COs POs PSOs

Content	Sr. No
BA	1
BCom	2
B.Sc	3
M.Sc	4
Biotechnology	5
BCA	6

POs & Cos for B.A

Programme Outcomes - B. A.

PO1: **Social responsibility and awareness**: The students acquire knowledge in social sciences, literature and humanities which make them sensitive, helping them to grow their ability as responsible citizens. It also creates social consciousness.

PO2: Inculcation of human values: Students acquire the knowledge with human values framing the base to deal with various problems in life with courage and humanity.

PO3: Familiarize learners with the social and economic issues: Learners get familiarize with the social, economic, historical, geographical, political, ideological and philosophical tradition and thinking.

PO4: Communication and linguistic skills: Students acquire good communication and linguistic skills which is the need of modern time and essential for campus drives.

PO5: Competency: It empowers the graduates to appear for various competitive examinations or choose the post graduate programme of their choice.

PO6: Creativity: Students will acquire the sense of social service and creative ability and responsible citizen.

COs : B. A English

B. A. English Paper II & IV: Reading Literature Aim of the Course
CO1: To enable students to read and appreciate various forms of literature and critically interact with them from different perspectives.
CO2: To introduce students to appropriate literary strategies to read literature.
CO3: To pinpoint how far literary language deviates from ordinary language.
CO4: To unravel many meanings in a literary text.
Paper IV: Semester Two Unit One: Methodology of Literature
CO1: Develop their appreciation for the purposes and pleasures of prose fiction and nonfiction.
CO2: Articulate ways that literary works construct values and ethical meanings.
CO3: Practice analytical reading on multiple examples of each genre chosen to illuminate different literary choices and conventions, including texts that are culturally and historically diverse.
CO4: Identify major features of literary form and construct arguments about the relationship between form and the work‟s meaning.
CO5: To understand of various forms of literature, the ode, the lyric, the Sonnet, the novel and
dramatic type‟s comedy and tragedy
CO6: To understand the various aspects of novel and drama

BA II English Optional
CO1: To enable students to read and appreciate various forms of literature and critically interact with them from different perspectives. Objectives of the Course
CO2: To introduce students to appropriate literary strategies to read literature.
CO3: To pinpoint how far literary language deviates from ordinary language.
CO4: To unravel many meanings in a literary text
Paper V &VII: LITERATURE IN ENGLISH 1550-1750 Paper V: Semester III
On successful completion of the course, the students will be able to:
CO1: Interpret various forms of literature.
CO2: Distinguish and analyze literary forms like essay, mock epic, drama and novel.
CO3: Compare and differentiate between literary language and ordinary language.
CO4: Unravel many meaning in literary text.
Paper VI & VIII: LITERATURE IN ENGLISH 1750-1900 Paper VI: Semester III
On successful completion of the course, the students will be able to:
CO1: Understand the literary forms of poetry: Ballad and dramatic monologue, romantic poetry, prose, play and novel in 18th century and 19th century.
CO2: appreciate the poems of S.T Coleridge and Robert Browning,
CO3: Comment on the themes and styles of Oscar Wilde‟s play.
CO4: Understand plot, characters and setting in the novel of Thomas Hardy.

BA III English Optional
CO1: To introduce the students to Modern English Literature as production of the age.
CO2: To familiarize the students with the literary terms and introduce to them the various streams in literary criticism and develop in them skills for literary evaluation.
CO3: To help the students to approach and appreciate Indian literature in English and make them see its place among world literature in English.
CO4: To introduce the students to American literature and its diverse cultures reflected in its writing.
CO5: To make the students able to understand the background of English literature and help them to write on its development.

CO6: To make the students understand how the literature of modern period relates to the important trends of the period.
CO7: To make the students aware of the fact that all readers are critics and introduce them to basic texts in criticism while developing critical thinking in them.
CO8: To introduce the students to the thematic concerns, genres and trends of both Indian Writing in English and American Literature.
CO9: To lead the students to see how texts are affected by the context.
Paper IX & XIII: Twentieth Century English Literature Semester V Contents: Unit One:
Poetry
On successful completion of the course, the students will be able to:
CO1: Understand how the literature of modern period relates to the important trends of 20th century.
CO2: Appreciate poem by T.S Eliot and W.B Yeats.
CO3: Comment on the themes of Osborne and G.B Shaw‟s plays
CO4: Understand the plot, character setting in the novels of Kingsley Amiss and D.H Lawrence.
Paper X & XIV: Introduction to Literary Criticism and Terms Semester
On successful completion of the course, the students will be able to
CO1: Identify and discuss the classical Greek critics of literature.
CO2: Provide a brief overview of the major critical theories by critics like Aristotle, Sir Philip
Sidney, William Wordsworth and F.R. Leavis.
CO3: Learn the terms related to various genres of literature
CO4: Cultivate an understanding of major critical and interpretive methods
Paper XI & XV: Indian Writing in English
CO1: To introduce to nineteenth Century Reform Movements in India; the Indian National Movement; Rise of the Indian Novel; Caste-Class;
CO2: To make aware the students of social, political, and cultural issues reflected in Indian writing in English, with reference to Indian social reformations, freedom struggle, women education and empowerment in nineteenth century.
CO3: To appreciate the artistic and innovative use of language employed by the writers to instill the values and develop human concern in students through exposure to literary texts.
CO4: To familiarize the students with the emergence and growth of Indian Writing in English
in the context of colonial experience.
CO5: To discuss issues concerning Indian Writing in English such as the representation of culture, identity, history, constructions of nation, (post) national and gender politics, cross-cultural transformations.
Semester V Poetry:
On successful completion of the course, the students will be able to:
CO1: Understand the background of Indian English literature and its development.
CO2: Critically appreciate the themes in the poems of Nissim Ezekiel and Arun Kolatkar.
CO3: Understand and evaluate the themes, Plot, character in the plays of Girish Karnad and Vijay Tendulkar.
CO4: Appreciate the theme, setting, characters in the novels of Raja Rao and U.R Anantha Murthy
Paper XII & XVI: Project Work on History of English Literature
CO1: To understand the background of the English literature and help students to write on its

development.
CO2: To write down the aspect of research methodology.
CO3: To write research papers.
CO4: To understand new trends, movements in English literature.
American literature in literary history.

COs : Economics

B.A. Economics Micro Economics:

CO1: This paper is a foundation of economics.

CO2: To understand the meaning and scope of micro economics, the behavior of an economic agent, namely, a consumer, a producer, a factor owner and the price fluctuation in a market.

CO3: To study the behavior of a unit and analysis is generally static and in partial equilibrium framework.

Price Theory:

CO1: To understand various components regarding price determination under various types of markets.

CO2: To understand theory of production, Cost and revenue analysis, forms of market and factor pricing theories.

Indian Economy:

CO1: To study the analytical factor of the students, by highlighting an integrated approach to be functioning aspects of the Indian economy, keeping in view the scope for alternative approaches.

CO2: To study social, political and economic environment influencing policy decisions.

CO3: To develop all these themes, the courses are divided into specific modules.

Macro Economics:

CO: To study awareness of the basic theoretical framework underlying the field of macro economics.

Development Economics:

CO: To understand theories of development underlying the field of development economics.

International Economics:

CO1: To understand the basic principles that trend to govern the free flow of trade in goods and services at global level.

CO2: To understand and analyze the deference between various economies of the world.

Agricultural Economics:

CO1: To study the treatment of issues in agriculture economics to those intending to specialize in the area.

CO2: To familiarize students with policy issues those are relevant to Indian agricultural economics.

CO3: To analyze the issues using basic micro economics.

History of Economic Thought:

CO1: To understand basic ideas of classical, new classical and marginalist economist.

CO2: To compare the basic economic ideas of various economic thinkers of the world.

Money Banking and Finance:

CO1: Money and banking constitutes important components of modern economy.

CO2: To understand the operations of money and banking and their interaction with the rest of the economy is essential to realize how monetary forces operate.

CO3: To understand the monetary and banking system in India.

Public Finance:

CO1: To study the significance and scope of Public Finance.

CO2: To provide detailed information about the fiscal policy, public revenue, public debt and public expenditure.

Statistical Methods:

CO1: To understand the techniques of statistical analysis which are commonly applied to economic problems.

CO2: To study the tools and techniques of stastistical methods.

CO3: To understand how to collect data, its presentation, analysis and making inferences.

Research Methodology:

CO1: To undertsad the social sciences research to the students of economics.

CO2: To know the importance of social research design, data collection and presentation of data.

CO3: To understand the idea of research in social sciences.

Industrial Economics:

CO: In the contemporary world with globalization and liberalization more and more attention is being given to industry. This paper strengthens the Students to deal or adjust with above situation.

