vectors, scalar multiple of a vector, triangle law, parallelogram law, polygon law, properties of addition of vectors, three dimensional co-ordinate geometry, co-ordinate axes & coordinate planes in space, co-ordinates of a point in space, distance between two points in a space, unit vectors along axes, position vector of a point in a space, product of vectors, scalar product, definition, properties, vector product, definition, properties, simple applications, work done by force, resolved part of a force, moment of a force.

9. Linear Inequations

Linear inequations in one variable – solution of linear inequation in one variable & graphical solution, solutions of system of linear inequations in one variable, Linear inequations in two variables – solution of linear inequation in one variable & graphical solution, solution of linear inequations in two variables & graphical solution, solutions of system of linear inequations in two variables, Replacement of a set or domain of a set, Transposition.

10. Determinants

Revision, determinant of order three, definition, expansion, properties of determinants, minors & co-factors, applications of determinants, condition of consistency, area of a triangle, Cramer's rule for system of equations in three variables.

11. Matrices

Introduction, concepts, notations, order, types of matrices – zero matrix, row matrix, column matrix, square matrix, determinant of a square matrix, diagonal matrix, scalar matrix, identity matrix, triangular matrices, singular & non-singular matrices, transpose of a matrix, symmetric & skew symmetric matrices, operations on matrices – equality, addition, subtraction, multiplication of a matrix by a scalar, simple properties, multiplication of matrices – definition, properties of matrix multiplication, properties of transpose of a matrix - $(A')' = A$, $(KA)' = KA'$, $(AB)' = B'A'$.

PART – 2

1. Sets, Relations and Functions

Set – Revision, subset, proper improper subset and their properties, union, intersection, disjoint sets, empty set, finite & infinite sets, equal sets, equivalent sets, universal set, Venn diagrams, complement of a set, difference of two sets, power set, Relations – ordered pairs, equality of ordered pairs, Cartesian product of two sets, No. of elements in the Cartesian product of two finite sets, Cartesian product of the reals with itself, definition of relation, pictorial diagrams, domain, codomain and range of a relation, types of relations, one-one, many-one, binary equivalence relation, functions – function as a special kind of relation, pictorial representation of a function, domain, codomain and range of a function, equal functions, types of functions - constant function, identity function, one-one function, onto function, into function, even & odd functions, polynomial function, rational function, modulus function,

signum & greatest integer, exponential function, logarithmic function, functions with their graphs, sum, difference, product, quotient of functions, scalar multiplication, composite function, inverse function, binary operations, real valued function of the real variable, domain and range of these functions.

2. **Logarithms**

Introduction, definition, properties, laws of logarithms, change of base, characteristics & mantissa – method of finding characteristics, method of finding mantissa, method of finding antilogarithm.

3. **Complex Numbers**

Introduction, need for complex numbers, definitions –(real parts, imaginary parts, complex conjugates, modulus, argument), algebra of complex numbers – equality, addition, subtraction, multiplication, division, powers and square root of a complex number, higher powers of i, DeMoivre's formula – (without proof), square root of a complex number, properties of complex numbers – properties of addition of complex numbers, 1) Closure Property 2) Commulative Law 3) Associative law 4) Existence of additive identity 5) Existence of additive inverse. Properties of product of complex numbers –Existance of multiplicative identity – Existance of multiplicative inverse, properties of conjugate & modulus of complex numbers, Argand Diagram – representation of a complex number as a point in plane, geometrical meaning of modulus and argument, polar representation of complex numbers, Fundamental theorem of algebra, cube roots of unity – solution of quadratic equations in the complex number system, cube roots of unity.

4. **Sequences & Series**

Revision - sequence, A.P., Sum of first n terms of A.P., properties of A.P., geometric progression – introduction, general term, sum of the first 'n' terms, (n terms from the end of G.P.) containing finitely many terms & sum to infinite terms, properties of G.P., H.P. as a special type of A.P, Means – arithmetic mean, geometric mean, harmonic mean, relation between A.M., G.M., H.M., Arithmetico-Geometric sequence, special series, sum of cube of first n natural numbers, sum of cube of first n odd natural nos., exponential & logarithmic series.

5. **Permutations & combinations**

Introduction, fundamental principle of counting, factorial notation, permutations, when all r objects are distinct, when all r objects are not distinct, circular permutations, simple applications, combinations – definition, properties, relations between permutations and combinations, simple applications.

6. **Mathematical Induction and Binomial Theorem**

Principle of mathematical induction, simple applications, binomial theorem – binomial theorem for positive integers, general term, particular term, properties of binomial co-efficient with simple application, binomial theorem for any index (without proof), particular cases of binomial theorem, simple applications.

7. **Limits**

Introduction of concept, meaning of $x \to a$,

the limit of a function, fundamental theorem on limits, algebra of limits – standard limits, without proof, limits at infinity – concepts, simple problems.

8. Differentiation

Definition : derivative, derivative at a point, geometrical significance of derivative, physical significance (velocity as a rate of change of displacement), derivatives from first principle - of trigonometric functions, logarithmic functions, algebraic functions, exponential functions, rules of differentiation – derivative of sum, difference, product and quotient.

9. Integration

Definition of integration as antiderivative, geometrical interpretation of indefinite integrals, algebra of integrals – integrals of some standard functions, rules of integration.

10. Statistics

Measures of dispersion – range, quartile & quartile deviation (for grouped and ungrouped data), comparison of two frequency distributions with same mean, mean deviation about mean, mean deviation about median (for grouped & ungrouped data), variance, standard deviation, effect of change of origin and scale on variance and standard deviation, combined variance and standard deviation, co-efficient of variation.

11. Probability

Revision, types of events – events and algebra of events, axiomatic definition of probability, mutually exclusive and exhaustive events, mutually exclusive events, addition theorem – for any two events A and B, Result on complementary events. Conditional probability – definition, multiplication theorem, independent events, Baye's theorem, odds in favour and against.

List of Practicals: XI

1. Problems on locus.
2. Family of lines.
3. Tracing of Conics I.
4. Tracing of Conics II.
5. Applications of vectors (Dot and cross product).
6. Linear inequation.
7. Applications of determinants.
8. Algebra of matrices.
9. Tracing of graphs of functions.
10. Numerical problems using laws of logarithms.
11. Power and square root of a complex number, cube root of unity.
12. Examples on special series.
13. Permutations and combinations.
14. Mathematical induction.
15. Binomial theorem.
16. Limits.
17. Differentiation.
18. Integration.
19. Measures of dispersion.
20. Probability.

Std. XII : PART – 1

1. Mathematical Logic

Statements - Introduction, sentences and statement, truth value of statement, open sentences, compound statement, quantifier and quantified statements, logical connectives : conjunction, disjunction, negation, implication/ conditional,

biconditional, truth tables of compound statements, examples related to real life and mathematics, statement patterns and logical equivalence - tautology, contradiction, contingency, duality, negation of compound statement, contrapositive, converse, inverse, algebra of statements-idempotent law, associative law, commutative law, distributive law, identity law, complement law, involution law, DeMorgan's laws, difference between converse, contrapositive, contradiction, application-introduction to switching circuits (simple examples).

2. Matrices

Elementary transformation of a matrix-revision of cofactor and minor, elementary row transformation, elementary column transformation, inverse of a matrix-existance and uniqueness of inverse of a matrix, inverse by elementary transformation, adjoint method, application-solution of system of linear equations by – reduction method, inversion method.

3. Trigonometric functions

Trigonometric equations-general solution of trigonometric equation of the type : $\sin\theta$, = 0, $\cos\theta = 0$, $\tan\theta = 0$, $\sin\theta = \sin\alpha$, $\cos\theta = \cos\alpha$, $\tan\theta = \tan\alpha$, $\sin^2\theta = \sin^2\alpha$, $\cos^2\theta = \cos^2\alpha$, $\tan^2\theta = \tan^2\alpha$, $a\cos\theta + b\sin\theta = C$ solution of a triangle : polar coordinates, sine rule, cosine rule, projection rule, area of a triangle, application, Hero's formula, Napier Analogues, inverse trigonometric functions-definitions, domain, range, principle values, graphs of inverse trigonometric function, properties of inverse functions.

4. Pair of straight lines

Pair of lines passing through origin-combined equation, homogenous equation, theorem-the joint equation of a pair of lines passing through origin and its converse, acute angle between the lines represented by $ax^2+2hxy+by^2=0$, condition for parallel lines, condition for perpendicular lines, pair of lines not passing through origin-combined equation of any two lines, condition that the equation $ax^2+2hxy+by^2+2gx+2fy+c=0$ should represent a pair of lines (without proof), acute angle between the lines (without proof), condition of parallel and perpendicular lines, point of intersection of two lines.

5. Circle

Tangent of a circle-equation of a tangent at a point to 1) standard circle,2) general circle, condition of tangency only for line $y = mx + c$ to the circle $x^2 + y^2 = a^2$, tangents to a circle from a point outside the circle, director circle, length of tangent segments, normal to a circle-equation of normal at a point.

6. Conics

Tangents and normals-equations of tangent and normal at a point for parabola, ellipse, hyperbola; condition of tangency for parabola; ellipse, hyperbola; tangents in terms of slope for parabola, ellipse, hyperbola, tangents from a point outside conics, locus of points from which two tangents are mutually perpendicular, properties of tangents and normals to conics (without proof).

7. Vectors

Revision, Collinearity and coplanarity of vectors : linear combination of vectors, condition of collinearity of two vectors, conditions of coplanarity of three vectors, section formula : section formula for internal and external division, midpoint formula, centroid formula, scaler triple product : definition, formula, properties, geometrical interpretation of scalar triple product, application of vectors to geometry-medians of a triangle are concurrent, altitudes of a triangle are concurrent, angle bisectors of a triangle are concurrent, diagonals of a parallelogram bisect each other and converse, median of trapezium is parallel to the parallel sides and its length is half the sum of parallel sides, angle subtended on a semicircle is right angle.

8. Three dimensional geometry

Direction cosines and direction ratios: direction angles, direction cosines, direction ratios, relation between direction ratio and direction cosines, angle between two lines, condition of perpendicular lines.

9. Line

Equation of line passing through given point and parallel to given vector, equation of line passing through two given points, distance of a point from a line, distance between two skew lines, distance between two parallel lines (vector approach).

10. Plane

Equation of plane in normal form, equation of plane passing through the given point and perpendicular to given vector, equation of plane passing through the given point and parallel to two given vectors, equation of plane passing through three non-collinear points, equation of plane passing through the intersection of two given planes, angle between two planes, angle between line and plane, condition for the coplanarity of two lines, distance of a point from a plane (vector approach)

11 Linear programming problems

Introduction of L.P.P. definition of constraints, objective function, optimization, constraint equations, non-negativity restrictions, feasible and infeasible region, feasible solutions, Mathematical formulation-mathematical formulation of L.P.P. different types of L.P.P. problems, graphical solutions for problem in two variables, optimum feasible solution.

Std. XII - PART – 2

1. Continuity

Continuity of a function at a point : left hand limit, right hand limit, definition of continuity of a function at a point, discontinuity of a function, types of discontinuity, algebra of continuous functions, continuity in interval-definition, continuity of some standard functions-polynomial, rational, trigonometric, exponential and logarithmic function.

2. Differentiation

Revision- revision of derivative, relationship between continuity and differentiability-left hand derivative and right hand derivative (need and concept), every differentiable function is continuous but converse is not true, Derivative of

composite function-chain rule, derivative of inverse function, derivative of inverse trigonometric function : Derivative of implicit function definition and examples, derivative of parametric function – definition of parametric function , exponential and logarithmic function-derivative of functions which are expressed in one of the following form a) product of functions, b) quotient of functions, c) higher order derivative, second order derivative d) $[f_{(x)}]^{[g(x)]}$

3. **Applications of derivative**

Geometrical application-tangent and normal at a point, Rolle's theorem, and Mean value theorem and their geometrical interpretation (without proof), derivative as a rate measure-introduction, increasing and decreasing function, approximation (without proof), Maxima and minima-introduction of extrema and extreme values, maxima and minima in a closed interval, first derivative test, second derivative test.

4. **Integration**

Indefinite integrals-methods of integration, substitution method, integrals of the various types, integration by parts (reduction formulae are not expected), integration by partial fraction-factors involving repeated and non-repeated linear factors, non-repeated quadratic factors, definite integral-definite integral as a limit of sum, fundamental theorem of integral calculus (without proof), evaluation of definite integral 1) by substitution, 2) integration by parts, properties of definite integrals.

5. **Applications of definite integral**

Area under the curve : area bounded by curve and axis (simple problems), area bounded by two curves, volume of solid of revolution-volume of solid obtained by revolving the area under the curve about the axis (simple problems).

6. **Differential equation**

Definition-differential equation, order, degree, general solution, particular solution of differential equation, formation of differential equation-formation of differential equation by eliminating arbitary constants (at most two constants), solution of first order and first degree differential equation-variable separable method, homogeneous differential equation (equation reducible to homogeneous form are not expected), Linear differential equation, applications : population growth, bacterial colony growth, surface area, Newton's laws of cooling, radioactive decay.

7. **Statistics**

Bivariate frequency distribution - bivariate data, tabulation of bivariate data, scatter diagram, covariance of ungrouped data, covariance for bivariate frequency distribution, Karl Pearson's coefficient of correlation.

8. **Probability distribution**

Probability distribution of a random variable-definition of a random variable, discrete and continuous random variable, probability mass function (p.m.f.), probability distribution of a discrete random variable, cumulative probability distribution of a discrete random variable,

expected value, variance and standard deviation of a discrete random variable, probability density function (p.d.f.), distribution function of a continuous random variable.

9. **Bernoulli trials and Binomial distribution**

   Definition of Bernoulli trial, conditions for Binomial distribution, binomial distribution (p.m.f.), mean, variance and standard deviation, calculation of probabilities (without proof), Normal distribution : p.d.f., mean, variance and standard deviation, standard normal variable, simple problems (without proof).

List of Practicals : XII

1. Applications of logic.
2. Inverse of a matrix by adjoint method and hence solution of system of linear equations.
3. Inverse of a matrix by elementary transformation and hence solution of system of linear equations.
4. Solutions of a triangle.
5. Tracing of tangents and normals for circle and parabola.
6. Tracing of tangents and normals for ellipse and hyperbola.
7. Applications of scalar triple product of vectors.
8. Three dimensional geometry - line.
9. Three dimensional geometry - plane.
10. Formations and solutions of LPP.
11. Applications of derivatives (Geometric applications).
12. Applications of derivatives – Rate measure.
13. Applications of derivatives - Maxima and minima
14. Applications of definite integrals - Limit of a sum.
15. Applications of definite integrals - Area.
16. Applications of definite integrals - volume.
17. Applications of differential equations.
18. Bivariate frequency distribution.
19. Expected value, variance and S.D of a random variable.
20. Binomial distribution.

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Mathematics & Statistics (Commerce) (88)

Introduction

Mathematics is inseparable part of human life and is perhaps the only subject that merits this distinction.

Higher Secondary is a launching stage, from where students may join courses like C.A., I.C.W.A., Computer Science, Information Technology, Acturial Science, Accounting and Finance, Banking and Insurance etc. Thus, it is utmost important to make the study of Mathematics more meaningful by acquainting the students with many branches of Mathematics. This will help them in developing Mathematical skills and tools as well as statistical techniques required for higher education.

The proposed syllabus has been designed in accordance with National Curriculum Framework – 2005 and as per guidelines given in Focus group on Teaching of Mathematics 2005.

Motivating topics from real life situations and other subject areas as well as major thrust on applications of various concepts is the need for present.

Objectives

To enable students

1. to create an aptitude for Mathematics and Statistics in those who are interested in higher studies.
2. to equip themselves with tools in Mathematics and Statistics that are needed in handling various situations in Commerce.
3. to acquire knowledge, critical understanding of basic concepts, facts, principles, terms, symbols and mastery of underlying process and skills.
4. to inculcate the positive attitude to think, reason, analyze and articulate logically.
5. to develop awareness for the need for national integration, protection of an environment, observance of small family norms, removal of social barriers, elimination of sex biases.
6. to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.
7. to acquaint the students with emerging trends in Mathematics and Statistics, if possible.

Std. XI : PART - 1

1. Sets, Relations and Functions –
- 1.1 Review
- 1.2 Power set and Cartesian Product
- 1.3 Relations
- 1.4 Functions
- 1.5 Operations on functions
- 1.6 Graphs of functions

2. Complex Number
- 2.1 Definition of complex number -
- 2.2 Algebra of complex numbers
- 2.3 Geometrical representation of a complex number

3. Sequences and Series
- 3.1 Revision of A.P.
- 3.2 Geometric Progression
- 3.3 Harmonic Progression
- 3.4 Special Series

4. Angle and its measurement
- 4.1 Revision
- 4.2 Measurement of angles
- 4.3 Systems of measurement of angles

5. Trigonometric Functions
- 5.1 Trigonometric Functions
- 5.2 Trigonometric functions of compound angles (All formulae without proof)
- 5.3 Inverse trigonometric functions

6. Plane Co-ordinate Geometry
- 6.1 Locus
- 6.2 Line

7. Circle and Conics
- 7.1 Circle
- 7.2 Conics

8. Equations –
- 8.1 Equations

9. Determinants
- 9.1 Revision
- 9.2 Determinant of order 3
- 9.3 Applications of Determinants

10. Limits
- 10.1 Standard Limits

11. Differentiation –
- 11.1 Derivative
- 11.2 Rules of differentiation
- 11.3 Derivatives of particular functions
- 11.4 Derivatives of composite function

PART - 2

1. Logarithms
- 1.1 Introduction and Definition
- 1.2 Laws of logarithms
- 1.3 Characteristics and Mantissa

2. Theory of Attributes
- 2.1 Introduction, notation and class frequencies
- 2.2 Consistency of data
- 2.3 Independence of attributes
- 2.4 Association of attributes

3. Partition Values
- 3.1 Partition values

4. Measures of Dispersion
- 4.1 Measures of Dispersion

5. Moments
- 5.1 Moments

6. Skewness and Kurtosis
- 6.1 Skewness
- 6.2 Kurtosis

7. Permutations and Combinations
- 7.1 Permutations
- 7.2 Combinations

8. Probability
- 8.1 Types of events
- 8.2 Addition Theorem
- 8.3 Conditional probability

9. Index Numbers

Introduction
- 9.1 Types of Index Numbers
- 9.2 Uses of Index Numbers
- 9.3 Some specific Index Numbers
- 9.4 Cost of living Index Numbers, Uses of cost of living Index Number

10. Time Series

Introduction
- 10.1 Mathematical Models
- 10.2 Measurement of Trend

Std. XI : LIST OF PRACTICALS

1. Graphs of standard functions
2. Complex Numbers
3. Sequences and Series
4. Trigonometry – I
5. Trigonometry – II
6. Locus and straight lines, Circle and Conics
7. Equations and Determinants

8. Limits and Differentiation
9. Logarithms
10. Theory of Attributes
11. Partition Values
12. Measures of Dispersion-I
13. Measures of Dispersion-II
14. Moments
15. Skewness and Kurtosis
16. Permutations and Combinations
17. Probability-I
18. Probability-II
19. Index Numbers
20. Time Series

Std. XII : PART - 1

1. Mathematical logic
- 1.1 Statements
- 1.2 Logical Connectives
- 1.3 Statement patterns and logical equivalence
- 1.4 Algebra of statements
- 1.5 Venn diagrams

2. Matrices
- 2.1 Definition and types of matrices
- 2.2 Algebra of matrices
- 2.3 Inverse of a matrix
- 2.4 Solution of equations

3. Continuity
- 3.1 Continuity of a function at a point

4. Differentiation
- 4.1 Derivative of Inverse function
- 4.2 Logarithmic Differentiation
- 4.3 Derivative of implicit function
- 4.4 Derivative of parametric function
- 4.5 Second order derivative

5. Applications of Derivative
- 5.1 Increasing and decreasing functions
- 5.2 Maxima and minima

6. Indefinite Integration
- 6.1 Definition of an integral
- 6.2 Integral of standard functions
- 6.3 Rules of Integration
- 6.4 Methods of Integration
- 6.5 Integration by parts

7. Definite Integrals
- 7.1 Definite Integral
- 7.2 Properties
- 7.3 Applications

PART - 2

1. Ratio, Proportion and Partnership
- 1.1 Ratio, proportion and partnership

2. Commission, Brokerage and Discount
- 2.1 Commission and Brokerage
- 2.2 Discount

3. Insurance and Annuity
- 3.1 Insurance
- 3.2 Annuity

4. Demography
- 4.1 Introduction, Definition
- 4.2 Uses of vital statistics
- 4.3 Measurements of Mortality
- 4.4 Life tables

5. Bivariate Data and Correlation
- 5.1 Bivariate frequency distribution
- 5.2 Karl Pearson's coefficient of correlation
- 5.3 Rank correlation

6. Regression Analysis Introduction
- 6.1 Equation of line of regression
- 6.2 Regression coefficients and their properties

7. Random Variable and Probability Distribution

7.1 Definition and types of random variables
7.2 Probability Distribution of a Discrete Random Variable
7.3 Probability Distribution of a Continuous Random Variable
7.4 Binomial Theorem
7.5 Binomial Distribution
7.6 Poisson Distribution
7.7 Normal Distribution

8. Management Mathematics

8.1 Inequations
8.2 Linear Programming Problem
8.3 Assignment Problem
8.4 Sequencing

Std. XII : LIST OF PRACTICALS

1. Mathematical Logic
2. Matrices-I
3. Matrices-II
4. Differentiation
5. Applications of Definite Integrals
6. Commercial Arithmetic-I
7. Commercial Arithmetic-II
8. Measurements of Mortality
9. Construction of Life Table
10. Correlation for Bivariate Ungrouped Data
11. Correlation for Bivariate Grouped Data
12. Spearman's Rank Correlation Coefficient
13. Regression Analysis
14. Probability Distribution
15. Binomial Distribution
16. Poisson Distribution
17. Normal Distribution
18. Linear Programming Problem
19. Assignment Problem
20. Sequencing

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Geology (41)

Introduction

The subject of Geology is introduced at the Junior college level. It is the branch of Science and it considers various aspects of the earth. It deals therefore with the origin, interior and composition of the earth. It is not only the study of surface processes and surface geology but also studies various processes that operate in the interior of the earth in detail, taking the cognizance of their surface manifestations.

Geology primarily studies the rock, their constituents as minerals, their structures and the way of their distribution has taken place on the continents and also on the ocean floor. Consideration to economical aspects of rock and minerals is one of the major branches of the subject. The structure of rocks has also significance as it plays an important role in various civil engineering structures. Hosting of petroleum and natural gas, as energy source, is also related to the structure of rocks. Though the subject deals with pure and fundamental scientific aspects of rocks and minerals, it has much wider application in industries like refractory, abrasive and medicine, etc.

Major problem now being faced by mankind is of ground water. The subject of geology covers, all the aspects, like its surface and subsurface distribution, conservation and management of watershed and modelling to ground water basin constituents which is the major aspect of study.

In brief, Geology plays an important role in industrial and economic development of the country.

Objectives

To enable the students to

1. understand basic concepts, terminology and processes in Geology.
2. acquire knowledge about the Earth.
3. help to understand the problems of the physical environment and identify measures to overcome them.
4. get acquainted with fundamentals of Mineralogy, Petrology, Structural geology, Paleontology, Stratigraphy, Economic geology, Remote Sensing, Ground water geology.
5. develop scientific temper by promoting the spirit of enquiry by observing the nature and its processes at work.
6. develop geological skills, related to collection, processive and analysis of data/ information and preparation of report and use of computers wherever possible.
7. link geology with different fields in national development.
8. apply the knowledge of Geology in finding natural resources and sustainable developments.
9. understand the Geology of India and Maharashtra.

Std.XI - Paper – I

1. Introduction to Geology

1.1 Definition, importance and Interdisciplinary nature

1.2 Branches of Geology

1.3 The earth as a planet, Origin of the earth. Distribution and evolution of

continents and oceans, Major internal structure of the earth-crust, mantle and core.

2. External processes affecting the Earth's crust

2.1 Weathering – types, erosion, denudation and deposition

2.2 Soil : formation and classification

2.3 Geological action : Running water, Glaciers, Wind, Sea waves, Ground water

3. Organization

3.1 Organizations with reference to location and functions –
DGM, GSDA, GSI, ONGC, NIO, ISRO, CGWB, IBM, AMD

Paper – II

4. Minerology

4.1 Definition of Mineral, Crystal, Chemical – composition and Physical properties of minerals, - such as Colour, Streak, Lustre, Cleavage, Fracture, Hardness, Form, Specific– Gravity, Radioactivity, Electricity, Magnetism.

4.2 Study of rock forming mineral groups as –

(1) Feldspar group - Orthoclase

(2) Silica group - Rock crystal,, Amethyst, Agate,Opal

(3) Amphibole group - Hornblende

(4) Pyroxene group - Hypersthene

(5) Mica group - Muscovite

(6) Olivine group - Olivine

(7) Other minerals - Calcite, Stilbite, Apophyllite

5. Petrology

5.1 Definition of rock, Three fold classification of rocks as – igneous, sedimentary and metamorphic.

5.2 Igneous rocks – Definition, classification plutonic, hypabyssal and volcanic. Study of Granite, Gabbro, Dunite, Pegmatite, Dolerite, Rhyolite and Basalt.

5.3 Sedimentary rocks – Processes of formation of sedimentary rocks, Study of Laterite and Bauxite, Conglomerate, Breceia, Sandstone, Shale, Limestone.

5.4 Metamorphic rocks – Definition of metamorphism; Agents and types of metamorphism. Study of Slate, Marble, Chlorite schist, Granite gneiss

5.5 Study of rocks used as Building material with reference to Strength, Durability, Colour, Study of Granite, Basalt, Sandstone, Limestone, Marble.

6. Maharashtra

6.1 Location – its relation with India

6.2 Physiography – Physiographic divisions, relief features, Geological structure.

6.3 Distribution of major rock types and their economic significance.

6.4 Distribution of economically important minerals – varieties of Silica, Zeolites, Kyanite,Bauxite,Iron and Manganese ores, Coal, Oil and Natural gas.

Practicals

1. Mineralogy

1.1 Identification and Description of minerals – Physical properties – Colour, Streak, Lustre, Cleavage, Fracture, Hardness and Chemical composition of following mineral groups –

(1) Feldspar group - Orthoclase
(2) Silica group - Rock crystal, Amethyst, Agate, Opal
(3) Amphibole group - Hornblende
(4) Pyroxene group - Hypersthene
(5) Mica group - Muscovite
(6) Olivine group - Olivine
(7) Other minerals - Calcite, Stilbite, Apophyllite

1.2 Determination of specific gravity of Quartz, Orthoclase, Hornblende, Calcite, Baryte.

2. Petrology

Identification and Description of rocks :

(1) Igneous rocks – Granite, Gabbro, Dunite, Pegmatite, Dolerite, Rhyolite and Basalt.
(2) Sedimentary rocks – Laterite and Bauxite, Conglomerate, Breccia, Sandstone, Shale, Limestone.
(3) Metamorphic rocks – Slate, Marble, Chlorite Schist, Granite Gneiss
(4) Building stones, Granite, Basalt, Limestone, Marble, Sandstone

3 Topographical Map

Acquaintance with topographical maps. Map making agency – Survey of India, Reading of Topsheets of Maharashtra. Use of conventional signs and symbols. Identification of landforms.

4 Field work and it's brief report

5 Certified Practical Journal

Std. XII : Paper – I

1. Dynamic Geology

1.1 Earthquakes – Definition, Causes, Seismic waves, Magnitude and Intensity
1.2 Volcanoes – Types, Products, Associated features
1.3 Mountains – Types
1.4 Natural Hazards and Disasters – Classification
i) Tectonic – Earthquakes – Effects, Precautions, Seismic Zones of India
ii) Topographic – Landslides – Causes, Forms and Effects. Disaster Management.

2. Structural Geology

2.1 Outcrop, Dip and Strike of bed
2.2 Fold
Definition, Elements of fold, Anticline, Syncline, Symmetrical and Asymmetrical
2.3 Fault
Definition, Elements of fault, Normal, Reverse, Horst and Graben
2.4 Joint
Definition, Geometrical and Genetical classification

2.5 Unconformity
Definition, formation of Unconformity Disconformity, Nonconformity and Angular unconformity.

3. Palaeontology and Stratigraphy

3.1 Fossils
Conditions and Modes of preservation and Uses.

3.2 Stratigraphy of Peninsulor India
Principles, Correlation and its methods. Standard Geological Time Scale.

3.3 Stratigraphy of Peninsular India.
Physiographic Divisions of Peninsular India, Brief outline of stratigraphy of Peninsular India.

Paper – II

4. Materials of the Crust

4.1 Mineralogy – Definition :
Rock forming mineral groups

1. Feldspar Group – Microcline, Plagioclase.
2. Silica group – Quartz, Amethyst, Chalcedony, Flint, Jasper, Opal.
3. Amphibole group – Hornblende, Asbestos
4. Pyroxene group – Augite
5. Mica group – Biotite, Phlogopite.
6. Olivine group – Olivine.
7. Other minerals – Kyanite, Corundum, Gypsum, Calcite, Garnet

4.2 Petrology
Definition of rock, rock cycle

A) Igneous -
Definition, classification based on silica percentage, mode of occurrence, colour, Texture-Crystallinity, Granularity, Mutual relationship, Granitic, Porphyritic.
Structure – Vesicular and Amygdaloidal. Forms – Extrusive and Intrusive

B) Secondary / Sedimentary
Definition, classification – based on products of weathering.
Texture – Size, Shape, Form. Structure – Stratification, Lamination, Graded bedding, Cross bedding, Ripple marks.

C) Metamorphic Definition, Agents, Types and Zones
Structure – Slaty, Granulose, Schistose and Gneissose.

5. Economic Geology

5.1 Definition of
Ore, Ore mineral, Industrial mineral, Gangue, Tenor of ore

5.2 Ores

1. Iron Ore – Hematite, Magnetite
2. Manganese Ore – Pyrolusite, Psilomelane
3. Copper Ore – Chalcopyrite
4. Lead Ore – Galena
5. Aluminium Ore – Bauxite

5.3 Mineral/Rock Based Industries –
Fuel –

Coal, Petroleum
Cement –
Limestone, Gypsum
Fertilizers –
Gypsum
Refractories –
Bauxite, Kyanite
Abrasives –
Diamond, Corundum
Electric and Electronics
Mica and Quartz
Medicines –
Mica, Iron ore, Copper ore

6. Applied Geology

6.1 Ground Water –
Source and Zones of ground water, Water table and Aquifer and their types.
Conservation and Management of ground water.

6.2 Remote Sensing –
Definition, Elements of photo recognition Tone, Texture, Size, Shape, Association, Recognition of terrain features – Relief (Plain, Hills and Ranges), Drainage (Streams, River), Exposures- (Vegetation, Soil and Rocks, Lineaments)
Manmade features – (Road, Town/ village, Agriculture field)

6.3 GIS –
Components of Geographical Information System. Importance and significance of G.I.S.

Practicals

1. Mineralogy

(A) Identification and Description of minerals

With reference to Chemical Composition. Colour, Streak, Lustre, Fracture, Cleavage, Hardness and Form of following mineral groups :

1) Feldspar group –
Microcline, Plagioclase
2) Silica group –
Quartz, Amethyst, Chalcedony, Flint, Jasper, Opal
3) Amphibole group –
Hornblende, Asbestos
4) Pyroxene group
Augite
5) Mica group –
Biotite, Phlogopite
6) Olivine group
Olivine.
7) Other minerals –
Kyanite, Corundum, Gypsum, Calcite, Garnet.

(B) Identification and Description of ore minerals

With reference to Chemical composition, Colour, Streak, Lustre, Fracture, Cleavage, Hardness, Form and Uses of following ore minerals.

1) Iron Ore –
Hematite, Magnetite
2) Manganese Ore –
Pyrolusite, Psilomelane
3) Copper Ore –
Chalcopyrite

4) Lead Ore –
Galena
5) Aluminium Ore –
Bauxite

2. Petrology

Identification and description of rocks with reference to Colour, Texture/Structure, Mineral Composition and Classification.

1) Igneous –
Granite, Syenite, Gabbro, Dunite, Pegmatite Dolerite, Rhyolite, Basalt.
2) Sedimentary – Laterite and Bauxite, Breccia, Boulder bed, Grit, Sandstone, Shale, Siltstone, Limestone.
3) Metamorphic – Phyllite, Marble, Quartzite, Mica schist, Hornblende gneiss

3. Structural Geology

Drawing and study of sketch diagrams of the following
Dip and Strike of bed,
Fold-
Anticline, Syncline, Symmetrical, Asymmetrical
Fault -
Normal, Reverse, Horst, Graben
Joint -
Strike, Dip, Bedding, Oblique, Columnar
Unconformity –
Disconformity, Nonconformity, Angular
Igneous forms –
Sill, Dyke, Laccolith, Lopolith, Batholith, Phacolith

4. The Geological Map of India

Outline map of India the with outline of geological formations of peninsular India are to be supplied to the student and a student has to fill the appropriate colours/ signs and prepare the index of the following geological formations – Dharwar, Cuddapah, Vindhyan, Gondwana, Deccan traps and Tertiary Super groups.

5. Topographical Maps

Reading of topographical maps with reference to prominent physical features and drawing of cross section with reference to horizontal series of beds.

6. Field Work

Visit to near by geologically interesting and important places and their brief report.

7. Record

Certified Practical Journal.

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Political Science (42)

Introduction

Man is a social animal. He lives in a society. Every individual interacts with each other. There are different activities of human beings. Some are social some are related to finances and some are Political activities.

The students of Political Science studily different political institutions. Students have started learning this subject from Std. IX. They have studied the meaning and definitions of Political Science, as well as they have studied the concept of democracy, challenges to the democracy, electoral process, political parties, etc.

Political Science is most influential important social science. Some basic concepts like Liberty, Equality, Justice, Human Rights, State, Nation are subject matter of this subject. It deals even with Governance, which explains how the country is governed International relation is also a part of Political Science. So it deals with problems like world security changing world, Globalization, etc.

Though Political Science is related to mainly political activities, some social activities influence over political activities, so they also are studied in Political Science. Social movements is one of the examples. OBC politics, Regionalism, Communalism also are part of this subject.

Objectives

1. To create and develop interest among students in Political Science as an important Social Science.
2. To introduce to students the relation of Political Science to social life, introduce Political Science to social life, introduce various concepts from Political Science and their importance.
3. To create awareness about Human Rights and their violations. To introduce to students International organizations and changing context of world politics.
4. To introduce to students the social, cultural economic effects of Globalization in India.
5. To create awareness among students about the Fundamental Rights necessary for all round development of individuals.
6. To introduce to students changing nature of legislature, Executive and Judiciary.
7. To explain to students changing nature of party competition in India and its effects on Indian Politics.
8. To introduce to students various social political movements in India and the new trends in Indian Politics based on caste, religion, language.

Std. XI : Part One

Political Theory

1. State – Meaning, Essential components of the state, State and Society, State and Government
2. Nation – Meaning, Difference between State and Nation.
3. Liberty – Meaning, Types and Importance
4. Equality and Justice – Meaning and Types
5. Human Rights – Declaration of Human Rights, National Human Rights Commission, State Human Rights Commission; Composition and functions.

Part Two
Contemporary World Politics

6. Changing World – Cold war, End of Bipolarization, Emergence of Uni - polar system, Multi polar system
7. International Organizations – Need, Different organization 1) International Organizations 2) Regional Organizations
8. World Security – Meaning, Importance, Factors endangering world security – Terrorism, Violation of Human Rights, Poverty in the World, Arms race
1. Globalization – Meaning, Emergence of Globalization, Effects of Globalization, India and Globalization

Std. XII Part One

Indian Constitution

1. Indian Constitution : Characteristics
2. Fundamental Rights, Directive Principles and Fundamental duties.
3. Legislature : Parliament.
   Lok Sabha and Rajya Sabha, Law making process, Amendment procedure State legislature : Vidhan Sabha, Vidhan Parishad
4. Executive : Union Executive :
   President – Election, Power and Functions
   Vice President – Election, Power and Functions
   Prime Minister and Council of Ministers – Election,
   Collective Responsibility and Role of Prime Minister
   State Executive : Governor, Chief Minister and Council of - Ministers.
5. Judiciary : Introduction, composition
   A) Supreme Court : Introduction, Composition, power and function
   B) High Court : Composition, power and function
   C) Subordinate Court, Lok Nyalaya
   D) Independence of the judiciary

Part Two

Politics in India

6. Patterns of Party Competition
   i) One party dominant system
   ii) Towards multi party system
7. Political and Social Movements
   i) Nature of social movement
   ii) Role of movements in democratic system
   iii) Examples of movements i) Caste ii) Workers iii) Women
   iv) Farmers etc.
8. New trends in Indian Politics
   i) Changing relations between caste and politics – OBC Politics
   ii) Regionalism and Increasing importance of states
   iii) Rising importance of religion in Indian Politics.

Internal assessment -

i) Field visit
ii) Interview
iii) Seminar
iv) News paper cutting
v) Book Review
vi) Project

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Home Management

(For Std. XI only)

Introduction

Home management an area that deals with a systematic study of management of resources in the family to achieve the goals and improve the quality of life of the families and individuals. The theory and application of home management creates interest in resource management as a subject of teaching, learning and application. It is a combination of art and science.

This syllabi focuses on basics of resource management, decision making, work simplification, interior decoration, savings - investment and consumerism, which help students to become good home maker, wise consumer and entrepreneur. It further emphasizes on developing skills in time-management, family budget, flower arrangement and home decoration.

Objectives

To enable the students to

1. understand the concept of Home-Management
2. use resources wisely
3. develop skill in decision making
4. acquaint with family income, family budget and saving
5. understand the application of work-simplification
6. develop aesthetic sense through home decoration
7. realise consumer problems and role of consumer in market
8. develop good buymanship skill

Theory :

Unit-1 **Introduction to Management**

- 1.1 Definition of Management
- 1.2 Basic concept of Management
- 1.3 Nature and Role of Home Management in changing world
- 1.4 Need of Home Management in day to day life

Unit-2 **Factors Motivating Management**

- 2.1 Values – Concept, Characteristics, Sources and Types
- 2.2 Goals – Definition, Types, Importance
- 2.3 Standards – Definition, Classification
- 2.4 Inter-relationship between Values, Goals and Standards

Unit-3 **Management Process**

- 3.1 Meaning and Definition of Home Management
- 3.2 Steps in Management Process – planning, controlling and evaluation
- 3.3 Relationship between planning, controlling and evaluation

Unit-4 **Decision Making**

- 4.1 Meaning and Definition
- 4.2 Importance
- 4.3 Decision making process
- 4.4 Types of Decision

Unit-5 **Family Resources**

- 5.1 Meaning and Definition
- 5.2 Classification of Resources – Human and Non-human

5.3 Characteristics of Resources
5.4 Factors affecting the use of family resources

Unit-6 **Time Management**
6.1 Concept and definition
6.2 Importance of Time Management
6.3 Classification of Time – Work time, Rest period, Leisure time
6.4 Characteristics of time
6.5 General guidelines for managing time

Unit-7 **Management of Family Income**
7.1 Definition of family income
7.2 Sources of family income
7.3 Ways of improving family income
7.4 Family Budget– Definition, Importance, Steps in making budget
7.5 Savings and Investment Definition, Importance, Types, Schemes

Unit-8 **Work Simplification**
8.1 Definition
8.2 Importance
8.3 Mundel's Classes of Change
8.4 Application of Mundel's Classes of Change

Unit-9 **Home Decoration**
9.1 Elements of Arts
9.2 Principles of Arts
9.3 Flower Arrangement – Importance, material used, types.
9.4 Rangoli – Importance, material used, types
9.5 Accessories – Meaning, types, guidelines for selection and placement of various accessories in different rooms

Unit-10 **Home Furniture**
10.1 Definition of furniture
10.2 Importance
10.3 Material used
10.4 Selection of furniture
10.5 Care of furniture

Unit-11 **Consumer Awareness**
11.1 Definition of consumer
11.2 Responsibilities of consumers
11.3 Problems faced by consumers
11.4 Rights of consumers
11.5 Guidelines for wise purchase
11.6 Consumer Protection Act

Related Activities And Project :

A. Related activities
i) Collection and analysis of any five labels.
ii) Demonstration on any two types of flower arrangement.
iii) Demonstration on any two types of Rangoli.
iv) Preparation of one inexpensive decorative article.