Economy of Maharashtra:

CO1: To understand the basic features of the economy of Maharashtra.

CO2: To study the problems related agriculture, industries, cooperative sector and infrastructure in the Maharashtra state.

COs : Hindi

बी. ए.

सामान्य हिंदी (SL – I & II) (बी.ए., बी. कॉम., बी. एस्सी.)

CO1: मानवीय संवेदनाओं का विकास हो जाता है और इंसानीयत को बढावा मिलता है।

CO2: हिंदी कहानी साहित्य का परिचय मिल जाता है।

CO3: हिंदी के प्रमुख लेखक और और उनकी लेखन विशेषताओं का परिचय प्राप्त होता है।

CO4: विद्यार्थिओं के भाषा कौशल का विकास होता है।

CO5: विद्यार्थिओं में हिंदी भाषा के महत्त्व के साथ व्याकरणिक सजकता निर्माण होती है।

प्रश्नपत्र 1 – उपन्यास साहित्य

CO1: विद्यार्थियों की साहित्यिक अभिरूचि का विकास और साहित्य आस्वादन का आनंद देना।

CO2: इंसानी जीवन मूल्यों का विकास और उनके प्रति आस्था निर्माण करना।

CO3: उपन्यास साहित्य की बारिकियों से परिचित करना और हिंदी उपन्यास साहित्य की पहचान करना।

CO4: लेखन और भाषा कौशल का विकास करना।

प्रश्नपत्र 2 – नाटक साहित्य

CO1: हिंदी नाटकों और उसके बहाने साहित्य में नाट्य परंपरा, हिंदी रंगमच, अभिनय तथा व्यावसायिक नाटकों से परिचित करना।

CO2: 'विजयपर्व' नाटक से अशोक की जिंदगी का संघर्ष, युवराज से राजगद्दी और फिर राजगद्दी से निर्वाण तक के सफर का प्रयास युद्ध से शांति भली है की स्थितियों को बयां करता है। अतः विद्यार्थियों पर संघर्ष, रक्तपात, लडाई से शांति भली है के संस्कार हो जाता है।

CO3: 'होरी' नाटक प्रेमचंद का है। इस नाटक के अध्ययन के पश्चात् किसानों की दयनीयता, जमीन से जुडना, पारिवारिक संघर्ष आदि का परिचय मिला। विद्यार्थी भी पहले से किसान परिवारों से जुडे हैं, अतः 'होरी' नाटक में चित्रित पात्र उन्होंने अपने घरों में बसे हैं ऐसा एहसास किया है। बिना पढाई के क्या होता है इसका परिचय भी पाया है। अतः शिक्षा से आत्मनिर्भर बनने की प्रेरणा, सम्मान पाने की लालसा विद्यार्थियों में जगती है।

CO4: 'अलख आजादी की' नाटक भारतीय स्वतंत्रता का लेखा-जोखा प्रस्तुत करता है। आज जिस देश में हम रह रहे हैं, वह कहां से कहां तक का सफर कर चुका है, इससे विद्यार्थी परिचित हो गए हैं। घर-गांव और देश के प्रति देशभक्ति के भाव विद्यार्थियों में जगाने का काम इस नाटक से होता है।

CO5: 'नाटक साहित्य' पेपर के अध्ययन के बाद विद्यार्थियों में हिंदी नाटक साहित्य की बारिकियों को पहचानने की क्षमता का विकास, संवेदनाओं का विकास, नाट्य आस्वादन और नाटकों की आलोचना करने की दृष्टि का विकास हो गया है।

प्रश्नपत्र 3 – हिंदी गद्य साहित्य

CO1: हिंदी कहानी और व्यंग्य साहित्य का अध्ययन करना।

CO2: इंसानी जीवन मूल्यों और संवेदनाओं का विकास और उनके प्रति आस्था निर्माण करना।

CO3: साहित्य आस्वादन और मूल्यांकन क्षमता का विकास करना।

CO4: हिंदी साहित्य की गद्य विधाओं का परिचय करवाना।

प्रश्नपत्र 4 – एकांकी साहित्य

CO1: एकांकी नाटक की तुलना में छोटी विधा है। प्रथम सत्र में नाटकों का अध्ययन और द्वितीय सत्र में एकांकी का अध्ययन है। इससे विद्यार्थियों को नाटक और एकांकी के बिच का फर्क समझ में आता है।

CO2: हिंदी एकांकी के उद्भव और विकास से विद्यार्थी परिचित होता है।

CO3: एकांकी के माध्यम से मानवीय संवेदनाओं का अध्ययन हो गया और जीवन में मानवीय मूल्यों से विद्यार्थी परिचित हो गए। छोटी-छोटी घटनाओं का जीवन में क्या महत्त्व है, इसका परिचय भी विद्यार्थियों को हो गया है।

CO4: 'एकांकी नए पुराने' किताब के भीतर पांच प्रतिनिधिक एकांकियों को पढाई के लिए रखा है, जिससे ऐतिहासिक, सामाजिक और समस्यामूलक एकांकी कैसे होती है, इसका ज्ञान विद्यार्थियों को होता है।

CO5: 'प्रतिनिधिक महिला एकांकी'हिंदी महिला एकांकीकारों की एकांकियों का प्रतिनिधित्व करती है। महिलाओं के अनुभव जगत का बयान करता यह एकांकी संग्रह महिलाओं की मुश्किलों और पीडाओं को विद्यार्थियों के सामने रखता है। अर्थात इससे विद्यार्थी अपने घर-परिवार में रह रही महिलाओं के मुश्किलों से परिचित हो गए हैं।

सामान्य हिंदी (SL – III & IV) (बी.ए., बी. कॉम., बी. एस्सी.)

CO1: साहित्य आस्वादन अभिरूचि का परिसंस्कार करना।

CO2: जीवन मूल्यों के प्रति आस्था निर्माण करना।

CO3: हिंदी के आधुनिक गद्य साहित्य की प्रतिनिधिक रचनाओम का परिचय करना ।

CO4: अत्याधुनिक इलेक्ट्रॉनिक माध्यमों का परिचय करना।

CO5: व्यावहारिक, प्रयोजनमूलक तथा संप्रेषणमूलक व्यावसायिक हिंदी भाषा से विद्यार्थी परिचित हो और रोजमर्रा की जिंदगी में अपनी मांगों को पूरा करने में सक्षमता पाए यह अपेक्षा भी इस पाठ्यक्रम की रही है।

CO6: पत्रलेखन के सारे प्रकार, आवेदन पत्र, बैंकिंग तथा सरकारी कार्यालयों की प्रयोजनमूलक भाषा से विद्यार्थी परिचित होता है।

CO7: हिंदी साहित्य की कहानी, कविता, संस्मरण, रेखाचित्र, डायरी, आत्मकथा, जीवनी, निबंध, यात्रावृत्त, व्यंग्य, रिर्पोताज, पत्र आदि विधाओं का परिचय भी विद्यार्थी कर चुके हैं। जीवन मूल्य, भाव-भावनाओं, संवेदनाओं के परिचय के साथ आधुनिक साधनों का भाषाई प्रयोग कैसे करे इसका परिचय भी विद्यार्थी पाते हैं।

CO8: रेडियो वार्ता लेखन, समाचार लेखन, मीडिया के विविध आयाम, हिंदी भाषा की व्यावसायिक उपयोगिता, बैंकों में हिंदी, वैश्वीकरण के परिप्रेक्ष्य में हिंदी भाषा का महत्त्व, उद्योग-व्यापार में हिंदी के सहारे कैसे आर्थिक प्रगति कर सकते हैं आदि बातों का परिचय करवाना।

प्रश्नपत्र 5 – कथेत्तर गद्य साहित्य

CO1: कथेत्तर गद्य साहित्य पेपर रखने का उद्देश्य यहीं है कि हिंदी के विद्यार्थी हिंदी साहित्य के कथेत्तर विधाओं से परिचित हो।

CO2: 'गद्य गौरव' और 'गद्य प्रभा' किताब के माध्यम से विद्यार्थी रेखाचित्र, निबंध, संस्मरण, जीवनीपरख लेख, व्यंग्य, आत्मकथा अंश, यात्रा वृतांत, लेख आदि विधाओं से भलीभांति परिचित हो।

CO3: साहित्य के विविध विधाओं के आस्वादन का आनंद लेने की आदत और अभिरुचि विकास भी विद्यार्थियों में करना।

CO4: हिंदी कथेत्तर गद्य संवेदना की परंपरा का परिचय करना।

CO5: जीवन मूल्यों के प्रति आस्था पैदा करना।

प्रश्नपत्र 6 – प्रयोजनमूलक हिंदी 1

CO1: हिंदी भाषा के प्रयोजनमूलक रूप का परिचय करना।

CO2: हिंदी भाषा की व्यावहारिकता पर प्रकाश डालना।

CO3: भारत देश की राष्ट्रभाषा होने के नाते हिंदी भाषा की एहमीयत का मूल्यांकन करना।