B. Any one project based on syllabus
(Maintenance of record of above activities and project)

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Food Science

(For Std. XI only)

Introduction

Food is the basic necessity of life. Particularly, nutritious food is essential for good health. Food science deals with the study of nutritive value and composition of food and changes taking place in it during preparation and processing. This subject involves the study of nutrients, balanced diet, methods of cooking of food and principles of cookery. The knowledge enables the students to make right choice of food for physical and psychological well being.

In addition to scientific principles, Food science also includes an 'art'. The practicals provided for this subject help the students to develop the 'skill' in cooking. It motivates the students to try out various innovative, nutritious recipes and serve these in attractive manner.

The student is thus equipped to plan and prepare 'balanced' recipes for healthy living.

Objectives –

To enable the students to

1. understand the functions of food and nutrients.
2. learn the basic five food groups and apply the knowledge in planning balanced diet.
3. know various methods of cooking and use these while cooking different foods to prepare attractive nutritious acceptable food products.
4. improve nutritional quality of food.
5. learn the desirable and undesirable changes which occur during preparation, cooking and processing of food.
6. eliminate undesirable changes and bring about desirable changes during cooking.
7. develop skill in selection, buying, care and storage of food.
8. identify common food adulterants.
9. study the effect of food adulterants.

Std. XI : Theory

Unit-1 **Introduction to Food Science**
- 1.1 Objectives of Food Science
- 1.2 Acceptability of food
- 1.3 Meaning and concept of Food, Nutrition, Nutrients and Health.
- 1.4 Functions of food (Physiological, Social and Cultural, Psychological)

Unit-2 **Nutrients in food** - Sources, function and deficiency
- 2.1 Carbohydrates
- 2.2 Proteins
- 2.3 Fats
- 2.4 Vitamins
- 2.5 Minerals

Unit-3 **Food Groups**
- 3.1 Classification of food according to five basic food groups
- 3.2 Contribution of food groups to diet.
- 3.3 Concept of Balanced diet.

Unit-4 **Cooking of food**
- 4.1 Objectives of Cooking food
- 4.2 Prepreparation for cooking

4.3 Methods of cooking, advantages and disadvantages * Moist heat * Dry heat * Frying * Microwave, * Solar Cooking * Combination method

Unit-5 **Carbohydrate**

5.1 Classification – Monasaccharide, disaccharide and polysaccharide

5.2 Sugar

* Types – Granulated, Powdered, Khandasari, Icing sugar, Brown sugar
* Effect of heat on sugar – Caramalization, Crystallization, Inversion.
* Use of sugar in cookery.

5.3 Cereal and Cereal products.

* Composition
* Cereal products
* Principles involved in cooking – Dextrinization, Gelatinization, Gel formation, Identity of grains, Gluten formation, Fermentation.

Unit-6 **Protein**

6.1 Physical and Chemical properties.

6.2 Milk and Milk products -

* Composition
* Effect of heat, acid and enzyme on milk.
* Processing of milk – Pasteurization, Homogenization, Sterilization, Condensation, Skimming, Drying.
* Milk products – Curd, Chakka, Cheese, Paneer, Khova, Cream, Butter, Milk powder.

6.3 Legumes and Pulses

* Importance in diet.
* Processing of legumes and pulses – Decortication, Soaking, Germination, Fermentation.
* Use of legumes and pulses in cookery.

6.4 Nuts and Oilseeds

* Importance in diet.
* Uses of nuts and oilseeds in cookery.

6.5 Eggs

* Structure and compostion
* Effect of cooking on egg.
* Foam formation.
* Functions of egg in cookery.

6.6 Fish, Meat and Poultry

* Structure
* Importance in diet.
* Effect of Cooking.

Unit-7 **Vegetables**

7.1 Classification and composition

7.2 Importance in diet.

7.3 Colour pigments.

7.4 Flavouring compounds.

7.5 Changes during cooking.

Unit-8 **Fruits**

8.1 Classification and composition

8.2 Importance in diet.

8.3 Colour pigments and flavouring compounds

8.4 Changes during ripening and cooking

Unit-9 **Fats and oils**

9.1 Saturated and unsaturated fats

9.2 Types of fats and Oils – Butter, Margarine, Hydrogenated fats, Oils, Ghee

9.3 Uses of fats and oil in cookery.

Unit-10 **Spices and condiments**

* Use in cookery.

Unit-11 **Food adulteration**

11.1 Definition of food adulterant and food adulteration.

11.2 Common food adulterants and its identification.

11.3 Effect on health

Std. XI - Practicals and Project

1. Introduction to laboratory rules, use of equipments and terms used in cookery.
2. Weights and measures of raw foods in standard and household measures.
3. Cereal Cookery

   Preparation of any one recipe from each principle

   1. Gelatinization and Dextrinization
      - Vermicelli kheer / Sheera
   2. Identity of Grain
      - Pulao/Masale Bhat
   3. Gluten formation
      - Puri (Masala)/ Thepla
   4. Fermentation
      - Bhatura/Jelebi
   5. Processed Cereal
      - Mix-Max Bhel / Green Pohe / Chivada
4. Sugar Cookery
   1. Demonstration of syrup making.
   2. Caramelization
      - Til papadi / Caramel Pudding
   3. Crystallization
      - Sugar coated ground nuts / Champakali
   4. Inversion
      - Rose syrup/ Sudharus
   5. Sugar in syrup form
      - Gulab jamun / Rasgulla
5. Milk and Milk Products
   1. Coagulation of protein by heat
      - Basundi/Rabadi/Kulfi
   2. Coagulation of protein by acid :
      - Palak Paneer/Mutter Paneer/ Paneer Paratha
6. Legumes and Pulses
   1. Soaking / Germination
      - Usal/Dahi wada / Mix Dal wada
   1. Fermentation
      - Idli/Dhokla and Chutney
   2. Gelatinization, Gel formation
      - Kadhi, Surali wadi/ Vegetable Omelette
7. Nuts and oil seeds
   1. Thickening agent
      - Khuskhus Kheer / Ground nut- Amti
8. Eggs
   1. Leavening agent and foaming
      - Cake/Doughnut
   1. Binding agent (Coagulation of egg protein and Gel formation.)
      - Scrambled egg / Bread pudding / Puffy Vegetable Omelette.
   2. Thickening agent
      - Soft custard with fruits.
   3. Emulsifying agent
      - Russian salad/Salad with creamy French dressing.
9. Vegetables and fruits
   1. Any vegetable in combination with dal / besan / legume/cereal
      - Coriander wadi / Alu wadi / Dal kanda
   2. Vegetable and Fruit preparations using different colour pigments
      - Soup : Palak/Tomato/Mixed vegetable

- Salad : Indian/Western.

3. Snacks using vegetables
   Mixed Vegetable cutlet / Vegetable Thalipith.
10. Sandwiches
11. Demonstration on identification of adulterants from foods- Tea, Turmeric, Chilly powder, Rava, Butter, Ghee, Oil and any other.
12. Maintenance of a Journal.
13. Selection of a project based on syllabus and preparation of a project file

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Child Development (43)

(For Std. XII only)

Introduction

Child development is a broad behavioural science which deals with the needs, rights, growth pattern, developmental aspects of an individual. The theoretical and practical knowledge of the subject develops proper understanding and attitudes of the students towards children and the ability to recognize the uniqueness of each child's traits. This will enable the students to adopt effective methods and techniques for observing and evaluating the child in scientific manner enhancing their skills and confidence.

After learning this subject the students can work independently with young children and assist in various child-centres. Besides this, the knowledge of the subject is quite useful to the would be mothers to upbring their children in a scientific way, which in turn will definitely help in promoting children's wholesome development at its maximum potential and also in building a strong nation.

Objectives

To enable the students to

1. get acquainted with the developmental phases from conception to six years
2. develop awareness about importance of early years in human life
3. know the nature of developmental pattern and factors affecting development
4. understand the various aspects of child development
5. understand the needs and importance of early child care and education

Theory :

Unit-1 Introduction to Child Development

- 1.1 Meaning and Scope of child development
- 1.2 Needs of children and various ways to meet them
- 1.3 Characteristics of children during infancy, toddler hood and early childhood
- 1.4 Rights of children
- 1.5 Importance of early years in individual's life

Unit-2 Growth and Development

- 2.1 Meaning of growth and development
- 2.2 Factors influencing growth and development- Heredity, Environment, Maturation and learning, Nutrition , Endocrine glands, Illness, Physical defects, Rest, Sleep, Exercise and Family culture.
- 2.3 Principles of development
- 2.4 Developmental milestones of children

Unit-3 Pre-natal Development

- 3.1 Male and Female reproductive system
- 3.2 Conception
- 3.3 Stages of prenatal development
- 3.4 Signs of pregnancy
- 3.5 Danger signals during pregnancy
- 3.6 Care during pregnancy and delivery

3.7 Factors influencing prenatal development

Unit-4 Neonatal Period

4.1 Physical appearance of the new born baby

4.2 Neonatal adjustment to postnatal life

4.3 Reflexes of newborn

4.4 Care of new born

Unit-5 Physical Development during infancy and early childhood

5.1 Meaning and importance of physical development

5.2 Aspects of physical development – Height and weight, Body proportions, Muscles, Bone and teeth

5.3 Physical development during infancy

5.4 Physical development during early childhood

5.5 Factors influencing physical development

Unit-6 Motor Development during infancy and early childhood

6.1 Meaning and importance of motor development

6.2 Sequence of motor development

6.3 Development of gross and finer motor skills

6.4 Handedness

6.5 Motor development during infancy

6.6 Motor development during early childhood

6.7 Factors influencing motor development and skills

Unit-7 Cognitive Development during infancy and early childhood

7.1 Meaning and importance of cognitive development –

7.2 Mental Process-Perception, Thinking, Reasoning, Memory, Imagination, Curiosity, Creativity, Attention span, Concept formation

7.3 Cognitive development during infancy

7.4 Cognitive development during early childhood

7.5 Factors influencing cognitive development

Unit-8 Speech and Language Development during infancy and early childhood

8.1 Functions of Language

8.2 Communication – Crying, Cooing and Babling, Gesturing, Learning to speak, Pronouncing words, Sentence Formation

8.3 Steps in Speech and language development – Comprehension, Vocabulary building, Sentence formation, Pronunciation

8.4 Speech defects

8.5 Speech and Language Development during infancy

8.6 Speech and Language Development during early childhood

8.7 Factors influencing speech and language Development

Unit-9 Emotional Development during infancy and early childhood

9.1 Meaning and importance of emotional development

9.2 Characteristics of children's emotions

9.3 Common emotional pattern –

Positive and negative emotions - Excitement, Love and Affection, Curiosity, Joy, Fear, Anger, Temper Tantrums, Jealousy – Causes, expression and effective ways of dealing with them

9.4 Emotional development during infancy

9.5 Emotional development during early childhood

Unit-10 Social and Moral Development during infancy and early childhood

10.1 Meaning and importance of social development

10.2 Role of family, school and community in socialization

10.3 Forms of social behaivour – Negativism, Aggression, Co-operation, Rivalry, Quarrelling, Shyness, Timidity

10.4 Meaning and importance of moral development

10.5 Types of disciplinary methods and its effects on children

10.6 Meaning and importance of moral development.

10.7 Elements of discipline and types of disciplinary methods adopted by parents.

Unit-11 Early Childhood Care and Education

11.1 Need and importance

11.2 Types of Early Childhood Care and Education Centres and various activities to be conducted in centres - Play Centre, Crèche, Anganwadi, Nursery School, Kindergarten, Balwadi, Montessori School etc.

Activities – Outdoor and Indoor play, stories, songs, readiness activities, literature activities, arts and craft activities, field trips etc.

11.3 Integration of children with special needs in early childhood education

Std. XII
Related Activities and Project

A. Related Activities

a. Collection of literature related to children Songs/ stories/ riddles/ pictures for children

b. Any two Art and craft activities for children –

- Painting -Finger painting, Thread/ String and Block painting, Spray and Stencil painting
- Printing -Block, Vegetable, Thumb/ Hand/Foot print
- Paper activities -Tearing, Twisting, Crumbling, Folding
- Collage work - Paper, Cloth or any other Clay moulding

c. Preparation of Soft toys/ Puppets, Educational material/ Play material

d. Visit to Play Centre/Creche/Anganwadi/ Nursery School and Report Writing

B. Project

Any one project based on syllabus (Maintenance of record of above activities and project)

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Textiles (44)

(For Std. XII only)

Introduction

Food, shelter and clothing are three basic needs of mankind. The use of textiles has become more and more comprehensive as the field developed. Today it is not limited only to protect the human body but is also used to indicate the social status and for variety of other purposes. It is being used for clothing, home furnishing, household textiles and also for many other industrial and medical purposes.

Syllabus is framed for students who desire a fundamental understanding of textiles – their nature, selection, use and care. The syllabus is organised in logical manner. It deals with textile related terms, fibers, yarns, fabrics, finishes and care. The syllabus is designed in such a way that it gives student relevant information needed to become a better consumer of textile products and to teach others how they may select and purchase wisely.

As the scope of textiles is ever expanding so do the field of laundry. Realising the need separate topics included in the syllabus will help student to take care of textiles in satisfactory manner. The practical knowledge will develop entrepreneurship skills among the students.

Objectives

To enable the student to

1. get acquainted with the properties and uses of various textile fibers.
2. understand different types of yarns, weaves and finishes.
3. develop skills in making wise purchase of textiles.
4. acquire knowledge of methods of laundry and stain removal.
5. create awareness regarding selection of textiles.
6. understand the principles of clothing construction and its application.
7. acquire basic skills of clothing construction.

Std. XII

Unit-1
1. Introduction to textiles
   - 1.1 Meaning and scope
   - 1.2 Classification of textile fibers
   - 1.3 Properties of textile fibers

Unit-2
2. Natural fibers : Introduction, Properties, Uses
   - 2.1 Cotton
   - 2.2 Wool
   - 2.3 Silk
   - 2.4 Asbestos

Unit-3
3. Man made fibers : Introduction, Properties, Uses
   - 3.1 Viscose Rayon
   - 3.2 Polyester

Unit-4
4. Yarn
   - 4.1 Introduction
   - 4.2 Yarn formation
   - 4.3 Yarn twist
   - 4.4 Classification· Simple yarns-Single, Ply, Cable, Crepe Novelty yarns – Slub, Knot, Flock, Boucle, Nub, Chenille

Unit-5
5. Fabric construction
   - 5.1 Introduction
   - 5.2 Weaves
   - • Classification Basic weaves

– Plain, Twill, Satin· Novelty weaves – Pile, Leno-Gauze, Honey Comb

5.3 Non-woven fabric construction

Unit-6 6. Finishes

6.1 Introduction

6.2 Objectives

6.3 Basic finishes -Singeing, Scouring, Bleaching, Brushing, Sizing, Weighting, Degumming, Mercerizing, Delustering, Sanforizing and calendering

6.4 Special finishes

Unit-7 7. Consumer Awareness

7.1 Problems of consumers and remedies

7.2 Labels

7.3 Purchase, storage and care of textiles

Unit-8 8. Laundry

8.1 Introduction : Aims and objectives Scope of Laundry

8.2 Cleansing Agent : Introduction, Types, Uses, Water, Soaps, Detergents

Unit-9 9. Methods of laundering

9.1 Introduction

9.2 Various methods of laundering

9.3 Washing of different types of clothes – Cotton, Silk, Wool, Synthetic

Unit-10 10. Stain Removal

10.1 Introduction

10.2 Classification

10.3 Techniques and methods

10.4 General guidelines for stain removal

Unit-11 11. Introduction to Household Textiles

11.1 Curtains and Draperies

11.2 Bed sheets and Pillow covers

11.3 Towels and Napkins

11.4 Carpets and Rugs

Std. XII

Practicals and project

1. Sewing tools and accessories
2. Sewing machine – Parts, functions and care of sewing machine
3. Basic terms used in clothing construction
4. Body measurements
5. Demonstration of various seams, necklines, plackets, fastners
6. Stitching of Apron by incorporating following -
   i) Bias binding for bib
   ii) Patch pocket
   iii) Belt
7. Stitching of A line frock by incorporating following -
   i) Bias binding for armhole and neckline
   ii) Plain placket
   iii) Fasteners
8. Identification of Textile fibres by performing burning test –Cotton, Wool, Silk, and Polyester fibre
9. Identification of basic weaves - Plain, Twill, Satin
10. Identification of novelty weaves - Honey comb, Pile, Leno-gauze
11. Collection of textile labels – Informative, Brand, Certification
12. Maintenance of journal
13. Any one project based on syllabus

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Sociology (45)

Introduction

Sociology is a Social Science. There is a difference between Science and Social Science. We live in a society with full of social and natural calamities. It is not in the hands of common man to control the situation. The study of social problems should be without personal bias. The proper applications of scientific principles are necessary. So Sociology is a Science which tackles problems by using Scientific methods. Science asks us to find out the actual sequence of the incidents and their interrelation. Sociology studies the incidents in a systematic way.

In a society we interact with human beings. So it is the duty of Sociology to understand human interactions. Society is united on the basis of Social relationships. Individuals learn the culture and aspects of social life by social processes. This process of socialization changes the raw human being into a social being. A teacher should build a noble person for future society through sociology. He teaches students to behave to be responsible persons with humanity. Education provides various experiences to the students. These experiences set the students to understand society and to adopt social conditions in a desirable manner.

Applied sociology includes various practical uses of Sociology in planning, adjustment with the changing time, preparing welfare programme, removal of illiteracy, corruption, communalization, exploitation etc. The students are expected to study environmental issues, modernization, population education, Sanskritization, globalization with other social factors.

The course prepared for standard XI and XII would certainly serve as a foundation course in Humanities.

Std. XI
(SOCIOLOGY)

Objectives

1. To make students aware about concepts and definitions of society and Sociology.
2. To introduce the students about emergence of Sociology its nature, scope and founding fathers.
3. To introduce basic concepts of Sociology, along with their characteristics.
4. To make students aware of Social stratification and its types.
5. To explain different dimensions of Social system in India .
6. To introduce base of Social Research with types.
7. To introduce Culture with its characteristics features.
8. To make students aware about concepts like socialization and re-socialization.
9. To introduce various social processes.
10. To introduce directions, components and types of social change.

Syllabus

Unit-1: Nature of Sociology

1.1 Introduction to Sociology- Definitions, Emergence and Nature.

1.2 Scope and uses of sociology

1.3 Contribution of Sociologists:

a) Auguste Comte

b) Emile Durkheim.

c) Dr. G. S. Ghurye.

d) Dr. M. N. Srinivas.

Unit-2: Social Research Method

2.1 Social Research – Definition and Meaning

2.2 Scientific Method – Definition and Stages

2.3 Sources of Data Collection:

a) Meaning of Primary Data and its Sources:

(i) Observation

(ii) Interview

(iii) Questionnaire

(iv) Schedule

(v) Survey

b) Meaning of Secondary Data and its Sources:

(i) Personal documents

(ii) Public documents

Unit-3: Basic Concepts

3.1 Concept : Definition, meaning and functions.

3.2 Society : Definition, meaning and characteristics.

3.3 Social Group : Definition, meaning and characteristics, classification of social group into Primary and Secondary.

3.4 Community : Definition, meaning and characteristics.

3.5 Association : Definition, meaning and characteristics.

3.6 Status and Role :

A) Status - Definition and types - Ascribed and Achieved.

B) Role : Definition of Role, Role set, Role strain and Role conflict.

3.7 Social Stratification : Definition, meaning, and forms of stratification (open and closed)

Unit-4: Social System

4.1 Social System – Definition, Meaning and Characteristics.

4.2 Marriage – Definition, Meaning, Characteristics, Forms and Functions.

4.3 Family – Definition, Meaning, characteristics. Forms and Functions.

4.4 Religion – Definition, Meaning, Nature, Functions and Dysfunctions

Unit-5: Culture and Socialization

5.1 Culture – Definition, Meaning, Characteristics and components of Culture (Knowledge, Beliefs, Norms and Values, Signs).

5.2 Socialization – Definition, Meaning, Process of Socialization, Agencies of Socialization and Importance of Socialization.

Unit-6: Social Processes

6.1 Social Process – Definition, Meaning and Characteristics.

6.2 Types of Social Processes:

a) Cooperation – Definition, meaning, Characteristics and Types.

b) Competition – Definition, meaning, Characteristics and Types.

c) Conflict – Definition, meaning, Characteristics and Types.

d) Accommodation – Definition, Meaning and characteristics

e) Assimilation – Definition, meaning and characteristics.

Unit-7: Social Change

7.1 Social change – Definition, Meaning

and Characteristics.

7.2 Factors of Social Change:
1) Geographical 2) Biological
3) Technological 4) Cultural.

7.3 Forms of Social Change:
(1) Evolution (2) Progress (3) Reform (4) Revolution.

7.4 Direction of Social Change: (1) Linear (2) Cyclical

Unit-8: Project Work (20 Marks)
Project work has been newly included in the Standard XI Sociology Syllabus as per the new guidelines.

Std. XI

Objectives

1. To introduce different stages of formation of Indian Society.
2. To introduce Tribal Community, Rural Community Urban Community, The three Segmants of Indian Society with their Characteristics, problems and remedies.
3. To study about family, marriage and caste the social institutions of India with their continuity and change.
4. To make students aware of social problems in India, like population, women's problems, problems of youth, with their causes and remedies.
5. To make students aware of the nature, needs, hurdles and remedies of Indian National Integration.
6. To explain the students about changing dimensions of India like industrialization, modernization, democratization, etc.
7. To introduce Contribution of Social Reformers in India.
8. To inform about mass media and processes like Globalization as new areas of social change.

Std.-XII
(SOCIOLOGY)

Unit 1 Introduction to Indian Society

A. Formation of Indian Society

1.1 Ancient Period
1.2 Medieval Period
1.3 British Period
1.4 Post Independence Period

B. Segments of Indian Society

1.5 Tribal community – Definition, characteristics, problems and remedies
1.6 Rural Community – Definition, characteristics, problems and remedies
1.7 Urban community – Definition, characteristics, problems and remedies

Unit 2 Social Institutions in India : (Changing nature)

2.1 Marriage
2.2 Family
2.3 Caste

Unit 3 Major Social Problems in India

3.1 Social Problem – meaning and nature.
3.2 Population problem – causes, consequences of over population, and remedial measures.
3.3 Problems of Women – gender inequality, working women's problem, dowry, domestic violence (causes and remedies)
3.4 Farmer's suicide – causes and remedial measures

Unit 4 National Integration

4.1 Meaning and need of National Integration.

4.2 Unity in Diversity.
4.3 Obstacles to National Integration.
4.4 Measures to promote National Integration.

Unit 5 Social Change in India

5.1 Industrialization: Meaning, Characteristics and impact on Indian Society
5.2 Urbanization: Meaning, Characteristics and impact on Indian Society
5.3 Westernization: Meaning, Characteristics and impact on Indian Society
5.4 Modernization: Meaning, Characteristics and impact on Indian Society
5.5 Democratization: Meaning, Characteristics and impact on Indian Society

Unit 6 Social reformers in India

(Contribution of Social Reformers :-Social and Educational work and its Impact on Indian Society)

6.1 Raja RamMohan Roy
6.2 Swami Dayanand Saraswati
6.3 Mahatma Jyotiba Phule
6.4 Rajarshi Shahu Maharaj
6.5 Dr.Bhimrao Ramji Ambedkar

Unit 7 Globalization and Mass Media

7.1 Globalization – Meaning, Characteristics and impact on Indian society.
7.2 Mass Media Meaning and components (Newspapers, Radio, TV, Movies, Computer and Internet)
7.3 Impact of mass media on Indian Society.

Unit-8:- Project Work (20 Marks)

Project work has been newly included in the Standard XII Sociology Syllabus as per the new guidelines.

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Philosophy (46)

Introduction

The world has entered into the 21st century which is perceived as a century of Science and Technology. The Scientific and Technological advancement has brought the world into one's house. Our nation cannot remain aloof from this world reality with which it is bound to be affected.

On the other hand, religious fundamentalism and terrorism are also bequeathed by the last century, both phenomena have posed challenges to value system.

It is the first and foremost responsibility and duty of philosophy as a discipline to make the students aware of this challenge and prepare them to confront it. Hence, the thrust of any new curriculum has to acquire social and moral Philosophy which will serve to prepare a critique of both tradition and modernity and preserve healthy elements in both and introduce new ideas if and when required.

It is in this situation and under these compulsions that Moral and Social Philosophy needs to be introduced at +2 level where students are quite receptive and prone to internalize what they are taught.

As problems of Moral and Social Philosophy are Philosophical problems and require philosophical method for their discussion, knowledge of Philosophy and Philosophical problems also turn out to be necessary.

Objective

To enable students to

1. Understand the nature of Philosophy and philosophical problems along with the basic branches of philosophy.
2. Understand the real nature and limitation of both tradition and modernity.
3. Develop the capacity of application of the principles to actual practice.
4. Acquire knowledge of fundamental concepts, principles and theories of philosophy.
5. Understand relation between individual and society.
6. Develop an ability to recognize the extent to which value judgements are involved in the selection of information.
7. Develop an ability to assess the relevance of information to the particular problem.
8. Develop interest in the study of philosophy.
9. Develop proper attitude towards philosophical enquiry.

Std.XI
MORAL PHILOSOPHY

Unit	Sub –Unit	
1.	**1.**	**Nature of Philosophy and nature of Moral Philosophy**
	1.1	Introduction : Definition of Philosophy : Branches of Philosophy – Metaphysics, Epistemology, Ethics, Logic, Aesthetics
	1.2	Definition of Moral Philosophy, its nature and scope, conduct and character, normative and descriptive sciences.
	1.3	Some Moral Concepts – Right, Good, Duty, Virtue

2. 2. Concept of Value
- 2.1 Meaning of Value
- 2.2 Theory of Purushartha

3. 3. Evaluation of Action
- 3.1 Teleological theories – Hedonism (Charvaka), Utilitarinism (Mill)
- 3.2 Deontological theories – Categorical imperative (Kant), Nishkama Karmayoga (Bhagavad Geeta)

4. 4. Theories of Punishment
- 4.1 Concept of Punishment
- 4.2 Natural and Moral evil
- 4.3 Presuppositions and purposes of Punishment
- 4.4 Theories of Punishment – Deterrent, Retributive, Reformative

5. 5. Environmental Ethics
- 5.1 Relation of Man with Nature – Indian and Western Model
- 5.2 Rights of Animals

6. 6. Applied Ethics
- 6.1 Nature and scope of applied ethics.
- 6.2 Teaching Profession – Teacher - Student relationship
- 6.3 Medical profession – Doctor - Patient relationship

7. 7. Project Work (20 marks)

Project Work has been newly introduced in standard XI Philosophy syllabus as per the new guidelines.

Std. XII : Introduction to Philosophy

Unit Sub –Unit

1. 1. Nature of Philosophy
- 1.1 Definitions of Philosophy
- 1.2 Value of Philosophy
- 1.3 Relation of Philosophy to Natural Science and Religion

2. 2. Nature of Knowledge
- 2.1 Concept of knowledge
- 2.2 Origin of knowledge
- 2.3 Types of knowledge
- 2.4 Sources of knowledge
- 2.4.1 Western – Rationalism, Empiricism :- Perception, Intuition, Inference, Testimony
- 2.4.2 Indian – Nyaya darshan – Pratyaksha, Anumana

3. 3. Theories of Truth
- 3.1 Sentence and Proposition
- 3.2 The Correspondence theory of Truth
- 3.3 The Coherence theory of Truth
- 3.4 The Pragmatic theory of Truth

4. 4. Nature of Reality
- 4.1 Vaisheshika darshan – Sapta Padartha, Atomism
- 4.2 Democritus' – Atomism

5. 5. Concept of self
- 5.1 Definition of self
- 5.2 Empirical self
- 5.2.1 Charvaka darshan, Jaina darshan Bauddha darshan
- 5.3 Transcendental self Advaita Vedanta darshan

6. 6. The Concept of God
- 6.1 Nature of God - characteristics of God.
- 6.2 Relation between God and the world – Deism, Theism, Pantheism
- 6.3 Arguments for the existence of God
- 6.3.1 Cosmological
- 6.3.2 Teleological
- 6.3.3 Moral
- 6.4 Problem of Evil.

7. 7. Project Work (20 marks)

Project Work has been newly introduced in standard XI Philosophy syllabus as per the new guidelines.

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Logic (47)

Introduction

One of the important defining characteristics of 'man' is his rationality i.e. his capacity to think consistently and to draw conclusions from the information he receives.

Although this power is natural to every human being, scholars have identified the rules of reasoning which he makes use of, without being conscious of them. This is the Science of Logic. Traditionally, Logic was known and esteemed as the Queen of all Sciences as it is training of Logic, that sharpens reasoning capacity and makes one to understand arguments and detect fallacies in them if any. Logic thus happens to be the fundamental discipline useful for all branches of knowledge. With introduction of Logic at +2 Level, students will be able to understand, argue and convince with considerable amount of maturity. It will also contribute in enriching their power of critical thinking which is necessary in present situation and to save us from various irrational forces operative in society. Positively, it may also help in overcoming various crises confronted by us.

Objective

To enable the students to

1. Acquire knowledge of fundamental terms, definitions, concepts, principles and theories of Logic.
2. Understand logic as the study of inference.
3. Understand the purpose of logic and enquiry in general.
4. Differentiate between various forms of statements and arguments.
5. Apply formal techniques to arguments.
6. Develop the ability of logical thinking.
7. Appreciate logical thinking.
8. Develop interest in logic.
9. Detect fallacies involved in arguments.
10. Make use of tools and techniques in logic for solving practical problems in their life.

Std. XI

Unit	Sub -Unit	
1.	**1.**	**Nature of Logic**
	1.1	Kinds of Inference • Deductive • Inductive
	1.2	Difference between two types of inferences
	1.3	Truth & Validity
2.	**2.**	**Nature of propositions**
	2.1	Nature of propositions - modern view
	2.2	Distinction between proposition and sentence
	2.3	Distinction between simple and compound propositions
	2.4	Distinction between truth –functional and non-truth-functional compound propositions, types of truth functional compound propositions
	2.5	Symbolisation of propositions • Propositional constants • Propositional variables • Propositional connectives
	2.6	Basic truth-tables for Propositional connectives
3.	**3.**	**Decision Procedure**
	3.1	Nature of decision procedure
	3.2	Truth-table – for statement forms

3.3 Tautology, Contradiction, Contingent
3.4 Testing validity of arguments using truth-table method

4. 4. The Method of Deduction
4.1 Deductive Proof
4.2 Direct proof
4.3 Rules of Inference and Rule Of Replacement
4.4 Conditional proof
- Arguments
- Tautology

5. 5. Introduction to Traditional logic
5.1 Categorical Propositions
5.2 A, E, I, O propositions
5.3 Square of opposition of propositions
5.4 Representation of A, E, I, O using Venn diagrams

6. 6. Types of Inductive inference
6.1 Types of Inductive inference
- Ordinary inference
- Simple enumeration
- Analogy
- Hypothetico – deductive method

7. 7. Non-formal fallacies
7.1 Distinction between formal & non-formal fallacies
7.2 Various forms of non-formal fallacies
- Division and composition
- Accident and converse fallacy of accident

Ignoratio Elenchi :
- Argumentum ad baculum
- Argumentum ad hominem
- Argumentum ad populum
- Argumentum ad verecundiam
- Argumentum ad misericordiam
- Argumentum ad ignoratiam

8. 8. Difinition
8.1 Nature and purposes of definition
8.2 Kinds of definition
- Ostensive
- Extensive
- Biverbal
- Definition per genus et differentiam
- Stipulative definition
- Lexical definition

9. 9. Project work (20 marks)
Project Work has been newly introduced in the Std. XI Logic syllabus as per the new guidelines.

Std. XII

Section I :

Unit **Sub –Unit**

1. 1. Traditional Logic
Importance and relevance of logic to life.
1.1 Classification of propositions
1.1.1 Distribution of Terms
1.2 Types of inferences – Mediate and immediate
1.3 Opposition of Propositions,
1.3.1 Deciding relation of propositions on the basis of opposition of proposition
1.3.2 Deciding inter value of propositions on the basis of opposition of propositions.
1.4 Conversion, Obversion, Education

2. 2. Decision procedure
2.1 Principle of reduction ad absurdum.
2.2 Shorter Truth – table method

3. 3. Deductive proof
3.1 Indirect proof of tautology & arguments

4. 4. Predicate Logic

4.1 Need for Predicate Logic

4.2 Types of proposition

- Singular
- General (Existential universal)

4.3 Propositions, Function and deriving Propositions from propositional function and vice versa.

- Instantiation and
- Quantification / Generalization

4.4 Symbolization of propositions

4.5 Nature of quantificational deduction

4.6 Rules of quantificational deduction – U.I, U.G, E.I & E.G.(preliminary version)

4.7 Deductive proof of arguments involving quantifiers (Direct proof)

5. 5. Grounds of Induction

5.1 Material grounds of Induction

5.1.1 Observation

5.2.2 Experiment

5.2 Formal grounds of Induction

5.2.1 Notion of cause

5.2.2 Popular Notion of cause

5.2.3 Scientific Notion of cause

6. 6. Hypothesis

6.1 Definition and nature of hypothesis

6.2 Origin of hypothesis

6.3 Conditions of good hypothesis

6.4 Types of hypothesis

- Working hypothesis
- Ad Hoc hypothesis

6.5 Verification and confirmation of hypothesis

6.6 Established hypothesis as a law or theory of science.

7. 7. Project work (20 marks)

Project work has been newly introduced in the standard XII Logic Syllabus as per the new guidelines.

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Psychology (48)

Introduction

Psychology is introduced as an elective subject at the Higher Secondary stage of school education. As a discipline, psychology specialises in the study of experience, behaviours and mental processes of human beings within a socio-cultural and socio-historical context. This course purports to introduce the learners to the basic ideas, principles and methods in psychology so as to enable them to understand themselves and their social world better. The emphasis is put on creating interest and exposure needed by learners to develop their own knowledge base and understanding.

The course deals with psychological knowledge and practices which are contextually rooted. It emphasises the complexity of behavioural processes and discourages simplistic cause-effect thinking. This is pursued by encouraging critical reasoning, allowing students to appreciate the role of cultural factors in behaviour and illustrating how biology and experience shape behaviour. The course while developing an appreciation of subjectivity, also focuses on multiplicity of worldviews.

It is suggested that the teaching-learning processes should involve students in evolving their own understanding. Therefore, teaching of psychology should be based on the use of case studies, narratives, experiential exercises, analysis of common everyday experiences, etc.

Objectives

1. To develop appreciation about human behaviour and human mind in the context of learners' immediate society and environment.
2. To develop in learners an appreciation of multidisciplinary nature of psychological knowledge and its applications in various aspects of life.
3. To enable learners to become perceptive, socially aware and self-reflective.
4. To facilitate students' quest for personal growth and effectiveness and to enable them to become responsive and responsible citizens.

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Unit **Sub -Unit**

1 1.0 Introduction to Psychology

1.1 Definitions - Wundt, Watson, Morgan & King, Feldman

1.2 Branches of Psychology : Cognitive Psychology, Biological Psychology, Developmental Psychology, Social Psychology, Environmental Psychology, Health Psychology, Clincal and Counselling Psychology, Organisational Psychology, Educational Psychology

1.3 Recent Perspectives of Psychology: Behaviouristic perspective, Psychoanalytic perspective, Cognitive perspective, Biological perspective, Humanistic perspective

1.4 Psychology in Everyday Life

1.5 Psychologists at work : Clinical Psychologists, Counselling Psychologists, Community

Psychologists, School Psychologists, Organisational psychologists.

2 2.0 Methods of Psychological Enquiry

2.1 Objectives of Psychological enquiry: Description, Prediction, explanation, control and Application

2.2 Important Methods of data collection: Observational method, experimental method, correlational method, Survey method, Psychological testing, case study and project method.

3 3.0 Foundations of Human Behaviour

3.1 Heredity : Genes and Chromosomes

3.2 Central Nervous System : Brain and Spinal chord

3.3 Endocrine System : Pituitary gland, thyroid gland, adrenal gland, gonads.

3.4 Socio – cultural Factors : Family, Community, faith, gender, caste and disability

3.5 Socialization : Acculturation and Enculturation

4 4.0 Human Development

4.1 Meaning of Development : Life-span perspective on development, Growth, Development, Maturation and Evolution

4.2 Principles of Development

4.3 Factors Influencing Development : Heredity and environment

4.4 Stages of Development : Prenatal stage, infancy, childhood, adolescence, adulthood and oldage

4.5 Context of Development : Microsystem, mesosystem, exosystem, macrosystem Chronosystem

5 5.0 Attention and Perception

5.1 Distinction between attention and perception

5.2 Attentional Processes : Selective attention, divided attention, span of attention, attention deficit hyperactivity disorder

5.3 Principles of perceptual organization : Principle of proximity, principle of similarity, principle of continuity, principle of smallness, principle of symmetry, principle of surrounded-ness, principle of closure.

5.4 Illusions : Geometric illusions and apparent movement illusions

5.5 Socio-cultural influences on perception : differential familiarity, salience of stimuli, habits of perceptual inference.

6 6.0 Learning

6.1 Nature of learning : Definition and features of learning

6.2 Classical and Operant Conditioning: Pavlov's experiment on classical conditioning, Skinner's experiment on operant conditioning

6.3 Observational Learning : Imitation, social learning and modelling

6.4 Learning Styles : Relational style and analytical style

6.5 Learning Disabilities : Symptoms of learning disabilities.

7 7.0 Human Memory

7.1 Nature of Memory : Definitiion, stages of memory

7.2 Memory Systems : Sensory, Short-term memory and long-term memory

7.3 Measurement of Memory : Recall, recognitiion, re-learning and reconstruction

7.4 Nature and Causes of Forgetting : Ebbinghaus's curve of forgetting, trace decay, interference, retrieval failure

7.5 Improving Memory : Keyword method, method of loci, chunking, first letter technique, minimising interference

7.6 Eyewitness Memory

8 8.0 Motivation and Emotion

8.1 Nature of motivation : Motivation cycle

8.2 Types of motives : Biological motives and Psychosocial motives

8.3 Maslow's hierarchy of needs

8.4 Nature of Emotion : Definition and Types of Emotions by Plutchik

8.5 Expression of Emotions : Culture and emotional expression, culture and emotional labelling

8.6 Enhancing Positive Emotions : Personality traits, positive meaning, quality connections, being engaged, faith and positive interpretations.

Practicals

Practicals of Psycholigy is classified among three major aspects : Project, Experiments and Small Studies. There will be continuous evaluation of these practicals by the internal examiner who will essentially be the teacher supervising and monitoring the practical work. He will internally evaluate the student for 20 marks and submit it to the examining authority.

The Nature of Practicals

A : Project

The student shall be required to undertake one project which will have impetus on understanding of human behaviour. The project would involve the use of different methods of enquiry and related skills.

B : Experiments :

The student shall undertake Five experiments which are identified as below:

1. Span of attention
2. Muller-tyer Illusion
3. Recall and Recognition
4. Substitution Learning
5. Memory Span for Digits

OR

C : Small Studies

The student shall undertake small studies in the form of case studies related to the topic covered in the course.