CO4: हिंदी के राष्ट्रीय और आंतर्राष्ट्रीय स्वरूप का मूल्यांकन करना।

CO5: आधुनिक तंत्र विज्ञान में हिंदी की उपयोगिता पर आकलन करना।

प्रश्नपत्र 7 – आधुनिक हिंदी कविता

CO1: हिंदी साहित्य के पद्य (कविता) के उद्भव और विकास पर प्रकाश डालना, हिंदी कविता के प्रति विद्यार्थियों की अभिरुचि की वृद्धि करना, मानवीय भाव-भावनाएं और संवेदनाओं का विकास करना इस पाठ्यक्रम का उद्देश्य है।

CO2: नागार्जुन द्वारा लिखित खंडकाव्य 'भूमिजा' रामायण के कथा प्रसंग पर प्रकाश डालता है। सीता का ऐतिहासिक मूल्यांकन करते हुए एक नारी के नाते उसकी कौनसी शिकायतें राजा, पति, पुरुष और राज्य के प्रति रही है इसका लंबा मूल्यांकन करना। अर्थात नारी जीवन के संघर्ष और विद्रोह का परिचय इस खंडकाव्य का उद्देश्य है।

CO3: विद्यार्थी 'रामायण', 'रामचरितमानस' तथा अन्य रामायण कथा पर केंद्रित रचनाओं से एक अलग रचना से परिचित हो गए हैं, जिसमें सीता का एक स्त्री होने के नाते पुरुषों के प्रति विद्रोह है इसका परिचय करवाना।

CO4: 'चुनी हुई लंबी कविताएं' पढाई हेतु रखी है। कविता और खंडकाव्य के बिच का साहित्यिक पद्य रूप के नाते लंबी कविताओं को जाना जाता है। इन कविताओं के माध्यम से विद्यार्थी विविध भाव, रस से परिचित हो गए हैं। साथ ही आधुनिक जीवन की परेशानियों, भ्रमभंग, बाजारीकरण, अर्थसत्ता का ताकतवर होना, शब्दों की एहमीयत आदि बातों का परिचित करवाना।

प्रश्नपत्र 8 – प्रयोजनमूलक हिंदी 2

CO1: हिंदी भाषा के विविध रूपों का परिचय करना।

CO2: राजभाषा हिंदी के विविध रूपों का परिचय करना।

CO3: प्रयोजनमूलक भाषा तथा अनुवाद की भूमिका का परिचय करना।

CO4: हिंदी भाषा के प्रयोजनमूलक और व्यावहारिक रूप का परिचय करना।

CO5: भारत देश की राष्ट्रभाषा होने के नाते हिंदी भाषा की एहमीयत का मूल्यांकन करना।

CO6: हिंदी के राष्ट्रीय और आंतर्राष्ट्रीय स्वरूप का मूल्यांकन करना।

CO7: आधुनिक तंत्र विज्ञान में हिंदी की उपयोगिता पर आकलन करना।

प्रश्नपत्र 9 – प्रादेशिक साहित्य

CO1: साहित्य आस्वादन और अभिरूचि का परिष्कार करना।

CO2: जीवन मूल्यों के प्रति आस्था निर्माण करना।

CO3: प्रादेशिक भाषा के साहित्य से परिचय करवाना।

CO4: भारतीय साहित्य का अध्ययन करना।

प्रश्नपत्र 10 – आदि तथा मध्यकालीन हिंदी साहित्य का इतिहास

CO1: हिंदी साहित्य के इतिहास तथा आरंभिक काल का परिचय करना।

CO2: हिंदी साहित्य के लेखन स्रोतों एवं परंपराओं पर प्रकाश डालना।

CO3: हिंदी साहित्य आदिकाल, भक्तिकाल और रीतिकाल का परिचय देना।

CO4: साहित्य आस्वादन और अभिरूचि का परिष्कार करना।

CO5: जीवन मूल्यों के प्रति आस्था निर्माण करना।

प्रश्नपत्र 11 – साहित्यशास्त्र

CO1: साहित्य चिंतन परंपरा का अध्ययन करना।

CO2: साहित्यालोचन क्षमता का परिचय करना।

CO3: साहित्य सृजन के संस्कार करना।

CO4: साहित्य एक प्रकार से शास्त्र है, उसका पढना, चिंतन, आकलन, मूल्यांकन और सृजन करना एक प्रकार की शास्त्रीय तकनीक है। इसी तकनीक का विकास करना इस पाठ्यक्रम का उद्देश्य है।

CO5: साहित्य का स्वरूप, तत्त्व, प्रयोजन, हेतु, शब्दशक्तियां, रस, अलंकार, छंद, विविध विधाओं का स्वरूप, आलोचना आदि अंगों का परिचय विद्यार्थियों को करवाना।

CO6: साहित्य और हिंदी भाषा के विद्यार्थी होने के नाते एक परिपूर्ण इंसान बनने और मानवीय जीवन का आकलन, बोध और मूल्यांकन करने की क्षमता का विकास हो यह इस पाठ्यक्रम का उद्देश्य है, अर्थात 'साहित्यशास्त्र' इस पाठ्यक्रम की पढाई के बाद यह दृष्टि विद्यार्थियों लाना।

CO7: साहित्य का मूल्यांकन करने का नजरिया भी विकसित करना। साहित्य के कलापक्षीय अंगों पर प्रकाश डालने की दृष्टि का विकास करना।

प्रश्नपत्र 12 व 16 – प्रकल्प कार्य

CO1: पठन-पाठन और लेखन कौशलों का विकास करना।

CO2: आलोचनात्मक क्षमता का विकास करना।

CO3: अनुसंधात्मक दृष्टि का विकास करना।

CO4: प्रकल्प प्रस्तुति का तकनीक से परिचित करना।

प्रश्नपत्र 13 – मध्यकालीन काव्य

CO1: भारतीय भक्ति आंदोलन का अध्ययन करना।

CO2: रीतिकालीन संवेदनाओं का अध्ययन करना।

CO3: कविताओं के माध्यम से मध्यकालीन सांस्कृतिक संवेदना का अध्ययन करना।

CO4: भक्ति तथा रीतिकालीन पृष्ठभूमि और प्रवृत्तियों से विद्यार्थियों को परिचित करना।

CO5: साहित्य का चिंतन, आकलन और मूल्यांकन करना एक प्रकार की शास्त्रीय तकनीक है। इसी तकनीक का विकास करना इस पाठ्यक्रम का उद्देश्य है।

प्रश्नपत्र 14 – आधुनिक हिंदी साहित्य का इतिहास

CO1: हिंदी साहित्य के आधुनिक काल का परिचय करना।

CO2: हिंदी साहित्य के आधुनिक काल की पृष्ठभूमि और प्रवृत्तियों पर प्रकाश डालना।

CO3: हिंदी साहित्य के आधुनिक काल में कविता और गद्य लेखन के विविध प्रकारों का आकलन और मूल्यांकन।

CO4: भारतीय स्वातंत्रता संग्राम में हिंदी साहित्यकारों ने कौनसी भूमिका निभाई और देशभक्ति से प्रेरित होकर कितना साहित्य लिखा इसका मूल्यांकन करना।

CO5: हिंदी साहित्य के सामाजिक और आधुनिक पहलुओं पर प्रकाश डालना।

प्रश्नपत्र 15 – साहित्यशास्त्र

CO1: साहित्य चिंतन परंपरा का अध्ययन करना।

CO2: साहित्यालोचन क्षमता का परिचय करना।

CO3: साहित्य सृजन के संस्कार करना।

CO4: साहित्य के रस, अलंकार, छंद, विविध विधाओं का स्वरूप, आलोचना आदि अंगों का परिचय विद्यार्थियों को करवाना।

CO5: साहित्य की विविध विधाओं से विद्यार्थियों को परिचित करवाकर उसका तात्विक अध्ययन करना।

CO6: साहित्य का मूल्यांकन करने का नजरिया भी विकसित करना। साहित्य के कलापक्षीय अंगों पर प्रकाश डालने की दृष्टि का विकास करना।

CO7: विद्यार्थिओं में साहित्यालोचन की दृष्टि को विकसित करना।

प्रश्नपत्र 5 – आधुनिक साहित्य का इतिहास

CO1: हिंदी साहित्य के आधुनिक काल और परंपरा का परिचय करना।

CO2: हिंदी साहित्य के आधुनिक काल की पृष्ठभूमि और प्रवृत्तियों पर प्रकाश डालना।

CO3: हिंदी साहित्य के आधुनिक काल में कविता और गद्य लेखन के विविध प्रकारों का आकलन और मूल्यांकन।