Std.XII

Unit **Sub -Unit**

1 Intelligence

Definitions of intelligence

History of intelligence testing

Distribution of intelligence quotient in population

Types of intelligence tests

Aptitude

Emotional intelligence

2 Personality

Definitions of Personality

Factors influencing personality

Major approaches to the study of Personality

Assessment of personality

3 Stress Management

Nature of Stress
Sources of Stress
Types of Stress
Stress management techniques
Promoting Positive health and well-being

4 Psychological Disorders and Therapies

Concept of abnormality
Classification of psychological disorders
Major Psychological disorders
Types of therapies

5 Attitude

Definition of attitude
Attitude formation
Change of attitude
Prejudice

6 Social Influence

Nature of Social influence
Dynamics of Social influence
Influence of group on individual behaviour
Intergroup conflicts

7 Psychology and Life

Human-environment relationship
Environmental effects on human behaviour
Promoting pro-environmental behaviour
Psychology and Social Concerns

8 Developing Psychological Skills

Nature
Effective Psychological Skills
Counselling Skills
Communication Skills

Practicals : (Based on continuous Evaluation)

Practicals of Psychology is classified among three major aspects : Project, Psychological Testing and Case Studies. There will be continuous evaluation of these practicals by the internal examiner who will essentially be the teacher supervising and monitoring the practical work. He will internally evaluate the student for 20 marks and submit it to the examining authority under his hand and signature.

The Nautre of Practicals

A. Project

The student shall be required to undertake one project which would involve the use of different methods of enquiry and related skills.

OR

B. Psychological Testing

The student shall be required to conduct five Psychological tests related to the topic covered in the course. Psychological testing would involve using standardised Psychological assessment devices in different domains i.e. intelligence, aptitude, personality, stress, anxiety, depression, attitude, prejudice etc.

OR

C. Case Studies

The Student shall be required to prepare one case profile. The case profile will include developmental history of the subject using both qualitative (observation, interview, rating etc.) and quantitative approaches.

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Economics (49)

Introduction

The Framework of this curriculum is based on National Economic Policy to explain the students the nature of Indian Economy. Problems of Population explosion, Poverty, Unemployment, Measures to remove these problems. What are the Infra-structure facilities in the country, its development and its importance is included in the curriculum.

To make the students understand the above problems. This subject should be explained at Micro and Macro level. In future this curriculum will help students for higher education.

General Objective

1) To make the students understand the changes in Indian Economy and problems faced by the economy.
2) To make them inquisitive about the infra structural facilities in Indian Economy.
3) To explain to them the Principles of Micro & Macro Economics
4) To make students aware of concepts like Money, Banking, National Income, Public budget etc.
5) To create awareness among the students regarding qualities required for skilled entrepreneur (Leadership qualities)

Specific objectives

1) To help the students to understand the basic concepts of economic growth & economic development.
2) To develop ability of student to understand the challenges before the Indian Economy.
3) To create interest among the students to know the dynamic nature of Indian Economy and arising problems. In order to create economic equality, weaker and socially deprived groups are to be involved in the process of economic development.
4) To create awareness among students about objectives of new economic policy.
5) To prepare the students to understand the process of economic planning in Indian Economy.
6) To understand the basic Infra structural facilities of Indian Economy.
7) To motivate the students to collect, organize and classify graphical presentation of statistical data.
8) To motivate skillful abilities of the students to make graphical presentation of data.
9) To introduce students, Index numbers and construction of Index numbers.
10) To prepare them to make use of the technical knowledge of the curriculum in their day to day life.

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A Section – Indian Economic development

1) Economic development & Economic growth
2) Quality of human life – Introduction – Physical quality of Life Index & Human Development Index.
3) Major challenges before Indian Economy

a) Population

b) Poverty

c) Unemployment

4) Economic Reforms since 1991 & its main features.

a) Liberalisation

b) Privatisation

c) Globalisation

5) Economic Planning

a) Meaning and objectives

b) 10th Five year plan – a study

6) Infra structural development in India.

B Section – Introduction to statistics

7) Introduction to statistics

8) Collection & organization of Data

9) Graphical presentation of data

10) Measures of Central Tendency Mean, Median & Mode

11) Index Numbers.

Std. XII

Section A

Micro Economics

1. Introduction to Micro Economics
2. Consumers behavior
3. a. Analysis of Demand
   b. Elasticity of Demand
4. Analysis of Supply
5. Types of Market & Price determination under Perfect competition
6. Factors of Production

Section B

Macro Economics

7. Introduction to Macro Economics
8. National Income
9. Determinants of Aggregates
10. Money
11. Commercial Bank
12. Central Bank
13. Public Economics

Std Xi - Economics

Topics for Project (20 Marks)

1) Comparative study of some families based on income, expenses on health, education, entertainment etc.

2) An interview of an entrepreneur.

3) Study of the relationship between poverty and size of family.

4) Information about the relationship between number of children in a family and standard of living.

5) Report of visit to Employment Exchange.

6) Information about jobs created through Employment Guarantee Scheme.

7) An interview of self-employed persons.

8) Visit to Agriculture College/Industrial Training Institute/District Industrial Centre.

9) Information about economic & social inequality existing in various families.

10) Study of the effects of globalization on rural and urban families.

11) Information about Placement Agencies.

12) Study of impact of New Economic Policy on agriculture/industry/ service sector.

13) Information about families using solar energy (solar cooker, solar water heater etc.)

14) Visit to places using non-conventional energy sources.

15) An interview of some people using public transport.

16) An interview of some people using private transport.

17) Collect information from newspaper related to different economic events, during fifteen days.

18) Collect the data from 25 families regarding number of family members,

sex, age, education and occupation. From the collected data, classify families according to number of members per family, sex wise distribution, age distribution of all members, education wise distribution, occupational distribution.

19) Collect prices of 7 commodities on the 1st day of the month and on the last day of the month and find price Index numbers using Simple Aggregate Method and Average of price relatives methods.

20) Information about employment opportunities arising due to different modes of transport.

Note : The above list of projects is given only as guideline.

Std. XII

Economic Topics for Project (20 Marks)

1) Visit any cottage industry and collect information about its income and expenses.

2) Visit some families and note down observations regarding how utility of different commodities is subjective and relative.

3) Prepare a chart for Marginal Utility and Total Utility of any commodity consumed by you.

4) Comparative study of individual demand schedules of any one commodity of two families.

5) Visit a grocery shop and collect information about changes in demand and changes in price of wheat for the period of 5 months.

6) Visit retailers of any commodity & collect information about prices & supply.

7) Collect information about prices charged for toothpaste, bathing soap etc. by different firms under monopolistic competition.

8) An interview of an entrepreneur.

9) An interview of skilled and unskilled labour engaged in different sectors.

10) Survey of people using credit cards & debit cards.

11) Visit any Commercial Bank & collect information about its functioning.

12) Collect information of different Banking instruments like cheques, demand drafts, etc.

13) Collect information about E-Banking

14) Collect information about changes in the policies of Reserve Bank of India.

15) Collect information of the current budget from newspaper.

Note : The above list of projects is given only as guideline.

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Book-Keeping and Accountancy (50)

Introduction

A person who invests his hard earned money into business whether big or small expects good returns. To calculate returns businessman has to maintain systematic record of all transactions. One of the primary function of accounting is to provide vital information for decision making to external and internal users. Book Keeping being defined as systematic record of business transactions achieves this purpose. Also partnership Act, Companies Act, Co-operative Societies Act makes it mandatory to keep records systematically for knowing operating results.

Book-keeping and Accountancy is one of the core subjects in Commerce faculty. It is a compulsory subject at graduate and post-graduate level. Book-keeping is no doubt one of the most interesting, practically relevant and important subject for students aspiring professional courses like C.A. C.S and I.C.W.A.I.

The object of introducing this subject at Std. XI is to develop conceptual understanding of principles of accounting system which identifies, analyses, classifies, measures, summaries and records all business transactions in significant manner in separate set of books.

The business transactions are first recorded in primary books and subsequently posted in the ledger. At the end of accounting year it helps in presenting the financial position and result of operation of that business. Hence accounting is regarded as the language of business.

Book Keeping and Accountancy is both a science as well as an art. As a science teacher, commerce teacher must follow basis assumptions and postulates systematically to understand why a particular thing is done in a particular manner. As an Art students, commerce students should be able to apply the skill in maintaining books of account.

The role of accounting has been diverging with the changes in the economic trend as well as the effect of Globalisation, Liberalisation and Privatisation. The Board of studies for Book Keeping and Accountancy has diverted its efforts to make the syllabus more innovative, informative and practical oriented which will enable students to face challenges posed in todays competitive era.

Objectives

To enable the students to

1. Acquire knowledge of basic terms, definitions, concepts and conventions of Book-Keeping and Accountancy.
2. Understand business transactions and their effects on business operations.
3. Study different documents used for business transactions by knowing their contents and formats.
4. Know and practice the basic principles of Book-Keeping and Accountancy.
5. Understand and practice the contents and specimen of various books of account.
6. Develop the skill of calculations and accuracy.
7. Develop the technique of entering the transactions into the books of accounts with the understanding of their ultimate effect on final accounts.
8. Prepare the final accounts of proprietary concern, partnership firm, not for profit

organization and learn to analyze them.

9. Ascertain profit or loss from incomplete records.
10. Learn to use computer in accounting.

Std. XI

Sr.No. Topic

1. A. Introduction of Book-keeping and Accountancy

A.1 Meaning and definition
A.2 Objectives
A.3 Importance and Utility
A.4 Difference between Book-Keeping and Accountancy
A.5 Basis of Accounting - Cash basis and Accrual basis.
A.6 Qualitative characteristics of accounting information
A.7 Financial Accounting, Cost Accounting, Management Accounting

B. Basic Accounting Terminologies

B.1 Business Transactions - Cash Transactions and Credit Transactions
B.2 Goods
B.3 Profit, loss-Operating and Non-operating profits, Normal gains and abnormal gains with examples. Difference between profit and Income
B.4 Assets, Liabilities, Net-worth/ Owners Equity Assets: Fixed/ Current/Tangible/ Intangible/ fictitious
B.5 Contingent Liability
B.6 Capital, Drawings
B.7 Debtors, Creditors
B.8 Capital Expenditure, Revenue and Deferred Revenue Expenditure
B.9 Cash discount and Trade discount
B.10 Solvent and Insolvent
B.11 Accounting Year
B.12 Trading Concerns and 'Not for Profit' Concerns
B.13 Goodwill

C. Accounting Concepts, Conventions and Principles and Indian Accounting standards concepts and objectives

C.1 Meaning and Importance
C.2 Business Entity
C.3 Money measurement
C.4 Cost
C. 5 Consistency
C. 6 Conservatism
C. 7 Going Concern
C. 8 Realization
C. 9 Accrual
C.10 Dual Aspect
C.11 Disclosure
C.12 Materiality
C.13 Revenue
C.14 Matching
C.15 Accounting Standards

2. A. Meaning and fundamentals of Double Entry Book-keeping System

A.1 Study of Double Entry Book-keeping system.
A.2 Advantages of Double Entry Book-keeping system.
A.3 Comparison of Double Entry Book-keeping system with Conventional Accounting system.

B. Classification of Accounts and Accounting equations Rules

B.1 Types of accounts-personal, Impersonal accounts- Real

accounts, Nominal accounts.

B.2 Rules for different accounts for passing entries.

B.3 Illustrations

B.4 Accounting equations Assets, Liabilities, Revenue and capital expenses

B.5 Brief: Explanation about IFRS

3. Source documents required for Accounting

3. 1 Meaning, contents and specimen.

3. 2 Voucher-internal, external voucher

3. 3 Petty cash and cash voucher

3. 4 Cash and Credit memo

3. 5 Receipt

3. 6 Debit and Credit note

3. 7 Pay-in-slip

3. 8 Withdrawal slip

3. 9 Cheque-Bearer, Order, Crossed, Account payee

3.10 Bank pass book, Bank Statement and Bank advice

4 Journal

4.1 Meaning, Importance and utility of Journal.

4.2 Specimen of Journal

4.3 Writing of Journal entries

5. Subsidiary Books

5.1 Meaning, need and specimen of different Subsidiary Books.

5.2 Simple Cash Book with cash column only

5.3 Cash Book with cash and bank columns

5.4 Analytical Petty Cash Book-imprest system.

5.5 Purchase Book

5.6 Sales Book

5.7 Purchase Return Book

5.8 Sales Return Book

5.9 Bank Book

5.10 Journal Proper, Transactions of Discounts to be taken in Journal Proper

6. Ledger

6.1 Meaning, need and contents of ledger be explained

6.2 Specimen of ledger

6.3 Posting of entries from Subsidiary books to ledger

6.4 Balancing of ledger accounts.

7. Bank Reconciliation Statement

7.1 Meaning, need and importance

7.2 Reasons for difference in bank balance as per cash book and balance as per bank pass book

7.3 Specimen of Bank Reconciliation Statement

7.4 Preparation of Bank Reconciliation Statement

8. Trial balance

8.1 Meaning and Purpose

8.2 Specimen of Trial Balance

8.3 Preparation of Trial Balance from given balances of accounts.

9. Errors and their rectification

9.1 Meaning and effects of errors.

9.2 Types of errors - Errors of principles, Errors of Ommission, Errors of commission and Compensating Errors.

9.3 Steps to locate errors

9.4 Errors affecting and not affecting Trial Balance

9.5 Treatment of balance of suspense account

9.6 Rectification entries

10. Depreciation, Provisions and Reserves

10.1 Depreciation : Meaning, Need and Factors affecting depreciation.

10.2 Methods of computation of Depreciation : Straight Line Method, Written Down Value Method (Excluding Change in method)

10.3 Accounting Treatment of Depreciation : By charging to asset account by creating Provision for depreciation / accumulated depreciation account.

10.4 Provisions and Reserves : Meaning, Objectives and Difference between provisions and Reserves.

10.5 Types of Reserves : Revenue Reserve, Capital Reserve, General Reserve, Specific reserves, Secret reserves.

11. Financial statements of Proprietary concern

Financial Statements- Meaning, objective and Importance

11.1 Preparation of Trading Account

11.2 Preparation of Profit and Loss Account

11.3 Preparation of Balance Sheet

11.4 Effects of following adjustments only

a. Closing stock
b. Depreciation
c. Bad and Doubtful debts
d. Provision for discount on Debtors and Creditors
e. Outstanding expenses
f. Prepaid expenses
g. Accrued income
h. Income received in advance
i. Drawings
j. Goods distributed as free sample

12. Computer in Accounting

12.1 Introduction to Computer Accounting System :
Components of CAS, Features, Grouping of Accounts, using software of C.A.S.

12.2 Application of computer accounting Automation of accounting process, designing accounting reports, data exchange with other information system.

Project Work

1. A study of non-operating expenses of proprietory concern with examples and documents.
2. A study of various policies of company as AS-2, AS-6 and AS-10 from annual report.
3. A comparative study of conventional and modern system of accounting.
4. Analytical study of all assets or documents in your family.
5. Collection of all types of documents used in the banks and office.
6. A report on organised exhibition on all source documents in your college.
7. Visit to any proprietory concern and preparation of journal of 8 days with the help of business transactions.
8. A record of different imaginery transactions for 10 days of a new business with capital of ₹ 1,00,000, like Stationery shop / Newspaper stall / Medical store / Vegetable stall.
9. A study of account books maintained by Mahila Bachat Gat in your area and preparation of financial report.'
10. Ledger accounts and trial balance of any business concern with the help of a journal.

11. A report on procedure for opening various types of bank accounts.
12. A visit to factory or workshop or small scale industry and a study of various methods adopted for calculation of depreciation.
13. Final Accounts with the help of journal / subsidiary books of sole trading concern.
14. Journalising of household transactions for a month.
15. Effects on purchasing power of a customer due to discount.
16. Classification of family activities into monetary and non-monetary activities.
17. Preparation of Bank Reconciliation Statement from given extracts of Cash book and Pass book balances. (at least 15 reasons expected).
18. An analytical study of 25 different ledger accounts.
19. A project on the types of accounts related to goods.
20. Any one Accounting Package.

Note :

The above list of projects is given only as guidelines. Students are free to select any topic for project related to the syllabus.

Std. XII

Sr. No. Topic

1. Introduction to Partnership

1.1 Meaning and definitions

1.2 The Indian partnership Act 1932

1.3 Methods of capital accounts

i) Fixed Capital Method

ii) Fluctuating Capital Method

2. Partnership Final Accounts

2.1 Introduction and Necessity of preparation of Final Accounts with following adjustments.

Adjustments

a. Closing stock
b. Outstanding expenses
c. Prepaid expenses
d. Income received in advance
e. Income receivable
f. Bad debts
g. Provision for doubtful debts
h. Reserve for discount on debtors and creditors
i. Depreciation
j. Interest on capital, drawings and loans
k. Interest on investment and loans
l. Goods destroyed by fire/ accident (insured / uninsured)
m. Goods stolen
n. Goods distributed as free samples
o. Goods withdrawn by partners
p. Unrecorded purchases and sales
q. Capital expenditure included in revenue expenses and vice-versa
r. Bills Receivable dishonoured
s. Bills payable dishonoured
t. Deferred expenses
u. Capital receipts included in revenue. Receipts and vice-versa
v. Commission to working partner/ Managers on the basis of Gross profit, Net profit, sales, etc.

3. Reconstitution of Partnership

3.1 Meaning and different ways of reconstitution

3.2 Admission of a partner

3.2.1 Meaning and Need

3.2.2 Capital brought by new partner

3.2.3 New profit sharing ratio

3.2.4 Sacrifice ratio

3.2.5 Goodwill - Meaning, Methods

of valuation and treatment of goodwill.
i) Average profit method
ii) Super profit method

3.2.6 Adjustment of accumulated profits and losses.
3.2.7 Revaluation of assets and liabilities
3.2.8 Adjustment of capitals

3.3 Retirement / Death of a partner
3.3.1 Meaning, need
3.3.2 New ratio
3.3.3 Gain ratio
3.3.4 Treatment of goodwill
3.3.5 Adjustment of accumulated profits and lossess
3.3.6 Revaluation of assets and liabilities
3.3.7 Adjustment of capital
3.3.8 Amount due to retiring parter
3.3.9 Death of partner

4. Dissolution of Partnership Firm

4.1 Simple dissolution
4.2 Dissolution under Insolvancy situation

5. Accounts of "Not for Profit" concerns

5.1 Introduction, meaning and features of "Not for Profit" concerns.
5.2 Receipts and Payments Account-meaning and features. Distinction between Income and Expenditure account.
5.3 Preparation of Income and Expenditure Account and Balance Sheet with the following

a) Additional Information

1. Outstanding expenses and prepaid expenses of the current and previous year
2. Accrued income and income received in advance
3. Subscription received in advance and Subscription outstanding of the current and previous year
4. Depreciation
5. Capitalisation of entrance fees.
6. Creation of special funds out of donations
7. Stock of stationery
8. Opening balances of assets and liabilities

b) Important Items

Entrance fess, Subscriptions, Legacy, life membership fees, Sale of old assets, Scrap, News papers, Specific donation, General Donations, Specific Funds, Endowment fund

6. Single entry system

6.1 Introduction

- Meaning of single entry system.
- Difference between single entry and double entry system.

6.2 Preparation of statements
6.3 Additional information.

- Additional capital
- Drawings
- Depreciation on fixed Asset
- Bad Debts
- Reserve for Doubtful Debts
- Undervaluation and Overvaluation of Assets and Liabilities
- Interest on loan
- Interest on capital
- Interest on Drawings
- Partners salary
- Outstanding / Unpaid expenses
- Prepaid Expenses/ Expenses paid in advance.
- Illustrations

7. Bill of Exchange (Only Trade Bill)

7.1 Introduction, necessity, Meaning, Definition of Bill of Exchange

7.2 Draft/format of Bills, Parties to the Bill of Exchange, Acceptance of Bill, Terms of Bill, Days of Grace, Date of maturity, Due Date, Types of Bill

7.3 Honouring of Bill, Dishonour of Bill, Noting and Protesting of Bill, Notary Public and Noting Charges

7.4 Accounting Treatment of Bill by the Drawer/Holder and Drawee in following cases

a) Retaining the Bill till due date. honour/dishonour, insolvency of the drawee/ acceptor

b) Endorsement of the Bill, Honour/ dishonour and also insolvency of acceptor

c) Discounting the Bill with the Bank honour/dishonour and insolvency.

d) Sending the Bill to the Bank for collection, honour/ dishonour and insolvency

e) Renewal of Bill-Reasons for Renewal of the Bill. Renewal of Bill with or without charging interest

f) Making part payment of basic amount, interest and noting charges and drawing of new Bill

g) Honour/dishonour of New Bill

h) Insolvency of the acceptor and settlement of his account

i) Retirement of Bill

j) Journal Entries and Ledger

8. Company Accounts Part-I

Accounting for shares

8.1 Share and share capital, Meaning, Nature and Types

8.2 Accounting for Share Capital: Issue and Allotment of Equity Shares. Private placement of shares. Public subscription of shares. Over subscription and Under subscription of shares. Issue at Par and premium, and at discount, Calls in advance in arrears, Issue of shares for consideration other than cash

8.3 Accounting treatment of forfeiture and re-issue

8.4 Disclosure of Share capital in Company's Balance Sheet (Horizontal form)

9. Company Accounts Part-II

Accounting for Debentures

9.1 Debentures : Meaning, Issue of debentures at par, at premium and at discount

9.2 Issue of debentures for consideration other than cash. Interest on Debentures

10. Analysis of financial statements

10.1 Financial statement Analysis: meaning, objectives and limitations

10.2 Tools for financial statement Analysis-meaning of comparative statements, common size statements, cash flow analysis, and Ratio analysis

10.3 Accounting Ratios : Meaning objectives and classification of Ratios

10.4 Introductions to current ratio, liquid ratio, Gross profit ratio, operating profit ratio and Net profit ratio. ROI, ROCI

Project Work

1) Visit to Partnership Firm and study the management of the firm and a report on it.
2) A report on procedure of registration of Partnership Firm under Partnership Act 1932.
3) Preparation of Financial statement with the help of Journal / subsidiary books of any partnership firm.
4) Analylical study on various adjustments in Final Accounts of Partnership Firm.
5) A report on procedure of winding up Partnership Firm.
6) Study of the methods of valuation of goodwill and accounting treatment in case of Admission, Retirement or Death of a partner.
7) Visit to any not for profit concern. e.g. Library, Sports club, Mahila Bachat Gat, Public Hospitals, Educational Institutions, Temples, Masjids, Gurudwaras, Ganesh Mandal, etc. and preparation of a report on such visit or visits.
8) Analysis of the school / college transactions into revenue and capital receipts and revenue and capital expenditure.
9) Study of revenue and capital receipts, revenue and capital expenditure of minimum any ten non profit concerns.
10) Comparative study of Profit Organisations and 'Not for Profit' organisations and analysis of adjustments in final accounts of not for profit concern / organization.
11) Preparation of Report on various treatments of Bills of Exchange (Trade bill)
12) A visit to a cloth merchant who is maintaining his books of accounts under single entry system. Preparation of statement of affairs and statement of profit or loss from the data collected.
13) A visit to a Bank & preparation of a report on the procedure of discounting and collecting Hundies (Bills of Exchange)
14) An interview with a sharebroker.
15) A report on the procedure of opening a DEMAT Account.
16) A report on the procedure of purchasing and selling of shares through DEMAT Account.
17) Visit to a company and preparation of informative report on the procedure of issue of shares or Debentures.
18) A comparative study of different ratios to be used in the Annual Report of a company.

Note :

The above list of projects is given only as guidelines. Being creative and innovative, students may select any topic for project related to the syllabus.

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Organization of Commerce and Management (51)

Introduction

Now it becomes necessary to give formal, traditional, recent education in Commerce and Industry along with practical knowledge so as to enable the students to have good understanding of the basic concepts of globalised world and its relationship with the society.

Council of Boards of School Education in India (COBSE) has taken the responsibility of bringing out 'Common contents in commerce' at + 2 stages of secondary level. It is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. Information Technology is becoming a part of educational operations. Computerized systems are fast and replacing other systems. This curriculum will prepare students to analyse, manage, evaluate and respond to change which affects seriously. It provides a way of looking at and interacting with the business environment.

This syllabi introduces 80-20 pattern of evaluation. Comprising 80 marks Theory and 20 marks practical being need of the time. Practical approach is introduced. After doing a comparative study of syllabi of different Boards like C.B.S.E, ICSE, regarding their syllabi at + 2 level, this curriculum is prepared which shows common contents in commerce at the national level. The suggestions and recommendations received from various Boards regarding commerce subjects are considered in this curriculum. It allows students to appreciate that business is an integral component of society and develops an understanding of many social and ethical issues. Besides, it also informs students of a range of study and work options and bridge the gap between Secondary and Higher secondary education.

General Objective

- To develop student's understanding of the
- Processes of business and its environment.
- To acquaint students with the dynamic nature and inter - dependent aspects of business.
- To help the students understand the economic and social significance of business activity.
- To acquaint students with the practice of managing the operations and resources of business.
- To enable the students to be aware of socio – economic and ethical dimensions of business.
- To acquire with the knowledge of new trends in the field of business.
- To enhance the interest of students while doing the practical work like projects.

Specific Objectives

- To acquire the knowledge of nature and scope of business, small business.
- To understand private, public and global enterprises including Internal trade.
- To know about international business.
- To understand about business environment.

- To know about marketing process.
- To understand the nature and significance of management.

Note :

1) This syllabus is prepared according to the guidelines of N.C.F 2005.
2) This syllabus is compared with CBSE and ICSE Board – XI and XII syllabi pattern.
3) The instructions introduced in N.C.F. – 2005 are included in this syllabus.
4) While considering the N.C.F. 2005 it is observed that in XI-syllabi unit No. 7 and 8 and in XII syllabi unit No. 9 and 10, are already included in the subject-Secretarial Practice in the current syllabus. In view of this, to avoid the repetation of the above mentioned units of Stds. XI and XII these topics are deleated.
5) CBSE and ICSE BOARDS DO NOT have the subjects 'Secretarial Practice' and 'Co-operation'. These subjects are available only in Maharashtra State. Hence, the Board of studies proposes that no change is necessary in S.P. and Co-operation as these are newly constructed (Except, Business Finance to be included in S.P.) subjects.

Std. – XI

UNIT-1 Nature and Scope of Business

- Concept and characteristics of business
- Business, Profession and Employment-Meaning and distinctive features.
- Objectives of business-economic and social, role of profit in business.
- Classification of business activities-Industry and Commerce.
- Industry – Types of industries- primary, secondary, tertiary.
- Commerce-Trade-Auxiliaries.
- Business risks – nature and causes.

UNIT-2 Small Business

- Small scale industry- Tiny sector, cottage and rural industry.
- Role of small business in rural India.
- Problems of small business in India.
- Government Assistance and special schemes for industries in rural, backward and hilly areas.

UNIT-3 Private, Public and Global Enterprises.

- Private Sector and Public Sector.
- Forms of organizing public sector enterprises – Departmental undertaking, Statutory corporation, Government company.
- Changing role of public sector.
- Global Enterprises (Multinational companies)
- Joint Ventures – meaning, benefits.

UNIT- 4 Internal Trade

- Meaning and types of internal trade Wholesale Trade and Retail Trade.
- Services of a wholesaler and a retailer.
- Types of Retail Trade -
- Itinerant retailers and Fixed shops, Departmental store, Super market, Chain stores.
- Role of Chamber of Commerce and industry.

UNIT - 5 International Business

- Nature, importance, scope and complexities involved in international business.
- Basic information about ways of entering into international business.
- Contract manufacturing, licensing

franchising, joint ventures and setting up wholly owned subsidies.

- Export – import procedures and documentation.
- Foreign Trade promotion organizational support and incentives. Nature and importance of export processing zone/ Special Economic zones.
- International Trade Institutions and Agreement.

  W.T.O.UNCTAD, WORLD BANK, I.M.F.

UNIT-6 Business Environment

- Business Environment – meaning and importance.
- Dimensions of Business Environment – Economic, social, Technological, political and legal.
- Economic environment in India. Impact of Government policy changes on business and industry with special reference to adoption of the policies of liberalization privatization and globalization.

UNIT- 7 Marketing

- Marketing – meaning, functions, role.
- Distinction between marketing and selling.
- Marketing Mix – concept and elements-
- Product – nature, classification, branding labelling and packaging.
- Physical distribution – meaning, role Channels of distribution – meaning, types, factors determining choice of channels.
- Promotion – meaning and role, promotion mix, Role of Advertising and personal selling objections to Advertising.
- Price – factors influencing pricing.

UNIT-8 Nature and significance of management

- Management – concept, objectives, importance
- Nature of management, management as Science, Art, profession.
- Levels of management – top, middle, supervisory (first level).

Special Note :

Readers of this textbook may find some extra information in the various topics, which is related to the current reference and changes in the commercial business environment. The object of this information is to give current changes and updated reference to the students. No questions will be set on this extra information introduced in the textbook.

Some Subjects for Projects (Based on XI Syllabi)

Organization of Commerce and Management

1) Information about Automatic Machines
2) Report of service industry
3) Report of seasonal goods
4) An interview of an Agent
5) Different types of insurance policies
6) Pictorial presentation & information about a Mall
7) Different / Samples of Quotations
8) A visit to a manufacturing industry
9) An interview of a wholesaler / Retailer
10) An interview of two successfull self – employed persons
11) An interview of a Franchiser
12) E – Commerce: Need of todays' business world
13) Different attractive packagings
14) A visit to a Bank
15) Collection of banking instruments of various banks

    (Cheques, Demand Drafts, Pass book, withdrawl, Pay- in- slips etc)

16) Employment opportunities arised due to transport
17) Attractive Advertisements – Advertisements in the news papers, T.V. media, Radio Advertising, etc.
18) Report of Branded goods
19) A visit to a warehouse
20) A visit to well equipped commercial office.

N.B – Students are free to select any topic other than the topics given above but it must be related to the syllabus

Specific Objectives

- To know about different forms of business organizations and Business services.
- To understand the emerging modes of business.
- To know about social responsibilities of business and business ethics.
- To understand the concept of consumer protection and role of consumer organisations.
- To understand the principles, functions of management.
- To know about Entrepreneurship development.

Std. XII

UNIT-1 Forms of business organizations

- Sole proprietorship, Joint Hindu Family Business – meaning, features, merits and demerits.
- Partnership – meaning, types, registration, merits, limitations, types of partners.
- Co – Operative societies – types, merits and limitations.
- Company – Private Ltd, Public Ltd – merits, limitations.
- Starting a business – Basic factors.
- Choice of forms of business organizations.

UNIT-2 Business services

- Nature and types of Business services – Banking, Insurance, Transportation, Warehousing, communication.
- Banking – types of banks, functions of commercial banks, E – banking.
- Insurance – principles & types of life, fire, marine insurances.
- Postal and Telecom services.
- Warehousing – types and functions.
- Transport – meaning, role, means.

UNIT -3 Emerging modes of Business

- E – business – Meaning, Scope and benefits. Resource required for successful E –Business implementation.On – line transactions, payment mechanism.
- Security and safety of business transactions.
- Outsourcing – Concept, need and scope.

UNIT-4 Social Responsibilities of business and business ethics.

- Concept of social responsibility.
- Cases for social responsibility.
- Responsibility towards different interest groups, owners, investors, employees, consumers, government, community, public in general.
- Business ethics – concept and elements.
- Business and environmental protection.

UNIT-5 Consumer protection

- Importance of consumer protection.
- Rights of consumers
- Consumer responsibilities.
- Ways and means of consumer protection.
- Consumer awareness and legal redressal with special reference to Consumer Protection Act.

- Role of Consumer Organization and NGOS.

UNIT-6 Principles of Management

- Principles of Management – meaning, nature and significance.
- Fayol's Principles of Management.
- Taylor's scientific management – Principles and Techniques.

UNIT-7 Functions of Management

- Planning – Meaning, Nature, Importance.
- Organizing – Meaning, Nature, Importance.
- Staffing – Meaning, Nature, Importance.
- Directing – Meaning, Nature, Importance.
- Controlling – Meaning, Nature, Importance.
- Co – ordinating – Meaning, Nature, Importance.

UNIT-8 Entrepreneurship Development

- Concept, Functions and Need.
- Entrepreneurship: Characteristics and Competencies.
- Process of entrepreneurship development.
- Entrepreneurship Values: Attitudes and Motivation- Meaning and concept.

Some topics for Projects (Based on Std. XII Syllabus)

List of Topics for projects

1. An interview of sole trader
2. Partnership firm :- process & procedure
3. Joint Hindu family – An affectionate business
4. Collection of Common seals of different Joint stock companies and the relevant information about common seals
5. Visit to a co-operative society, co-operative credit societies, patpedhis, consumer co-operative stores and prepare a report of such visits.
6. Information about the businesses who are working in the private and public sector.
7. Effects on environment – (List of information of industries)
8. Information about the business groups who are famous in their social accountability (e.g. Tata, Reliance, etc.)
9. An interview of those persons who are aware of consumer welfare and their rights.
10. Information about a training institute, giving training to consumers about Their rights.
11. Prepare a report of any cottage industry doing planning on the basis of co-operation.
12. Information about students co-operative stores.
13. Plan and project report of any function.
14. An interview of a eminent businessman.
15. Detail information about the various services offered by a big business group.
16. Information of any two business groups who have secured I.S.O. 9000.
17. How will you plan against any natural calamity in your area.
18. How will you plan for keeping (maintaining) best highest Quality of the goods produced by group.
19. Information about the institute who gives career guidance.
20. Bad effects of various festivals on the environment.

N.B –

Students are free to select any topic other than the topics given above;
but that should be related to the topic of the syllabi.

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Secretarial Practice (52)

Introduction

Now it becomes necessary to give formal, traditional, recent education in Commerce and Industry along with practical knowledge so as to enable the students to have good understanding of the basic concepts of globalised world and its relationship with the society.

Council of Boards of School Education in India (COBSE) has taken the responsibility of bringing out 'Common content in commerce' at + 2 stages of secondary level. It is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. Information Technology is becoming a part of educational operations. Computerised systems are fast replacing other systems. This curriculum will prepare students to analyse, manage, evaluate and respond to change which affects seriously. It provides a way of looking at and interacting with the business environment.

This syllabi introduces 80-20 pattern of evaluation. Comprising 80 marks theory and 20 marks practical. Being need of the time, practical approach is introduced. After doing a comparative study of syllabi of different Boards like C.B.S.E, ICSE, regarding their syllabi at + 2 level, this curriculum is prepared which shows common content in commerce at national level. The suggestions and recommendations received from various Boards regarding commerce subjects are considered in this curriculum. It allows students to appreciate that business is an integral component of society and develop an understanding of many social and ethical issues. Besides, it also informs students of a range of study and work options and bridge the gap between Secondary and Higher secondary education.

General Objectives

- To develop an understanding of the processes of business and its environment in students.
- To acquaint students with the dynamic nature and inter - dependent aspects of business.
- To help the students regarding the economic and social significance of business activity.
- To acquaint students with the practice of managing the operations and resources of business.
- To enable the students to be aware of socio – economic and ethical values of business.
- To acquire knowledge of new trends in the field of business.
- To enhance the interest of students while doing the practical work like projects.

Std. XI

Specific Objectives

- To acquire knowledge of the basic term 'Secretary'
- To know about Joint Stock Company and machinery monitoring Joint Stock Company, structural organization of Joint Stock Company and company meetings.
- To understand business correspondence, secretarial correspondence with Directors, Registrar, Banks and Insurance company.

STD: XI

UNIT -1 Secretary

- Meaning, definition and importance.
- Types of secretaries:
  a) Personal b) Non – profit Association c) Co – operative Society d) Joint Stock Company e) Government department (Qualifications, qualities and functions)

UNIT-2 Joint stock company

- Evolution
- Definition and Features
- Merits and limitations
- Formation of Joint stock Company – Stages – Promotion, Incorporation, Capital raising and obtaining Trading Certificate
- Documents related to the Formation of a Joint stock Company – Memorandum of Association, Articles of Association, Prospectus, Statement in lieu of prospectus (Meaning, purpose and contents of each document).

UNIT-3 Machinery monitoring Joint stock Company

- The Central Government's Department of company affairs.
- The Board of Company Law Administration
  (Company Law Board / National company Law Tribunal)
- Registrar of Companies.
- Advisory Committee.
- Jurisdiction of court (brief outline of the role in monitoring mechanism)

UNIT-4 Structural Organization of a Joint stock company

- Shareholders – Acquisition of membership, rights and termination.
- Board of Directors – Qualifications, appointment, Powers, duties.
- Managing Director – Qualifications, appointment, powers, duties and remuneration.
- Auditor – Meaning, functions, rights, appointment, remuneration and removal.
- Company Secretary – Appointment, rights and responsibilities, remuneration.

UNIT - 5 Company Meetings

- Provisions for convening and conducting a valid meeting.
- Provisions related to Notice, Agenda, Quorum, Proxy, Voting, Motions, Amendments, Resolutions, Minutes.
- Types of Meetings – Statutory Meeting, Annual General Meeting, Extra – Ordinary General Meeting, Meetings of Board of directors.
- Role of a Company secretary relating to Meetings.

UNIT - 6 Business Correspondence

- Basic principles of Business correspondence.
- Importance
- Layout of a Business Letter
- Essentials of a good business letter
- Physical appearance of business letter
- Precaution to be taken while writing business letters

UNIT-7 Secretarial correspondence

7.1 Correspondence with Directors

- Notice of Meeting with agenda
- Sending a brief report to directors who were absent for meeting
- Reminding the directors about the provision regarding absenteeism of consecutive meetings
- Requesting a director to be present at a meeting as an expert
- Removal of a director

7.2 Correspondence with Registrar of Companies

- Filing Statutory Report
- Filing Annual Report
- Extension of time for holding Annual General Meeting
- Filing special resolution with Registrar of companies
- Alteration in clauses of Memorandum of Association and Articles of Association

7.3 Correspondence with Banks

- Opening of an Account
- Stop payment
- Issue of a Letter of Credit

7.4 Correspondence with Insurance Companies

- Enquiry about various policies regarding fire & marine Insurance.
- Asking for fire and marine policies.
- Informing insurance company about damage of goods by fire/marine loss
- Settlement of claim

Std. XI
PROJECT WORK

1) Interview of a personal secretary working with Doctor or any Professional.
2) Report of a social organization like Lions Club, Rotary Club, Mahila Bachat gat etc.
3) Informative report of a non profit association – Hospital, Public Library, Sports club, Cultural Association etc.
4) Visit report: Auditor's office.
5) Informative report about the office work done by using computer.
6) Interview of a promoter, Large scale businessman.
7) Documents presentation: Memorandum of Association, Articles of Association.
8) Interview of a Secretary- Company/Other institutes.
9) Insurance proposals – Fire insurance, Marine insurance
10) Informative report of education loans given by banks.
11) Visit to the bank to open an Account
12) Prepare proformas – Notice, Agenda, Resolution etc.
13) Report on visit to local co-operative organasation
14) Report on company visit.

Note :

The above list of projects is given only as guidelines. Being creative and innovative, students may select any topic for project related to the syllabus.

Std. XII

Specific Objectives

- To acquire the knowledge of business finance, sources of business finance.
- To understand the role of secretary in the capital formation.
- To know about the declaration and payment of dividend.
- To acquire the knowledge of correspondence of a company secretary with members, debenture holders and depositors.
- To give the information about financial markets.

UNIT 1 Business Finance

- Business Finance – Meaning, role, objectives of financial management.
- Financial planning – Meaning and

importance.
- Capital structure – Meaning and factors.
- Fixed and working capital – Meaning and factors affecting their requirements.