CO4: साहित्य और युगबोध के अंतरसंबंधों का अध्ययन करना।

CO5: हिंदी साहित्य के सामाजिक और आधुनिक पहलुओं पर प्रकाश डालना।

CO6: इतिहासबोध का अध्ययन करना।

CO7: ऐतिहासिक आलोचना का अध्ययन करना

प्रश्नपत्र 6 – पाश्चात्य साहित्यशास्त्र

CO1: पाश्चात्य साहित्य चिंतन परंपरा का अध्ययन करना।

CO2: अद्यतन आलोचनात्मक दृष्टि का अध्ययन करना।

CO3: साहित्यालोचन क्षमता का परिचय करना।

CO4: साहित्य सृजन के संस्कार करना।

CO5: समीक्षात्मक दृष्टि का विकास करना।

CO6: साहित्य एक प्रकार से शास्त्र है, उसका पढना, चिंतन, आकलन, मूल्यांकन और सृजन करना एक प्रकार की शास्त्रीय तकनीक है। इसी तकनीक का विकास करना इस पाठ्यक्रम का उद्देश्य है।

प्रश्नपत्र 7 – रीतिकालीन काव्य

CO1: रीतिकालीन कविता की पृष्ठभूमि का अध्ययन दरबारी संस्कृति के परिप्रेक्ष्य में करना।

CO2: रीतिबद्ध, रीतिसिद्ध औरव रीतिमुक्त कविता का अध्ययन करना।

CO3: रीतिकाल की पृष्ठभूमि और साहित्य लेखन की परंपरा का अध्ययन करना।

प्रश्नपत्र 8 – कहानी साहित्य

CO1: बीसवीं सदी की हिंदी कहानी परिचय करना।

CO2: हिंदी कहानी और प्रमुख कहानी आंदोलनों का परिचय करना।

CO3: हिंदी के प्रमुख कहानिकारों का परिचय करना।

CO4: समकालीन दलित विमर्श, स्त्री विमर्श और आदिवासी विमर्श का मूल्यांकन करना।

CO5: कहानी विधा का तात्विक विवेचन करना।

प्रश्नपत्र 9 – भारतीय साहित्य – 1

CO1: भारतीय साहित्य की अवधारणा का परिचय करना।

CO2: भारतीय भाषा साहित्य के अध्ययन की मदद से भारतीयता की पहचान करना।

CO3: तुलनात्मक अध्ययन की अवधारणा का अध्ययन करना।

CO4: भारतीय साहित्य के प्रतिनिधिक रचनाओं का अध्ययन करना।

प्रश्नपत्र 10 – भाषा विज्ञान

CO1: भाषा का वैज्ञानिक अध्ययन करना।

CO2: भाषा अध्ययन की प्रक्रिया का अध्ययन करना।

CO3: भाषा अध्ययन के ऐतिहासिक परिदृष्य का अध्ययन करना।

CO4: हिंदी भाषा के उद्भव और विकास का परिचय करना।

CO5: भाषा विकास और परिवर्तन का अध्ययन करना।

प्रश्नपत्र 11 – स्वतंत्रतापूर्व हिंदी कविता

CO1: स्वातंत्रतापूर्व हिंदी कविता के विकासक्रम का अध्ययन करना।

CO2: कविता के माध्यम से जनसंवेदना का अध्ययन करना।

CO3: स्वातंत्रतापूर्व काव्य रूपों का अध्ययन करना।

CO4: काव्यस्वादन तथा मूल्यांकन क्षमता का विकास करना।

प्रश्नपत्र 12 – प्रयोजनमूलक हिंदी

CO1: प्रयोजनमूलक भाषा तथा अनुवाद की भूमिका का परिचय करना।

CO2: हिंदी भाषा के प्रयोजनमूलक और व्यावहारिक रूप का परिचय करना।

CO3: भारत देश की राष्ट्रभाषा होने के नाते हिंदी भाषा की एहमीयत का मूल्यांकन करना।

CO4: हिंदी के राष्ट्रीय और आंतर्राष्ट्रीय स्वरूप का मूल्यांकन करना।

CO5: आधुनिक तंत्र विज्ञान में हिंदी की उपयोगिता पर आकलन करना।

CO6: प्रयोजनमूलक भाषा का सैद्धांतिक अध्ययन करना।

CO7: प्रयोजनमूलक भाषा कौशलों का विकास करना।

प्रश्नपत्र 13 – भारतीय साहित्य – 2

CO1: भारतीय साहित्य की अवधारणा का परिचय करना।

CO2: भारतीय भाषा साहित्य के अध्ययन की मदद से भारतीयता की पहचान करना।

CO3: तुलनात्मक अध्ययन की अवधारणा का अध्ययन करना।

CO4: भारतीय साहित्य के प्रतिनिधिक रचनाओं का अध्ययन करना।

CO5: भारतीय साहित्य की अध्ययन की समस्याओं का अध्ययन करना।

प्रश्नपत्र 14 – हिंदी भाषा का इतिहास

CO1: हिंदी भाषा का संरचनात्मक अध्ययन करना।

CO2: हिंदी भाषा के विकासक्रम पर प्रकाश डालना।

CO3: हिंदी की बोलियों का अध्ययन करना।

CO4: देवनागरी लिपि के गुण-दोषों पर प्रकाश डालना।

प्रश्नपत्र 15 – स्वातंत्र्योत्तर हिंदी कविता

CO1: स्वातंत्रोत्तर हिंदी कविता के विकासक्रम का अध्ययन करना।

CO2: स्वातंत्रोत्तर हिंदी कविता के माध्यम से स्वातंत्रोत्तर जनसंवेदना का अध्ययन करना।

CO3: स्वातंत्रोत्तर काव्यरूपों का अध्ययन करना।

CO4: काव्यस्वादन तथा मूल्यांकन क्षमता का विकास करना।

CO5: कविता के कलापक्षीय अंगों पर प्रकाश डालने की दृष्टि का भी विकास करना।

प्रश्नपत्र 16 – माध्यमलेखन

CO1: जनसंचार के माध्यमों का अध्ययन करना।

CO2: माध्यमोपयोगी लेखन का सैद्धांतिक अध्ययन करना।

CO3: माध्यम लेखन कौशलों का विकास करना।

COs : Sociology

B. A. Sociology B.A. Part-I, Semester I Paper no-I: - Introduction to sociology & Paper No-
II:-Individual & Society

CO1: Introduction to the basic concept of Sociology, subject matter & Importance of Sociology
and origin and development of sociology

CO2: Understanding in brief the knowledge of human Society and the institutions and other structural elements

B.A. part-I, Semester II, Paper no III - Introduction to Subfields of Sociology& Paper No
IV – Indian Social Composition

CO1: Student of Sociology must have the Knowledge of those branches to understand the scope of sociology &its wideness.

CO2: This course mainly covers the broad segments of Indian society which are India‟s geographical ethnic and religious distinctiveness

B.A. Part-II, Semester III Paper No-V: -Problems of Rural India Paper no-VI: - Contemporary Urban Issues

CO1: A student if sociology must be aware about the changing scenario of Rural India and the
contemporary problems of rural development

CO2: Understanding and analytical capacity among students about urbanization urban planning
and urban problems

B.A. part-II, Semester IV Paper no- VII -: Population in India Paper No-VIII: - Sociology
of Development

CO1: To understand causes, consequences of Indian population change.

CO2: Provides broad introduction to many development Issues in India

B.A. part-III Semester V paper: - Paper IX: Sociological Tradition Paper No. X: Introduction to Research Methodology Paper No. XII (Main) Urban Sociology

CO1: To provide the students with the basic understanding of emergence of sociological thought and to know about pioneer sociologists with their contributions to sociology

CO2: To introduce the Research Methodology for better understanding of application of social
sciences

CO3: To enable the students of urban Sociology to comprehend the basic elements of the subject and to draw attention of the students towards increasing urbanization

B. A. part - III Semester VI Paper NoXIII. : Sociological Theories Paper No. XIV: Social
Research Methods Paper No.XVI: Urban Society in India

CO1: Acquaintance with the sociological thought of the Pioneers of Sociology

CO2: Introduction to various steps in conducting research.

CO3: To analyze critically social problems of urban Indian and to discuss regarding impact of
modernization and industrialization upon the cities

M. A. Sociology M.A. part-I, Semester I Paper no-401: Theoretical Perspective in Sociology-1 Paper No-402-Methodology of Sociological Research Paper No- 421; Rural Society in India-1 Paper No 430; Contemporary Social Problems in India-1

CO1: Introduction to the Theoretical concept of Sociology.
CO2: To impart knowledge to students regarding the fundamentals of methodology of social research.
CO3: A student if sociology must be aware about the changing scenario of Rural India and the
contemporary problems of rural development
CO4: To familiarze the students with the concept of social problems and theortical approaches
to understand them
M.A., Semester II, Paper no 403- Theoretical Perspective in Sociology 2 Paper No 404 – Methodology of Sociological Research and statistics Paper No 431- Rural Society in India 2
Paper No 440; Contemporary Social Problems in India-2
CO1: To introduces students some of the interactionist theory
CO2: To develop a critical outlook at the exiting perspective and methodsnand to evolve conceptual clarity which can lead them in thir future research
CO3: To understand basic characteristics nature of peasant society in India
CO4: To study various strategics programme and measures adopted in the modern socity to solve these problem
M.A. Part-II, Semester III Paper No-501: -Classical Sociological Tradition: Marx and Durkhim Paper no-502: - Sociology of Development Paper No- 521: Social Demography:
1 Paper No- 526: Criminology -1
CO1: To make the students understand the sociological theories of Karl Marx and Emile Durkhim
CO2: To provide an overview of the historical development process
CO3: To introduce the student to the popuiation groth in India and the world
CO4: To introduce the students subject of Criminology.
M.A. part-II, Semester IV Paper no-503 -: Classical Sociological Tradition: Weber, Pareto,
Cooley and Mead Paper No: -504 Development – An Indian Experience Paper No: -531: Social Demography 2 Paper No- 536: Criminology -2
CO1: To develop insight for understanding the later developments in sociological theory
CO2: To understand the contemporary socio - economic framwork of develompment in India
CO3: To make the students to understand the basic demographic concepts to develop their sociological knowledge.
CO4: To introduce the students subject of Criminology.

COs : Political Science

B. A. Political Science Pol-101, Basic Concept of Political Science

CO1: To Know the Students Concept of State and Its origin, Nature & Elements.
CO2: To Study the Development of the Concept of Rights- State background of Political History.
CO3: To analyze transitions in societal systems the structure and order of the system.
CO4: To Enable Students to Understand Basic Concepts in Political Science.

Pol-102, Government and Politics of Maharashtra

CO1: To establish pattern of Maharashtra State.
CO2: To examine the government and non-government responses.
CO3: To History of the Freedom Movement in India Collected from the Bombay Government
Records.
CO4: To understand Historical and Political Background of Maharashtra.
CO5: To explain Structure and Functions of State Government in India.
CO6: To understand the Political Process of Maharashtra.

Pol-103, Basic Concept of Political Science

CO1: To defined terms in a social science outside of their immediate area of expertise, for example economist needing information regarding a political science term.
CO2: To create awareness among students about democracy.
CO3: To help the students to understand social and political values in indian political system.
CO4: To understand the concept of welfare state.

Pol-104, Government and Politics of Maharashtra

CO1: To contest elections to be a part of legislative and executive large parties came to be dependent upon smaller parties for the formation of government‟s power.
CO2: To provide solution to social problems.
CO3: To help the students to know the
CO4: To study Panchayat raj History.
CO5: To orient the student about ideology and programme of political parties in maharashtra.

Pol-105, Indian Government and Politics

CO1: The government is to secure all round progress and prosperity of society.
CO2: The more important political events in recent government of India.
CO3: To understand basic principles of Indian constitution.
CO4: To study various constitutional institutional in India.

Pol-106 International Relations

CO1: To explain the behavior of individual entrepreneurs and firms rather than world politics,
liberalism contains a theory of international relations.
CO2: The study has important implications for international law and international relations generally.
CO3: To explain basic concepts in international relations.
CO4: To understand the stages of development of international relation as a separate discipline.

Semester - IV Pol-107, Indian Government and Politics

CO1: To explain structure of union government and budgetary process in India.
CO2: To understand the framework of Indian supreme court.
CO3: To explain about party system and electoral reforms.
CO4: To evaluate the federal structure and centre state relation.

Pol-108, International Relations

CO1: To explore the nature of informal reasoning in international relations and to consider how
instruction could help enhance.
CO2: To study the various international and regional organization.
CO3: To aware about some major issues in internationalism.
CO4: Critically evaluate the non-alignment movement.

Semester V Pol - 109, Indian Political Thinkers

CO1: To understand modern political thinkers contribution.
CO2: It has been a problem in cultural transformation how best to accomplish the Cultural transformation of Indians into non-Indians.
CO3: To study the religious political, social and cultural thoughts of Indian political thinkers.

Pol - 110, Western Political Thinkers 33

CO1: To understand the views of western political thinkers.
CO2: To understand the ideas of western political thinkers and its relevance.
CO3: To understand the thoughts of Plato on various political concepts.
CO4: To know ideas of Aristotle and how he is father of political science.

Pol - 112, Indian Political Thinkers

CO1: To study Dr.B.R.Ambedkar‟s thoughts on democracy, economy and society.
CO2: To CRitically evaluate M.N. Roy‟s radical humanism.
CO3: To understand Nehru‟s democratic and secular views and its applicability.
CO4: To know of ideas of Maulana Azad views on religion and politics.

Pol - 113, Western Political Thinkers

CO1: To present and thoroughly document the wealth of historical and institutional material.
CO2: To study the thoughts of J. S. Mill and its applicability.
CO3: Critically evaluate the thoughts of Karl Marx and its relevance.
CO4: To understand the theory of utilitarianism.

Pol – 111, Political Ideologies

CO1: To Study the development and features of the political ideologies.
CO2: To understand relevance of political ideology in contemporary period.
CO3: To show how these ideologies originated and how and why they have for most of the twentieth century, the clash of three political ideologies, liberalism, communism, and fascism.
CO4: To relate the theoretical discussion and analysis of ideologies to the transformations,

Pol - 114, Political Ideologies

CO1: To study of ideology of socialism.
CO2: Critically evaluate the ideology of fascism.
CO3: To study the development and features of the communism.
CO4: To explain the ideology of feminism.

M. A. Political Science PSC-401, Western Political Theory

CO1: To introduce Western political theory.
CO2: The meaning and nature of political theory, debates as well as recent theoretical trends in
the discipline.
CO3: To explain the philosophy, political theory and political ideology and uses of political theory.

PSC- 402, Theories of International Relations

CO1: This course aims of making the students understand changing nature of international relations in terms explain the traditional approaches as well as major scientific approaches.
CO2: To explain the theories of international relations.

CO3: To understand the basic concepts of international relations.

PSC- 403, Comparative Politics: Theoretical Perspective

CO1: To the research process and ought to precede the other three objectives of comparison description and classification.

CO2: To help students of politics make such statements the best that Since the 1950s, political
scientists have increasingly sought to use comparative methods to help build.

CO3: To know the emergence of the new source of polities, comparative politics and comparative governments.

PSC- 432, State Politics in India

CO1: To introduce to the dynamics of state politics in India.

CO2: To focus on the study of the evolutionary nature of centre-state relationship in the country
after independence.

CO3: To assist students to know elections and political parties, changing nature of political process in states.

PSC- 404, Modern Political Ideologies

CO1: The ideas serve as the foundation of political system.

CO2: This course is an attempt of teaching student‟s world‟s great ideas which are broadly considered as political creeds usually termed political ideologies: liberalism, conservatism, socialism, Marxism etc.

CO3: Orient student about political ideology and development.

PSC- 405, World Politics: Issues and Debates

CO1: To introduce students the critical analysis of new trends in the field of world politics.

CO2: To create awareness about important issues in contemporary world politics.

CO3: To explain the cold war and its impact on world politics.

PSC- 406, Western Political Thought

CO1: Political thoughts occupy central position in the knowledge mechanism of political science, without which students are incapable.

CO2: To understand the theory debate and unable to make an inquiry into the socio-political problems. It is, therefore, necessary to generate their thinking by appearing this course.

CO3: To understand the views of western political thinkers on various political concepts.

PSC- 435, Public Administration

CO1: To acquaint the students with the concept of public administration.

CO2: Its theories, management and organization and to imbibe its significance as a growing discipline in all walks life.

CO3: To understand the basic concepts of public administration approaches and new public administration.

PSC- 407, Research Methods in Social Sciences

CO1: To acquaint the student with the basic concepts of research and to familiarize.

CO2: To understand the latest & scientific techniques and modern trends in social research.

CO3: To understand the major study in the research process concepts variables and hypothesis.

PSC- 408, Indian Political Thought

CO1: The precise aim of the ant colonial movement in India was to institute citizenship and to
put in place a constitutionality that was derived not from colonial authority but from a constituent.