UNIT-2 Sources of Business Finance

- Nature and significance: Financial requirements and sources.
- Methods of raising finance
  Equity and preference shares
  Debentures and Bonds
  Retained profits
  Public deposits
  Loan from commercial banks
  Loan from financial institutions
  Trade credit
  Discounting of bills of Exchange
  Global Depository Receipt, American Depository Receipt

UNIT-3 Role of a Secretary in the Capital Formation Part I

- Meaning of issue of shares at par, premium and discount, at bid price
- Meaning of Initial public offer.
- Meaning of bonus issue
- Meaning of rights issue
- Meaning of Employee stock option scheme
- Meaning of private placement.
- Issue of shares – procedure
- Allotment – Meaning, conditions for valid allotment, procedure
- Transfer and Transmission of shares – Meaning, provisions, procedure, difference.
- Issue of share certificate and share warrant – Meaning, provisions, procedure, difference.

UNIT-4 Role of a Secretary in the Capital Formation Part II

- Issue of debentures – procedure, conversion and redemption of debentures
- Deposits – invitation, acceptance, renewal, repayment, default and remedies
- Depositories and dematerialization of securities – meaning, importance, procedure, secretarial duties in issuing securities in dematerialized form

UNIT-5 Declaration and payment of dividend

- Meaning
- Provisions related to ascertainment of dividend, declaration of dividend and payment of dividend.
- Procedure of payment of dividend.
- Provisions regarding unpaid / unclaimed dividend
- Interim and final dividend – Meaning and difference

UNIT-6 Correspondence of company secretary with members, debenture holders and depositors

- Allotment of shares
- Regret letter
- Lodgement notice
- Approval / Refusal of Transfer of shares
- Issue of bonus shares
- Distribution of dividend – notice
- Allotment of debentures
- Redemption of debentures
- Conversion of debentures into shares
- Payment of interest on debentures
- Letter thanking the investor for deposits
- Payment of interest (Basic information of TDS to be given)
- Renewal of deposits
- Repayment of deposits

UNIT -7 Financial markets

- Concept of Financial market
- Money market – nature, instruments.

- Capital market- nature and constituents – primary and secondary market.
- Distinction between capital market and money market.
- Stock Exchange – meaning, functions, BSE, NSEI, Trading procedure.
- Securities Exchange Board of India (SEBI) objectives, functions.

PROJECT WORK - Std. XII

1) Specimen presentation of different kinds of share certificates.
2) Specimen presentation of different kinds of debenture certificates.
3) Interview report of an underwriter.
4) Functional report of SEBI.
5) Visit report – Financial institution other than bank.
6) Presentation of prospectus and your observations.
7) Introduction to latest instruments of debts – (Refer Economic Times, Business Today, internet).
8) Informative report of public deposits offer by company.
9) Informative report of DEMAT account.
10) Report about dividend policy of any company.
11) Specimen presentation of letters issued by company
    (Do not use specimen letters given in the book).
12) Collection of news clippings about share market.
13) Functional report of stock exchange.
14) Prepare specimen – Dividend warrant, Interest warrant

Note –

The above list of projects is given only as guidelines. Being creative and innovative, students may select any topic for project related to the syllabus.

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Co–operation (53)

Introduction

Along with formal, traditional, recent education in Commerce and Industry, now it has become necessary to give practical knowledge so as to enable the students to have good understanding of the basic concepts of globalised world and its relationship with the society.

Council of Boards of School Education in India (COBSE) has taken the responsibility of bringing out 'Common content in commerce' at + 2 stages of secondary level. It is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. Information Technology is becoming a part of educational operations. Computerised systems are fast replacing other systems. This syllabus will prepare students to analyse, manage, evaluate and respond to change which affects seriously. It provides a way of looking at and interacting with the business environment.

This syllabi introduces 80-20 pattern of evaluation. Comprising 80 marks Theory and 20 marks practical. Being need of the time, practical approach is introduced. After doing a comparative study of syllabi of different Boards like C.B.S.E, ICSE, regarding their syllabi at + 2 level, this curriculum is prepared which shows common content in commerce at the national level. The suggestions and recommendations received from various Boards regarding commerce subjects are considered in this curriculum. It allows students to appreciate that business is an integral component of society and develop an understanding of many social and ethical issues. Besides, it also informs students of a range of study and work options and bridge the gap between Secondary and Higher secondary education.

General Objectives

- To develop in students an understanding of the processes of business and its environment.
- To acquaint students with the dynamic nature and inter - dependent aspects of business.
- To help the students understand the economic and social significance of business activity.
- To acquaint with students the practice of managing the operations and resources of business.
- To enable the students to be aware of socio – economic and ethical dimensions of business.
- To acquire the knowledge of new trends in the field of business.
- To enhance the interest of students while doing the practical work like projects.

Std. XI

Specific Objectives

- To acquire the knowledge of basic terms, definitions and concepts of co-operation.
- To know the need and importance of co–operation.
- To understand the principles of co – operation and the history of co–operative movement.

- To get knowledge of Credit co– operative society, Farming co-operative society, Processing co– operative society, Marketing co– operative society, Industrial co–operative society, Multipurpose co – operative society, Consumer co–operative society, Housing co–operative society.

UNIT–1 Co - operation

1.1 Meaning
1.2 Features
1.3 Need
1.4 Importance

UNIT–2 Principles of co–operation

2.1 History of co–operative principles
2.2 Basic principles
2.3 General principles

UNIT–3 History of co – operative movement

3.1 World
3.2 India
3.3 Maharashtra

UNIT–4 Forms of Co–operative societies

4.1 Credit co–operative society
4.2 Farming co–operative society
4.3 Processing co–operative society
4.4 Marketing co–operative society
4.5 Industrial co–operative society
4.6 Multipurpose co–operative society
4.7 Consumers co–operative society
4.8 Housing co–operative society

UNIT–5 Co – operative movement in India

5.1 Achievements of co–operative movement
5.2 Merits of co–operative movement
5.3 Demerits of co–operative movement
5.4 Concepts of Liberalisation, Privatisation and globalisaiton

Project work - Std. XI

1) Visit any co-operative society in your locality / area and prepare Report.
   Prepare report on interview with the promoter of any co–operative Society of your locality/area.
2) Prepare report on progress of Credit co–operative society in your Locality / area.
3) Prepare report of Processing Co–operative society from your Locality / area.
4) Visit a Multipurpose Co–operative society and take interview of office bearer and prepare report.
5) Visit any Co–operative society from your local area, collect information of the working of Co–operative society and prepare report.
6) Collect information of Consumers Co–operative society and prepare report.
7) Report on the working of Students co-operative society.
8) Prepare a report of any Industrial co-operative society in your locality.

Note –

Students are free to select any topic other than the topics given above but it must be related to the syllabus.

Std. XII

Specific Objectives

- To acquire the knowledge of formation of co-operative society-stages, organization, office bearers.
- To understand the role and functions of Commissioner and Registrar of co-operative societies.

- To study the legal provisions of Maharashtra State Co-operative societies Act 1960 with up to-date amendments.
- To acquire the detailed knowledge about-
  - Maintenance of Accounts and Audit of co-operative society.
  - Study of District Central Co-operative bank.
  - State Co-operative bank, Urban Co-operative bank.
  - Co-operative education and training
- To know about the impact of global economy on co-operative movement.

UNIT – 1 Formation of co-operative society

Procedure as per Maharashtra Co-operative Societies Act- 1960

1.1 Stages in formation of co-operative society

1.2 Promotion stage

1.3 Registration stage

1.4 Promoter – Meaning, Functions, responsibilities

UNIT – 2 Organization of co-operative society

2.1 Member-Meaning, Types, Rights, Responsibilities

2.2 Managing committee - Functions, Powers, Responsibilities.

2.3 Office Bearers-Functions, Powers, Responsibilities

a. Chairman - Functions, Powers, Responsibilities

b. Vice – Chairman - Functions, Powers, Responsibilities

c. Secretary- Meaning and Definitions, Functions, Qualities of an ideal secretary

2.4 Correspondence of Secretary of a co-operative society with the Registrar, Member and Managing Committee

UNIT – 3 Role of Commissioner and Registrar of co-operative societies.

3.1 Registrar – Role, Functions, Powers, Responsibilities.

3.2 Commissioner.

UNIT – 4 Study of Maharashtra State Co-operative Societies Act-1960 with up to date amendments in connection with.

4.1 Capital raising

4.2 Meetings

4.3 Maintenance of Accounts and Audit

UNIT – 5 A brief study of following Co-operative organizations in the light of Co- operative movement in Maharashtra

5.1 District central co–operative banks.

5.2 Maharashtra State co–operative bank.

5.3 Urban co–operative banks.

UNIT – 6 Co–operative Education and Training

6.1 Concept of Co – operative Education and Training.

6.2 Objectives and Need of Co – operative Education and Training.

6.3 Organisational Structure of Co-operative Education and Training Centres in Maharashtra.

6.4 Vaikunthlal Mehta National Institute of Co – operative Management and Research, Pune in Co – operative Education and Training.

UNIT – 7 Impact of Global Economy on Co–operative Movement

7.1 Impact of Global Economy on Co–operative movement –Liberalisation, Privatisation and Globalisation.

7.2 In changing Economic environment expectations from co – operative movement.

Project work - Std. XII

1) A Report on interview with promoter of co–operative society.
2) A Report on information of co–operative society.
3) A Report on interview with managing director of co–operative society.
4) A Report on interview with Secretary of co–operative society.
5) Specimen presentation of letters issued by co-operative society. (Do not use specimen letters given in the text book)
6) A Report on interview with Registrar of co-operative society.
7) Collect the documents required for registration of co-operative society and prepare a report on it.
8) Visit a co-operative bank and prepare visit report.
9) A report on observation of Annul General meeting of any co-operative society.
10) A Report on interview with auditor of co-operative society.
11) A Report on 'A' class co-operative society.
12) A Report on visit to District Central Co-operative bank in your district.
13) A Report on Information about Urban Co-operative banks in your district.
14) A Report on banking services provided to customers by urban co-operative bank.
15) Informative report of co-operative training centres.
16) Informative report of Vaikunthlal Mehta National Institute of Co-operative Management and Research.
17) A report on Co-operative education with the help of distance learning / Correspondence courses.

Note

Students are free to select any topic other than the topics given above but it must be related to the syllabus.

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Physics (54)

Introduction

According to NCF 2005, the curriculum of the subject Physics is upgraded for higher secondary stage. This curriculum is comparable to the international standards which are useful for the students in Maharashtra State for different types of competitive examinations conducted in India. All the units of the subject from NCERT curriculum are divided into two years conveniently in Maharashtra State. Continuity in the curriculum is maintained in Std. XI & XII, which is not in NCERT curriculum. All the students appear for the competitive examinations only after +2 stage throughout India.

This syllabus has been designed in accordance with the guidelines shown in the final version of common core syllabii of COBSE, Delhi. Accordingly few additional sub units have been added.

Objectives

1. Emphasis on basic conceptual understanding of the content.
2. Emphasis on use of SI units, symbols, nomenclature of physical quantities and formulations as per international standards.
3. Providing logical sequencing of units of the subject matter and proper placement of concepts with their linkage for better learning.
4. Reducing the curriculum load by eliminating overlapping of concepts/ content within the discipline and other disciplines.
5. Promotion of process-skills, problem-solving abilities and applications of Physics concepts.
6. Strengthen the concepts developed at the secondary stage to provide firm foundation for further learning in the subject.
7. Expose the learners to different processes used in Physics-related industrial and technological applications.
8. Develop process-skills and experimental, observational, manipulative, decision making and investigatory skills in the learners.
9. Promote problem solving abilities and creative thinking in learners.
10. Develop conceptual competence in the learners and make them realize and appreciate the interface of Physics with other disciplines.

Std. XI

1. Measurements

Introduction, Need for measurement, Units for measurement, System of Units,
S.I. Units, Fundamental and derived units, Dimensional analysis, Order of magnitude and significant figures, Accuracy and errors in measurement.

2. Scalars and Vectors

Addition and subtraction of vectors, Product of vectors.

3. Projectile motion

Uniformly accelerated motion along straight line, Non uniform motion, Position

time graph and velocity-time graph, Equation of a projectile path, Time of flight, Horizontal range, Maximum height of a projectile, Relative velocity.

4. Force

Types of forces, General idea of gravitation, electromagnetic and nuclear forces, Law of conservation of momentum, Work done by a variable force. Work-energy theorem, Elastic and inelastic collisions in one and two dimensions, Inertial and non-intertial frames, Moment of force, Couple and properties of couple, Centre of mass, Centre of gravity, Conditions of equilibrium of a rigid body.

5. Friction in solids and liquids

Origin and nature of frictional forces, Laws of static friction, Laws of kinetic friction, Pressure due to fluid column, Pascal's Law and its applications, Effect of gravity on fluid pressure, Viscosity, Streamline flow, Turbulent flow, Viscous force, Newton's formula, Stokes' law, Equation for terminal velocity, Raynold's number, Bernoulli's principle and its applications.

6. Sound Waves

Waves and oscillations, Progressive waves, Characteristics of transverse waves, Characteristics of longitudinal waves, Sound as longitudinal wave motion, Relation between v, f and, λ Newton's formula for velocity of sound, Laplace's correction.

7. Thermal properties of matter

Temperature and heat, Measurement of temperature, Ideal-gas equation and absolute temperature, Thermal expansion, Specific heat capacity, Calorimetry, Change of state, Latent heat, Heat transfer.

8. Refraction of Light

Refraction of monochromatic light, Snell's law, Total internal reflection, Critical angle, Optical fibre, Dispersion of light, Prism formula, Angular dispersion and dispersive power, Rainbow, Scattering of light, Blue colour of sky, Colour of sun at sunrise and sunset. Elementary idea of Raman effect.

9. Ray optics

Reflection of light by spherical mirrors, Refraction at single curved surface, Lens maker's equation, Combination of thin lenses in contact, Concept of conjugate focii, Correction of eye defects, Magnifying power of simple microscope, Magnifying power of compound microscope, Magnifying power of telescope, Reflecting telescope - schematic diagram with explanation.

10. Electrostatics

Frictional electricity, Charges and their conservation, Coulomb's law and dielectric constant, Forces between multiple electric charges, Superposition principle of forces, Continuous distribution of charges, Concept of charge density, Electric field intensity, Potential energy, Electric potential due to point charge, Relation between electric field intensity and potential, Potential difference, Volt and electron volt, Electric dipole and dipole moment, Electric lines of force. Equipotential surfaces, P.E. of single charge and system of charges.

11. Current electricity

Ohm's law, Resistance, Specific resistance, Temperature dependence of resistance, Colour code of carbon resistor, Series and parallel combination of resistors, E.M.F.

and internal resistance of cell, Work done by electric current, Power in electric circuit, Cells in series and in parallel, Elementary idea of secondary cells.

12. Magnetic effect of electric current

Oersted's experiment, Biot Savart's law, Right hand rule, Magnetic induction at the centre of circular coil carrying current, Magnetic induction at a point along the axis of a coil carrying current, Fleming's left hand rule, Force between two infinitely long current carrying parallel conductors, Definition of Ampere, Force acting on a conductor carrying current in magnetic field, Torque on a current loop in magnetic field.

13. Magnetism

Origin of magnetism due to moving charges, Equivalence between magnetic dipole and circular coil carrying current, Definition of magnetic dipole moment and its unit, Torque acting on a magnet in uniform magnetic induction, Bar magnet as an equivalent solenoid, Magnetic field lines, Magnetic induction due to bar magnet at a point along the axis and at a point along equator, Earth's magnetic field and magnetic elements, Electromagnets and factors affecting their strength.

14. Electromagnetic waves

Electromagnetic waves and their characteristics, Transverse nature of electromagnetic waves, Electromagnetic spectrum, Space communication, Propagation of electromagnetic waves in atmosphere.

List of Practicals - Std. XI

1. Use of Vernier Callipers.
2. Use of Screw gauge.
3. To determine radius of curvature of a given spherical surface by a spherometer.
4. To find the weight of a given body using parallelogram law of vectors.
5. To study the relationship between force of limiting friction and normal reaction and to find co-efficient of friction between a block and a horizontal surface.
6. To determine resistance per cm of a given wire by plotting a graph of potential difference versus current.
7. To find the value of 'v' for different values of 'u' in case of a 'concave mirror and to find the focal length.
8. To find the focal length of a convex lens by plotting graphs between 'u' and 'v'or between '1/u' and '1/v'.
9. To find the focal length of a convex mirror, using a convex lens.
10. To find the focal length of a concave lens, using a convex lens.
11. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
12. To determine refractive index of a glass using a travelling microscope.
13. To find refractive index of a liquid by using (i) concave mirror, (ii) convex lens and plane mirror.
14. To determine specific heat capacity of a given (i) liquid (ii) solid, by method of mixtures.

List of Activities - Std. XI

1. To make a paper scale of given least count, e.g. 0.2 cm, 0.5 cm.
2. To determine mass of a given body using a meter scale by principle of moments.
3. To plot a graph for a given set of data,

with proper choice of scales and error bars.

4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a jet of water with angle of projection.
6. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
7. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
8. To study the nature and size of image formed by (i) convex lens (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
9. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.
10. To note the change in level of liquid in a container on heating and interpret the observations.

Std. XII

1. Circular motion

Angular displacement, Angular velocity and angular acceleration, Relation between linear velocity and angular velocity, Uniform circular motion, Radial acceleration, Centripetal and centrifugal forces, Banking of roads, Vertical circular motion due to earth's gravitation, Equation for velocity and energy at different positions of vertical circular motion. Kinematical equations for circular motion in analogy with linear motion.

2. Gravitation

Newton's law of gravitation, Projection of satellite, Periodic time, Statement of Kepler's laws of motion, Binding energy and escape velocity of a satellite, Weightlessness condition in orbit, Variation of 'g' due to altitude, lattitude, depth and motion, Communication satellite and its uses.

3. Rotational motion

Definition of M.I., K.E. of rotating body, Rolling motion, Physical significance of M.I., Radius of gyration, Torque, Principle of parallel and perpendicular axes, M.I. of some regular shaped bodies about specific axes, Angular momentum and its conservation.

4. Oscillations

Explanation of periodic motion, S.H.M., Differential equation of linear S.H.M. Projection of U.C.M. on any diameter, Phase of S.H.M., K.E. and P.E. in S.H.M., Composition of two S.H.M.'s having same period and along same line, Simple pendulum, Damped S.H.M.

5. Elasticity

General explanation of elastic property, Plasticity, Deformation, Definition of stress and strain, Hooke's law, Poisson's ratio, Elastic energy, Elastic constants and their relation, Determination of 'Y', Behaviour of metal wire under increasing load, Applications of elastic behaviour of materials.

6. Surface tension

Surface tension on the basis of molecular theory, Surface energy, Surface tension, Angle of contact, Capillarity and capillary action, Effect of impurity and temperature on surface tension.

7. Wave motion

Simple harmonic progressive waves, Reflection of transverse and longitudinal waves, Change of phase, Superposition of waves, Formation of beats, Doppler effect in sound.

8. Stationary waves

Study of vibrations in a finite medium, Formation of stationary waves on string, Study of vibrations of air columns, Free and Forced vibrations, Resonance.

9. Kinetic theory of gases and Radiation

Concept of an ideal gas, Assumptions of kinetic theory, Mean free path, Derivation for pressure of a gas, Degrees of freedom, Derivation of Boyle's law, Thermodynamics- Thermal equilibrium and definition of temperature, 1^{st} law of thermodynamics, 2^{nd} law of thermodynamics, Heat engines and refrigerators, Qualitative idea of black body radiation,Wein's displacement law, Green house effect, Stefan's law, Maxwell distribution, Law of equipartition of energy and application to Specific heat capacities of gases.

10. Wave theory of light

Wave theory of light, Huygens' Principle, Construction of plane and spherical wave front, Wave front and wave normal, Reflection at plane surface, Refraction at plane surface, Polarisation, Polaroids, Plane polarised light, Brewster's law, Doppler effect in light.

11. Interference and diffraction

Interference of light, Conditions for producing steady interference pattern, Young's experiment, Analytical treatment of interference bands, Measurement of wavelength by biprism experiment, Diffraction due to single slit, Rayleigh's criterion, Resolving power of a microscope and telescope, Difference between interference and diffraction.