CO2: To set the evidence out fairly, interpret it strictly, and alert readers to their political aims

were moderate, but pursued with a steady bureaucratic passion: they were driven far more the desire to achieve things than by the desire, common enough in politics.
CO3: To evaluate the British impact on Indian society, the theoretical perspective of social reforms movements in 19th century social vs political reforms.
PSC- 409, India's Foreign Policy
CO1: To understand basic approaches in the study of foreign policy.
CO2: To explain elements in the making of foreign policy and particularly focus on the changing nature of India‟s foreign policy.
CO3: To know the basic approaches to the study of foreign policy.
PSC- 437, Modern Trends in Political Theory
CO1: To provide an overview of the current trends in political theory.
CO2: To throw an insight into the divergent trends in modern political theory.
CO3: To study the import ants of social justice, theory of rights, feminist political theory.
PSC- 410, Constitutional process in India
CO1: To understand the constitution - various provisions, rights and duties.
CO2: The dignity of every citizen the emphasis is on secular values, liberty, equality, justice and brotherhood.
CO3: To know the framing of the Indian constitution background and working of the constituent assembly and philosophy of constitution.
PSC- 411, Political analysis
CO1: To deal with key issues related to political theory.
CO2: To familiarize the students with the ever on-going debate on the concepts like liberty, equality and a just social order from Liberal and Marxist perspectives.
CO3: To focus on modern analytical trends that claim to break a new ground in the study of political theory.
PSC- 412, South Asia and the world
CO1: To understand the challenges of a global job market.
CO2: To focus on micro study of South Asian region.
CO3: To specialize the students on South Asian study.
PSC- 423, Dr. Babasaheb Ambedkar on Caste: A study of his text annihilation of caste
CO1: Indian caste ridden society has created unprecedented socio-political problems within the
frame work of parliamentary system.
CO2: Impact the caste system has constituted major retard the developmental process of Indian
democracy. With this reference the course offers caste debate of Dr. B. R. Ambedkar so as to get introduce the student over the problem of caste.
CO3: To explain Dr.Ambedkar‟s theories, vision of ideal society, social vs politial reforsms, annihilation of caste.

COs : Sociology

B. A. Sociology B.A. Part-I, Semester I Paper no-I: - Introduction to sociology & Paper No-
II:-Individual & Society

CO1: Introduction to the basic concept of Sociology, subject matter & Importance of Sociology
and origin and development of sociology

CO2: Understanding in brief the knowledge of human Society and the institutions and other structural elements

B.A. part-I, Semester II, Paper no III - Introduction to Subfields of Sociology& Paper No
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CO2: Introduction to various steps in conducting research.

CO3: To analyze critically social problems of urban Indian and to discuss regarding impact of
modernization and industrialization upon the cities

COs : Psychology

Psychology B.A. I year

PSY 101 General Psychology

CO1: To provide solid foundation for the basic principles of psychology.

CO2: To familiarize students with the historical trends in psychology, major concepts, theoretical perspectives, empirical findings.

CO3: To provide an overview of the applications of psychology.

PSY 102 Social Psychology

CO1: To enable student to appreciate how individual behaviour is influenced by social and cultural contexts.

CO2: To enable student to develop an understanding of functioning of dyads, groups and organization.

CO3: To understand the unique features of the Indian socio-cultural context.

CO4: To understand how social problems can be analyzed in terms of various social psychological theories.

PSY 104 Basic Concepts in Psychology

CO1: To provide solid foundation for the basic principles of psychology.

CO2: To familiarized students with the historical trends in psychology, major concepts, theoretical perspectives, empirical findings.

CO3: To provide an overview of the applications of psychology.

PSY 105 Basic Concepts in Social Psychology

CO1: To enable student to appreciate how individual behaviour is influenced by social and cultural contexts.

CO2: To enable student to develop an understanding of functioning of dyads, groups and organization.

CO3: To understand the unique features of the Indian socio-cultural context.

CO4: To understand how social problems can be analyzed in terms of various social psychological theories.

PSY -103 106 Psychology Practicum's: Experiments & Test:

CO1: To nurture the skill of observation.

CO2: To create interest in psychological phenomenon.

CO3: To develop awareness of psychological tools, techniques and tests.

B.A. II year PSY 110 Psychology for Living:

CO1: To enable student to make the connection between psychology and its practical application to everyday life.

CO2: To train student how psychological principles can help them to face life‟s challenges

CO3: To enables students to relate what they are learning in class to issues that they encounter
in their everyday life, such as stress, health, work, personal relationships communication and self-esteem.

PSY 111 Psychological Statistics:

CO1: To train students in various psychological assessment techniques.

CO2: To acquaint the student and make them understand the different statistical methods with
their uses and interpretations.

CO3: To impart skills necessary for selecting and applying different tests for different purpose
such as evaluation, training, rehabilitation etc.

CO4: To nurture the skill of observation.

PSY 107 Psychology of Adjustment:

CO1: To enable student to make the connection between psychology and its practical application to everyday life.
CO2: To train student how psychological principles can help them to face life‟s challenges.
CO3: To enables students to relate what they are learning in class to issues that they encounter
in their everyday life, such as stress, health, work, personal relationships, communication and self-esteem.

PSY 108 Psychological Testing:
CO1: To train students in various psychological assessment techniques.
CO2: To acquaint the student and make them understand the different statistical methods with
their uses and interpretations.
CO3: To impart skills necessary for selecting and applying different tests for different.

B.A. III year PSY 113 Subsidiary Abnormal Psychology
CO1: Critical Thinking
CO2: Effective Communication
CO3: Community and Civic Responsibility
CO4: Quantitative Literacy
CO5: Scientific and Technological Effectiveness

PSY 114 Organizational Psychology
CO1: This course aims and understanding the behaviour of individuals along with other organizational assets
CO2: Students are expected to learn not only the theoretical aspects of the course but also to familiarize themselves with the skills, techniques and their application

PSY 119 Subsidiary Psychopathology:
CO1: To impart knowledge about the normality and Abnormality.
CO2: To make students understand the nature and Course of various abnormal conditions.
CO3: To impart knowledge and skills needed for Psychological assessment of different abnormal conditions.
CO4: To impart Knowledge and skills needed for Psychological assessment of different abnormal conditions.

PSY 117-123 Project Work.
CO1: Students should able to write a project in psychology.
CO2: Students should acquire the skills of presentation –PPT PSY 115 & 121
CO3: To nurture the skill of observation.

PSY 122 Main counselling in action
CO1: To impart Knowledge about the counselling
CO2: To make students understand the nature and Course of various conditions in which counselling is needed.
CO3: To impart Knowledge and skills needed for Psychological assessment of different counselling conditions conditions.

COs : History

B. A. History Shivaji and His Times (1630-1818)

CO1: Introduce innovative study techniques in the study of History of Maratha to make it Value based, conceptual and thought provocative. The secular ruler was very accommodating of all religions. He had numerous Muslim soldiers in his army. His only aim was to overthrow Mughal rule and establish Maratha Empire. He was also very supportive of people who converted to Hinduism.
CO2: Introduce international elements in the study of Marathas to facilitate comparative analysis of this history.
CO3: Highlight the importance of past in exploration of present context.
CO4: Understand the socio-economic, cultural and political background of 17th century Maharashtra.
CO5: Increase the spirit of healthy Nationalism & Secularism among the student.

History of Modern Maharashtra (1818-1960)
CO1: To give the student an introduction to the study of Maharashtra.
CO2: To acquaint the student with the basis understanding of how Maharashtra has grown to the present position and how the state has reached the present day.
CO3: To impart high quality of education to the students.
CO4: To prepare the students for a variety of challenging careers through innovation in teaching and research.
CO5: To develop comprehensive understanding of interdisciplinary issues of the society.

History of Early India (up to B.C. 300)
CO1: The study of ancient Indian history is important to those who want to understand the true nature of many races and tribes intermingled in early India.
CO2: Ancient India also saw the birth of Brahmanism of Hinduism, Jainism, and Buddhism, but all these cultures and religious intermingled and interacted.
CO3: Increase the spirit of healthy nationalism & secularism among the student.
CO4: The study of ancient Indian history is important to those who want to understand the true nature of the past and also to those who seek to understand the nature of the obstacles thatimpede India's progress as a nation.

History General Paper-VIII History of Mughal India (A.D. 1526- A.D. 1757)
CO1: To study the Mughal contribution to the Indian subcontinent.
CO2: The study of Mughal period would see a more fruitful blending of Indian, Iranian and Central Asian artistic, intellectual and literary traditions than any other in India's history.
CO3: To study Persian art and culture amalgamated with native Indian art and culture.
CO4: To study the political unity provided by the Mughal rulers.

History General Paper – IX Historiography
CO1: The study of development of history as a discipline.
CO2: The study of the writing of historical accounts.
CO3: Indicate the importance of thinking "historiographically" as well as historically.
CO4: To provide new angles to research and new interpretations to dispute.

History General Paper-X History of Indian national Movement (A.D. 1885-A.D. 1947)
CO1: To provide a comprehensive understanding of the transformations in the economy of colonial India.
CO2: to introduce land and agrarian policies under the British rule.
CO3: To develop nationalism in student mind.
CO4: To understand the British economic policy and why Indian revolted.
CO5: To understand all the Government and British parliamentary acts that led to the

foundation for the constitution

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B. Com

COs POs

PSOs

Programme Outcomes -B. Com.

PO01: Management skills: The programme can provide administrative abilities for providing trained professionals for banking, industrial and financial institutions.

PO02: Problem analysis: An intensive knowledge of accountancy, business law, economic principles, and taxation to complex commercial problems can be achieved.

PO03: Professional ethics: After completion of B.Com, B.Com graduate can work as a- Accountant, Auditor, Consultant, Company Secretary, Business Analyst, Finance Officer, Sales Analyst, Junior Analyst, Tax Accountant, Stock Broker, Economist, Business Development Trainee.

PO04: Professional skills: A student can also opt for LLB after B.Com. Business Law is one of the best options in it.

COs : B. Com

B.Com First Year, Semester II (CBCS Pattern) Financial Accosting II (Paper–III) CO1: To provide knowledge of basic accounting concepts, accounting standards and accounting principles the aim is also to provide the practical accounting knowledge.

CO2: To enable the students about depreciation and royalty account.

CO3: To make an ability to understand accounts of non trading concern and branch accounts.

CO4: To enrich students in financial accounting

CO5: To enhance the ability to solve practical sums of departmental accounts and consignment accounting.

Business Mathematics and Statistics II (Paper–IV)

CO1: To make students learn and understand the concept of Co-relation.

CO2: Student is expected to have knowledge of the types and methods of estimating regression lines.

CO3: This course provides Knowledge about Index Numbers, its types and uses.

CO4: To understand the procedure of application of Probability.

CO5: This Course provides knowledge & ability among students for using statistical tools with Computer.

Business Organization and Management (Paper –V)

CO1: To make students learn and understand the foundation of Indian Business & emerging opportunities in Business.

CO2: Student is expected to have knowledge of the forms of organization.

CO3: This course provides Knowledge about process of Management & Organization.

CO4: To understand the procedure of Leadership, Motivation & Control. **CO5:** This Course provides knowledge of functional areas of management.

Business Communication (Paper–VI)

CO1: To make students learn and understand Business communication.

CO2: Student is expected to have knowledge about the Business correspondence i.e. letter writing, preparing the resume and job application letter.

CO3: This course provides Knowledge about report writing.

CO4: To understand the procedure of oral presentation.

CO5: This Course provides knowledge & ability among students

for modern forms of communicating.

Optional Group Entrepreneurship Development (Paper-VII)

CO1: To make students learn and understand the role of Entrepreneurship in Economic Development.

CO2: Student is expected to have knowledge of the emerging trends in Entrepreneurship Development

CO3: This course provides Knowledge about Project identification and Resource Management.

CO4: To understand the procedure of Entrepreneurship Development Program.

CO5: This Course provides knowledge for students how to Selection, Preparation & what are the requirement for the project.

Office Management (Paper–VII)

CO1: To make students learn and understand the Modern office & its Functions

CO2: Student is expected to have knowledge about office system and role of manager in system

CO3: This course provides Knowledge about office services.

CO4: To understand the procedure of record management and reporting.

CO5: This Course provides knowledge for EDP Environment for effective office management.

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B.Com. S. Y. III Semester III (CBCS Pattern) Corporate Account-I (Paper -III)

CO1: To create awareness about Corporate Accounting in conformity with the provisions of Companies Act and as per Indian Accounting Standards.

CO2: To make aware about the conceptual aspect of corporate accounting. **CO3:** To acquaint about issue and forfeiture of shares with re-issue procedure. **CO4:** To make practice the final account of Joint Stock Company.

CO5: To enable students to acquire the knowledge of redemption of debentures and preference shares.

CO6: To understand the knowledge of profit prior to incorporation.

Cost Account-I (Paper -IV)

CO1: To create ability of students to understand basic cost accounting concepts and the classification of cost.

CO2: To provide the knowledge of material handling methods such as LIFO, FIFO, simple average and weighted average.

CO3: To explain the labor costing methods like incentive scheme, wage payment, time and piece rate etc.

CO4: Awareness will be received about costing methods and techniques.

CO5: To develop overheads knowledge and its methods of distribution.

I.T. Application in Business I (Paper -V)

CO1: To aware about C-Language and relevant software.

CO2: To acquaint the student about importance of operators in C and use of computer for it.

CO3: To enhance the knowledge of control benchmarking and decision making in C.

CO4: To guide students about loop and its type.

CO5: To make practice arrays and strings.

CO6: To encourage students to learn practical application of C-Language.

GST Account-I (Paper -VI)

CO1: Creating ability of students to learn tax concepts, procedure and legislation pertaining to GST in India.

CO2: To make perfection in learning of GST Registration process.

CO3: To understand practical online GST registration process and

filling GST returns.
CO4: To provide knowledge of supply under GST and valuation of supply.
CO5: Ability of student is to be existed to learn input tax credit.
CO6: Understand GST accounting with their documentation and keeping process of records in GST.

Financial Management-(Paper -VII)

CO1: To enhance financial literacy of students.
CO2: To make aware students about financial planning and financial sources.
CO3: To analyses budgeting and learned different methods or techniques of capital structure.
CO4: To acquaint about working capital management of a firm and its importance.
CO5: To learn how to analyze leverages.
CO6: To enlighten students regarding the dividend policy and decision making in finance.

Indian Economy (Paper -VII)

CO1: To orient the students about the recent trends in Indian Economy.
CO2: To create awareness about economic reforms in India since 1991.

CO3: To inculcate knowledge of various aspects of Indian Economy through practical approach like calculation of GDP, national income etc.

CO4: To provide detail information of causes, effects and government measures to reduce unemployment in India.

CO5: To acquaint the knowledge of five years plans and budget.

B.Com. T.Y. Old Pattern (Semester V and VI) Advanced Financial Accounting-I (Paper No. XXIX) and Advanced Financial Accounting-II (Paper No. XXXV)

CO1: To equip the students with the ability to analyze, Interpret and use financial account in business enterprise.

CO2: To introduce stock market, Electricity Company, insolvency accounts accounts of local government and farm accounting.

CO3: To provide the knowledge of social accounting, departmental accounting, investment accounting, bank final account and accounts of insurance companies.

Management Accounting-I (XXX) and Management Accounting-II (XXXVI)

CO1: To equip the students with the ability to analyze interpret accounting information in managerial decision making.

CO2: To have a good working knowledge of the subject.

CO3: To understand the application of management accounting techniques. **CO4:** To provide the knowledge of budgeting and responsibility accounting. **Cost Accounting-I (XXXI) and Cost Accounting-II (XXXVII)**

CO1: To expose the students to the basic concepts and the tools used in cost accounting.

CO2: To provide the knowledge about Single and output costing.

CO3: To explain the different accounting methods such as contract costing, operating costing and process costing.

Indirect Taxes and Direct Taxes-I (XXXII) and Indirect Taxes and Direct Taxes-II (XXXVIII)

CO1: To expose students to the basic tax concepts, procedure and legislation pertaining to indirect tax.

CO2: To provide the basic of Income tax act 1961.

CO3: To understand practical knowledge of income for salary and business and profession.

CO4: To provide knowledge to student of all direct sources of income tax. **New Auditing Trends-I (XXXIII) and New Auditing Trends-II (XXXIX) CO1:** To understand about the auditing procedure.

CO2: To enable the students to understand the auditing concepts and new auditing trends. **CO3:** To explore the knowledge Cost and Management Audit, Human Resource Audit, Investigation, Trends in Cooperative Audit and Tax Audit are explained throughout the subject work.

Optional Group Banking and Insurance-I (XXXIV) and Banking and Insurance-II (XXXX)

CO1: To familiarize student with banking and practices of banking.

CO2: To equip the students with the knowledge of modern banking.

CO3: To develop employability of student in banking, financial and other economic sector.

CO4: This course enables the students to know Fundamental of Insurance. **Information and Communication Technology-I (XXXIV) and Information and Communication Technology-II (XXXX)**

CO1: To familiarize the students with the programming in C environment.

CO2: To familiarize the student with all the latest new age system prevalent in business Domain.
CO3: To Provide the knowledge of E-banking, Security in e-banking, ERP, BPO and Knowledge Management.

B.Sc

COs POs

PSOs

Program Outcomes - B. Sc.

PO1: Scientific temperament: It inculcates scientific attitude in the minds of learners in physical, chemical, material, life and mathematical sciences. Students acquire scientific abilities like logical thinking, problem solving approach, data collection and decision making.