12. Electrostatics

Gauss' theorem proof and applications, Mechanical force on unit area of a charged conductor, Energy density of a medium, Dielectrics and electric polarisation, Concept of condenser, Capacity of parallel plate condenser, Effect of dielectric on capacity, Energy of charged condenser, Condensers in series and parallel, van-de-Graaff generator.

13. Current electricity

Kirchhoff's law, Wheatstone's bridge, Meter bridge, Potentiometer.

14. Magnetic effects of electric current

Ampere's law and its applications, Moving coil galvanometer, Ammeter, Voltmeter, Sensitivity of moving coil galvanometer, Cyclotron.

15. Magnetism

Circular current loop as a magnetic dipole, Magnetic dipole moment of revolving electron, Magnetisation and magnetic intensity, Diamagnetism, Paramagnetism, Ferromagnetism on the basis of domain theory, Curie temperature.

16. Electromagnetic inductions

Laws of electromagnetic induction, proof of, $e = -\frac{d\Phi}{dt}$

Eddy currents, Self induction and mutual induction, Need for displacement current, Transformer, Coil rotating in uniform magnetic induction, Alternating currents, Reactance and impedance, LC oscillations

(qualitative treatment only) Power in a.c circuit with resistance, inductance and capacitance, Resonant circuit, Wattless current, AC generator.

17 Electrons and photons

Photoelectric effect, Hertz and Lenard's observations, Einstein's equation, Particle nature of light.

18 Atoms, Molecules and Nuclei

Alpha particle scattering experiment, Rutherford's model of atom. Bohr's model, Hydrogen spectrum, Composition and size of nucleus, Radioactivity, Decay law, mass-energy relation, mass defect, B.E. per nucleon and its variation with mass number, Nuclear fission and fusion, de Broglie hypothesis, Matter waves – wave nature of particles, Wavelength of an electron, Davisson and Germer experiment, Continuous and characteristics X-rays.

19 Semiconductors

Energy bands in solids, Intrinsic and extrinsic semiconductors, P-type and N-type semiconductor, P-N junction diode, I-V characteristics in forward and reverse bias, Rectifiers, Zener diode as a voltage regulator, Photodiode, Solar cell, I-V characteristics of LED, Transistor action and its characteristics, Transistor as an amplifier (CE mode), Transistor as a switch, Oscillators and Logic gates (OR, AND, NOT, NAND, NOR)

20 Communication systems

Elements of communication system, bandwidth of signals, bandwidth of transmission medium, Need for modulation, Production and detection of an amplitude modulated wave, space communication, Propagation of electromagnetic waves in atmosphere.

List of Practicals - Std. XII

1. To determine Young's modulus of elasticity of the material of a given wire.
2. To find the force constant and effective mass of helical spring by plotting T^2--m graph using method of oscillations.
3. To determine the surface tension of water by capillary rise method.
4. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
5. To study the relation between frequency and length of a given wire under constant tension using sonometer.
6. To study the relation between the length of a given wire and tension for constant frequency using sonometer.
7. To find the speed of sound in air at room temperature using a resonance tube.
8. To find resistance of given wire using metre bridge and hence determine the specific resistance of its material.
9. To verify the laws of combination (series/ parallel) of resistances using a metre bridge.
10. To compare the emf of two given cells using potentiometer.
11. To determine the internal resistance of given cell using potentiometer.
12. To determine resistance of galvanometer using metre bridge.
13. To draw the I-V characteristic curves of a p-n junction diode in forward bias and reverse bias.

14. To study the characteristics of a common-emitter npn or pnp transistor and to find out the values of current and voltage gains.
15. To draw the characteristic curve of a zener diode and to determine its reverse break down voltage.

List of Activities - Std. XII

1. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.
2. To study the effect of detergent on surface tension by observing capillary rise.
3. To study the factors affecting the rate of loss of heat of a liquid.
4. To study the effect of load on depression of a suitably clamped meter scale loaded (i) at its end (ii) in the middle.
5. To measure the resistance and impedance of an inductor with or without iron core.
6. To study the variation in potential drop with length of a wire for a steady current.
7. To draw the diagram of a given open circuit comprising at least a battery, resistor/ rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.
8. To study effect of intensity of light (by varying distance of the source) on an L.D.R.
9. To identify a diode, an LED, a transistor, and 1C, a resistor and a capacitor from mixed collection of such items.
10. Use of multimeter to (i) identify base of transistor (ii) distinguish between npn and pnp type transistors, (iii) see the unidirectional flow of current in case of a diode and an LED (iv) check whether a given electronic component (e.g. diode, transistor or IC) is in working order.
11. To observe polarization of light using two polaroids.
12. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.

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Chemistry (55)

Introduction

According to NCF 2005, the new and updated curriculum is introduced at +2 stage. There is a need to provide the sufficient conceptual background of chemistry which will help the students to appear for different common entrance test at the state level and the national level. This new syllabus will make them competent to meet the challenges of academic and professional courses like medicine, engineering, technology, etc, after the +2 stage. The syllabus is comparable to the international level.

The syllabus contains areas like physical, organic, inorganic, industrial, analytical and polymer chemistry. The upgraded syllabus has taken care of new formulations and nomenclature of elements, compounds and IUPAC units of physical quantities. New nomenclature, symbols and formulations, fundamental concepts, modern techniques are given importance.

Objectives :

The broad objectives of teaching Chemistry at Higher Secondary stage are to help the learners :

1) To promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
2) To make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
3) To expose the students to various emerging new areas of chemistry and apprise them with their relevance in their future studies and their applications in various spheres of chemical sciences and technology.
4) To equip students to face various changes related to health, nutrition, environment, population, weather, industries and agriculture.
5) To develop problem solving skills in students.
6) To expose the students to different processes used in industries and their technological applications.
7) To apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering, etc.

Std. XI (Theory)

Unit 1: Some Basic Concepts of Chemistry

General Introduction: Importance and scope of chemistry. Historical approach to particulate nature of matter, laws of chemical combination, Dalton's atomic theory : concept of elements, atoms and molecules. Atomic and molecular masses mole concept and molar mass : Avogadro's law and Avogadro number, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichimetry.

Unit 2 :States of matter : Gases and liquids

Three states of matter. Intermolecular interactions, type of bonding. Role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law. Ideal behaviour, empirical derivation of gas equation. Ideal gas equation. Deviation from ideal behaviour, liquefaction of gases. Critical temperature. Kinetic energy and molecular speeds (elementary idea) Liquid State – Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

Unit 3 : Structure of atom

Discovery of electron, proton and neutron; atomic number, isotopes and isobars. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg's uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals – Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

Unit 4 : Periodic table

Significance of classification, brief history of the development of periodic table, modern periodic law and present form of periodic table, periodic trends in properties of elements atomic radii, ionic radii. Inert gas radii nomenclature of elements with atomic number greater than 100.Enthalpy: Explanation and definition of term. Ionization enthalpy, electron gain enthalpy, electronegativity, valence.

Unit 5: Redox reactions

Concept of oxidation and reduction, redox reactions, oxidation number, Balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number.

Unit 6: Chemical equilibrium

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium, Le Chatelier's principle.

Ionic equilibrium: Ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of polybasic acids, acid strength, concept of pH. Hydrolysis of salts (elementary idea). Buffer solutions, solubility product, common ion effect (with illustrative examples.) Handerson equation.

Unit 7 : Surface chemistry

Adsorption – physisorption and chemisorption; factors affecting adsorption of gases on solids; catalysis : homogenous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state : distinction between true solutions, colloids and suspensions; Lyophilic, Lyophobic, multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsion – types of emulsions. Elementary idea of nanomaterials.

Unit 8 : Nature of chemical bond

Valence electrons, ionic bond, Born Haber cycle : covalent bond parameters. Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence

bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), hydrogen bond.

Unit 9 : Hydrogen

Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides-ionic, covalent and interstitial; physical and chemical properties of water, heavy water. Hydrogen peroxide- preparation, properties and structure; hydrogen as a fuel. Uses of hydrogen peroxide.

Unit 10: s-Block elements (Alkali and alkaline earth metals)

Group 1 and Group 2 elements :

General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens; uses. Preparation and properties of some important compounds: Sodium carbonate, sodium hydroxide and sodium hydrogen carbonate, biological importance of sodium and potassium. Calcium oxide and calcium carbonate and industrial uses of lime and limestone, biological importance of Magnesium and Calcium.

Unit 11 : p-Block elements

Group Introduction to p-Block elements

Group 13 elements :

General introduction, electronic configuration, occurrence. Variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group. Boron-physical and chemical properties, some important compounds: borax, boric acids, boron hydrides. Aluminium; uses, reactions with acids and alkalies.

Group 14 elements :

General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behavior of first element. Carbon – catenation, allotropic forms, physical and chemical properties; uses of some important compounds; oxides. Important compounds of silicon and their uses: silicon tetrachloride, silicones, silicates and zeolites and structure of silicates.

Unit 12: Basic principles and techniques in organic chemistry

General introduction, methods of qualitative and quantitative analysis, Classification and IUPAC nomenclature of organic compounds. Melting point and boiling point. Electronic displacements in a covalent bond; inductive effect, electromeric effect, resonance and hyper conjugation.Homolytic and heterolytic fission of a covalent bond; free radicals,carbocations, carbanions; electrophiles and nucleophiles, types of organic reactions.

Unit 13 : Alkanes

Classification of hydrocarbons – Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism

of halogenation, combustion and pyrolysis.

Unit 14 : Alkenes

Nomenclature, structure of double bond (ethane), geometrical isomerism, physical properties, methods of preparation. Chemical reactions; addition of hydrogen, halogen, water, hydrogen halides (Markovnikoff's addition and peroxide effect) ozonolysis, oxidation, mechanism of electrophilic addition.

Unit 15: Alkynes

Nomenclature, structure of triple bond (ethylene), physical properties. Methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of – hydrogen, halogens, hydrogen halides, water.

Unit 16 : Aromatic compounds

Introduction, IUPAC nomenclature; benzene; resonance aromaticity; chemical properties; mechanism of electrophilic substitution. – nitration, sulphonaiton, halogenation, Friedel Craft alkylation and acylation; Carcinogenicity and toxicity.

UNIT-17: Environmental chemistry

Environmental pollution- air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, green house effect and global warming. Pollution due to industrial wastes, green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

Practical Syllabus - Std. XI

A. Basic laboratory techniques

1. Cutting glass tube and glass rod
2. Bending glass tube
3. Drawing out a glass jet
4. Study of burner
5. Operating pinch cork

B. Characterization and purification of chemical substances

1. Determination of melting point of an organic compound. (p-toludine, naphthalene, oxalic acid, β-naphthol, resorcinol, benzoic acid.)
2. Determination of boiling point of an organic compound. (acetone, methyl acetate, acetic acid, xylene (o,m,p), water)
3. Crystallization of impure sample of any one of the following compounds. Alum, copper sulphate, benzoic acid.

C. Surface chemistry

(a) Preparation of one lyophilic and one lyophobic sol: Lyophilic sol-starch and gum.

Lyophobic sol–aluminium hydroxide, ferric hydroxide, arseneous sulphide.

(b) Study of the role of emulsifying agents in stabilizing the emulsion of oil.

D. Chemical equilibrium

Any one of the following experiments:

(a) Study the shift in equilibrium between ferric ions and thiocyanate ions by changing the concentration of either ion. (b) Study the shift in equilibrium between $[Co(H_2O)_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

E. Experiments related to pH change

(a) Any one of the following experiments:

- Determination of pH of some solutions obtained from fruit juices, varied concentrations of acids, bases and salts using pH paper or universal indicator.
- Comparing the pH solutions of strong and

weak acid of same concentration.

- Study the pH change in the titration of a strong base using universal indicator.

(b) Study of pH change by common ion effect in case of weak acids and bases.

F. Quantitative estimation

- Using a chemical balance.
- Preparation of standard solution of oxalic acid.
- Determination of strength of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.
- Preparation of standard solution of sodium carbonate.
- Determination of strength of a given solution of hydrochloric acid by titrating it against standard sodium carbonate solution.

G. Qualitative analysis

Determination of one cation and one anion in a given salt:

Cations – Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+

Anions – CO_3^{2-} SO_3^{2-} $SO_4^{2-}$$NO_2^-$$NO_3^-$$Cl^-$, Br^-, I^-, $PO_4^{3-}$$C_2O_4^{2-}$$CH_3COO^-$

(Note: Insoluble salts excluded)

H. Detection of nitrogen, sulphur, chlorine, bromine and iodine in an organic compound.

PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects

1 Checking the bacterial contamination in drinking water by testing sulphide ion.

2 Study of the methods of purification of water.

3 Testing the hardness, presence of iron, fluoride, chloride etc. depending upon the regional variation in drinking water and the study of causes of presence of these ions above permissible limit (if any).

4 Investigation of the foaming capacity of different washing soaps and the effect of addition of sodium carbonate on them.

5 Study of the acidity of different samples of the tea leaves.

6 Determination of the rate of evaporation of different liquids.

7 Study of the effect of acids and bases on the tensile strength of fibers.

8 Analysis of fruit and vegetable juices for their acidity.

Note:

Any other investigatory project can be chosen with the approval of the teacher.

Std. XII (Theory)

Unit 1: Solid State

Classification of solids based on different forces; molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea), unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties, **Band theory of metals, conductors and semiconductors and insulators and n and p type semiconductors.**

Unit 2 : Solutions and colligative properties

Types of solutions, expression of concentration of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties –relative lowering

of vapor pressure,**Raoult's law** elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass.**Van't Hoff factor and calculations involving it.**

Unit 3 :Chemical thermodynamics and energetic

Concepts of system, types of systems, surroundings. Work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics – internal energy and enthalpy, Hess' law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation. Phase transition, ionization and solution **and dilution** Introduction of entropy as a state function, free energy change for spontaneous and non spontaneous processes, and equilibrium constant. **Second and third law of thermodynamics**

Unit 4: Electrochemistry

Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and laws of electrolysis (elementary idea), dry cell –electrolytic and galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, fuel cells; corrosion. **Relation between Gibb's energy change and emf of a cell.**

Unit 5: Chemical kinetics

Rate of reaction (average and instantaneous), factors affecting rate of reaction; concentration, temperature, catalyst; order and molecularity of a reaction; rate law and specific rate constant, integrated rate equations and half life (only for zero and first order reactions); concept of collision theory (elementary idea, no mathematical treatment). **Activation energy, Arrhenius equation.**

Unit 6 :General principles and processes of isolation of elements

Principles and methods of extraction – concentration, oxidation, reduction electrolytic method and refining; occurrence and principle of extraction of aluminium, copper, zinc and iron

Unit 7: p-Block elements

Group 15 elements:

General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; nitrogen – preparation, properties and uses; compounds of nitrogen; preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only); Phoshorous-allotropic forms; compounds of phosphorous; preparation and properties of phosphine, halides (PCl_3,PCl_5) and oxoacids (elementary idea only).

Group 16 elements:

General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen; preparation, properties and uses; **Classification of oxides,** simple oxides; Ozone.

Sulphur – allotropic forms; compounds of sulphur; preparation, properties and uses of sulphur dioxide; sulphurc acid; industrial process of manufacture, properties and

uses, oxoacids of sulphur (structures only).

Group 17 elements:

General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens; preparation, properties and uses of chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structure only).

Group 18 elements:

General introduction, electronic configuration. Occurrence, trends in physical and chemical properties, uses.

Unit 8 : d and f Block Elements

d-Block Elements -

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

f-Block elements-

Lanthanoids – Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction **and its consequences. Actinoids –** Electronic configuration, oxidation states. **Comparison with lanthanoids.**

Unit 9: Coordination compounds

Coordination compounds – Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, bonding; **Werner's theory, VBT, CFT**. isomerism, **(structural and stereo)** importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems).

Unit 10 : Halogen derivatives of alkanes (and arenes)

Haloalkanes :

Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions. **Stability of carbocations,R-S and d-l configuration**

Haloarenes :

Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only) **stability of carbocations, R-S and d-l configurations**. Uses and environmental effects of – dichloromethane, thrichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit 11 : Alcohols, phenols and ethers

Alcohols :

Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols; mechanism of dehydration, uses of methanol and ethanol.

Phenols:

Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.

Ethers :

Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit 12 : Aldehydes, ketones and

carboxylic acids

Aldehydes and ketones :

Nomenclature, nature of carbonyl group, methods of preparation. Physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.

Carboxylic acids :

Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit 13: Organic compounds containing nitrogen

Nitro compounds-General methods of preparation and chemical reactions

Amines :

Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Cyanides and isocyanides:

Will be mentioned at relevant places in context.

Diazonium salts:

Preparation, chemical reactions and importance in synthetic organic chemistry.

Unit 14: Biomolecules

Carbohydrates:

Classification (aldoses and ketoses), monosaccahrides **d-l configuration** (glucose and fructose), oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen), importance.

Proteins:

Elementary idea of α -amino acids, peptide, linkage, polypeptides, proteins; structure of amines-primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes.

Lipids and hormones (elementary idea) excluding structure, their classification and functions.

Vitamins: Classification and functions.

Nucleic acids: DNA and RNA

Unit 15: Polymers

Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization. Some important polymers; natural and synthetic like polythene, nylon, polyesters, bakelite, and rubber. **Biodegradable and non biodegradable polymers.**

Unit 16: Chemistry in everyday life :

1. **Chemicals in medicines :** analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines **elementary idea of antioxidants**
2. **Chemicals in food :** Preservatives, artificial sweetening agents.
3. **Cleansing agents :** Soaps and detergents, cleansing action.

Practical Syllabus - Std. XII

A. Chemical Kinetics

(Any one of the following) :

(a) Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid.

(b) Study of reaction rate of any one of the following:

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

(ii) Reaction between potassium iodate, KIO_3 and sodium sulphite (Na_2SO_3)

using starch solution as indicator (clock reaction).

(c) Acid hydrolysis of ethyl acetate.

B. Thermochemistry

Any one of the following experiments:

i] Enthalpy of dissolution of copper sulphate or potassium nitrate.

ii] Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).

iii] Determination of enthalpy change during interaction (hydrogen bond formation) between acetone and chloroform.

iv] Heat of displacement of Cu from $CuSO_4$ by Zn.

C. Electrochemistry

Variation of cell potential in $Zn|Zn^{2+}||Cu^{2+}|Cu$ with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature (demonstration).

D. Chromatography (demonstration)

(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 large difference in Rf values to be provided).

E. Preparation of Inorganic Compounds

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

(ii) Preparation of potassium ferric oxalate.

F. Preparation of Organic Compounds

(i) p-Nitrocetanilide

(ii) Aniline yellow or 2- Napthol aniline dye.

(iii) Iodoform

(iv) Phthalic or succinic anhydride.

(v) Di-benzal acetone

G. Tests for the functional groups present in organic compounds

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

H. Characteristic tests of arbohydrates, fats and proteins in pure samples and their detection in given food stuffs.

I. Determinaiton of concentration/molarity of $KMnO_4$ solution by titrating it against a standard solution of:

(i) Oxalic acid

(ii) Ferrous ammonium sulphate

(Students will be required to prepare standard solutions by weighing themselves).

J. Qualitative analysis

1) Determination of two cations from a given mixture of salts.

2) Determination of two anions from a given mixture of salts.

Cations – Pb^{2+}, Cu^{2+}, As^{3+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Zn^{2+}, Co^{2+}, Ni^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+},NH_4^+,

Anions – CO_3^{2-}, SO_3^{2-}, SO_4^{2-}, NO_2^- NO_3, Cl^-, Br^-, I^-, PO_4^{3-} $C_2O_4^{2-}$ CH_3COO^-

(Note : Insoluble salts excluded.)

PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects:

1 Study of presence of oxalate ions in guava fruit at different stages of ripening.

2 Study of quantity of casein present in different samples of milk.

3 Preparation of soyabean milk and its comparison with the natural milk with

respect to curd formation, effect of temperature, etc.

4 Study of the effect of potassium bisulphate as food preservative under various conditions (temperature, concentration, time etc).

5 Study of digestion of starch by salivary amylase and, effect of pH and temperature on it.

6 Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.

7 Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).

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

Note :

Any investigatory project, can be chosen with the approval of the teacher.

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