PO2: Basic scientific knowledge: Students acquire scientific knowledge to extract information, formulate and solve problems in systematic manner.

PO3: Technical competence and practical skills: The learners acquire skills to handle basic scientific instruments following the general lab safety practices through experimental skills

PO4: Creative thinking and numerical ability: It empowers the learners with creative thinking and numerical ability.

PO5: Environment and sustainability: It provides understanding of current scenario and necessity of sustainability along with solutions. Students are made aware of environment related issues and sustainable technology development.

PO5: Competency: The program prepares learners for post-graduation and highereducation. Students get eligible for appearing to the competitive exams such as MPSC and banking sectors.

Program Outcomes – M. Sc.

PO1: Scientific knowledge: Leaners acquire scientific knowledge. Students acquire ability to integrate and in-depth knowledge in the concerned subject. The program gives the interdisciplinary applications of the respective subject.

PO2: Problem analysis and analytical thinking: Learners can identify, formulate, review research literature, formulate research problem, and analyze them and derive conclusions. Learner can develops ability to formulate research problem using the basic principles of mathematical, biological, physical and chemical sciences.

PO3: Research skills: Students can acquire research skills through project works which are the foundations of research.

PO4: Basic instrumentation handling: Learners acquire skills of handling basic instrumentation skills.

PO5: Design / development of solutions: Learners can design solutions for scientific problems through practical based experiential learning for cultural, societal, and environmental considerations.

PO6: Development: Learners can acquire knowledge independently for personal and professional development.

PO7: **Research Aptitude:** Basic orientations of students towards research methodology and project work.

COs: Mathematics

B. Sc.- Mathematics Differential Equations

CO1: To understand the homogeneous and separable first order differential equations.

CO2: To understand the exact differential equations.

CO3: To understand homogenous linear equation with constant coefficient and variable coefficient

CO4: To find the solution of non-homogenous first order differential equations.

CO5: To find the solution of Bernoulli‟s equation.

Geometry

CO1: To understand geometrical terminology for plane, right line, sphere, cylinder and cone.

CO2: To know the geometrical results to find centre and radius of the circle.

CO3: Students find equation of lines and planes in space.

CO4: Student will be able to find angle between two planes and to find length of perpendicular

from a given point to a given line.

CO5: Students are able to identify parallel and perpendicular lines.

Differential and Integral Calculus

CO1: Students develop the concepts of limit, function, continuity, discontinuity and derivative.

CO2: Students become familiar with hyperbolic functions, inverse hyperbolic functions, derivatives, and higher order differentiation.

CO3: Students understand the consequences of Rolle‟s Theorem and mean value theorem for differentiable function.

CO4: Student understands definite integral as the limit of a sum.

CO5: Student will be able to understand the concept of divergence, curl, gradient and it‟s applications.

Number Theory

CO1: Students are able to find quotient and remainders from integer division.

CO2: Students apply Euclid‟s algorithm and Backward substitutions.

CO3: Students understand the concept of Congruences, residue classes and least residue.

CO4: Student knows the concepts addition and multiplication of integers modulo n.

CO5: Students are able to solve linear congruences.

Numerical Methods.

CO1: Student becomes familiar with numerical solutions of nonlinear equations in a single variable.

CO2: Students know the concepts numerical interpolation and approximation of functions.

CO3: Student solve first order initial value problem using Euler‟s method.

CO4: Student solve first order initial value problem using a second order Runge- Kutta Method.

CO5: Students are able to find numerical solution of ordinary differential equations.

Integral Transform and Partial differential Equations

CO1: Students understand the concept of beta and gamma function and its application.

CO2: Students are able use to Laplace transform to solve ordinary and partial differentialequation.

CO3: Students apply the properties of Laplace Transform to solve examples.

CO4: Students know the difference between linear and nonlinear partial differential equations.

CO5: Student able to solve the linear and nonlinear partial differential equation by various methods like Lagrange‟s, Charpit‟s, Jacobi‟s, Monge‟s Method.

Mechanics (I & II)

CO1: Students understand the concepts particle, rigid body, force, equilibrium etc.

CO2: Students can find the components of velocity and acceleration in a given direction.

CO3: Students follow the concepts momentum, angular momentum, work, energy and pointsfunctions in mechanics.

CO4: Students know what is projectile and motion of projectile.

CO5: Students know the differential and pedal equations of central orbits and their applications

Abstract Algebra (I & II)

CO1: Students understand the number systems and algebraic structures.

CO2: Students understand the concept Ring and special types of Rings.

CO3: Students identify the difference between homomorphism and isomorphism of a group.

CO4: Students know and apply the concepts of linear dependence and linear independence ofvectors.

CO5: Students are able to give the examples of inner product space.

Ordinary Differential Equations (I & II)

CO1: Students know the difference between equation and differential equation.

CO2: Students are able to find the solution of linear differential equation of first and second order.

CO3: Students understand the initial value problem and its solutions.

CO4: Students know the concept Wronskian of solution.

CO5: Students can find singular point and regular singular point of the differential equation.

Real Analysis (I & II)

CO1: Students become familiar with terminology sets, elements, operations on sets, functions,
operations on functions.

CO2: Students are able to define and recognize the basic properties of the field of real numbers.

CO3: Students are able to understand the concept of series of real numbers, convergence and Divergence.

CO4: Students are able to understand the definition of Metric Space and continuous function on
metric space and difference between open sets and closed sets.

CO5: Students are able to define Riemann integral and its properties and also Fourier series and
its application**M. Sc. Mathematics M.Sc. F. Y. (Mathematics) Abstract Algebra I & IICO1:** Students solve a wide variety of problems based on Sylow theorems.

CO2: Students understand fundamental theorem of finitely generated Abelian group.

CO3: Students find order of a group and an element.

CO4: Students evaluate basis and dimension of vector spaces.

CO5: Students understand Galois Theory.

Real Analysis I & II

CO1: Students know the extension of a measure.

CO2: Students use technology tools to solve the problems of Riemann and Lebesgue integrals.

CO3: Students demonstrate the ability to apply analytical and theoretical skills to model and solve the problems based on measure spaces.

CO4: Students understand how to find the Four Derivatives

CO5: Students solve the examples on the general integral.

Topology (I & II)

CO1: Students know the difference between open and closed sets on different topological spaces.

CO2: Students know the two Fundamental topologies, i.e. Indiscrete and Discrete topologies.

CO3: Students can understand when two topological spaces are Homeomorphic.

CO4: Students identify the concept of connectedness, compactness and Separation axioms.

CO5: Students understand concepts of Bases, Sub-bases, Nets, Filters and Ultrafilter.

Complex Analysis I & II

CO1: Students know the basic concept of complex numbers.

CO2: Students follow the concept of metric spaces and topology with respect to complex plane.

CO3: Students learnt the topics of Power series, Cauchy-Riemann equations and harmonic functions.

CO4: The student understands complex integration.

CO5: Students learnt the functions like Gamma function, Riemann Zeta function together with

Weistrass factorization theorem.

Differential Equations (I & II)

CO1: Students understand Linearly Dependence or Independence of functions by using the Wronskian of the functions.

CO2: Students are able to solve Simple Harmonic Motion Problems and Damped Motions problems.

CO3: Students understand the concept of Existence and Uniqueness of solutions.

CO4: Students are able to solve the Initial value problems and Boundary value problems.

CO5: Students recall the concept of Maximum and Minimum Principle.

Functional Analysis

CO1: Students unify many principles learned at earlier stages of Real-Analysis.

CO2: Students understand reflexivity of a Hilbert Space.

CO3: Students are able to learn projection and self-adjoint operators.

CO4: Students define inner-product spaces and solve the problems based on it.

CO5: Students know normed linear spaces and Banach spaces.

Partial Differential Equations

CO1: Students are able to classify whether the second order Partial differential equation is Elliptic, Hyperbolic or Parabolic.

CO2: Students understand the concept of four fundamental equations. i.e. Laplace Equations, Transport Equations, Heat equations and wave equation.

CO3: Students understand Mean value theorems, Green‟s Theorem and poison‟s Equation.

CO4: Students can find solution of Heat equation and Wave equation.

CO5: Students know the Burger Equation.

Numerical analysis

CO1: Students can apply the Numerical Methods. i.e. Bisection, False position, Newton-Raphson to solve nonlinear equations.

CO2: Students are able to find the Errors and the Rates of Convergence.

CO3: Students recognize Iterative methods i.e. Jacobi- Gauss seidel methods.

CO4: Students know the Numerical Differentiation and Numerical Integration.

CO5: Students can apply the interpolation methods for solving the problems numerically.

CO6: Mechanics Students know the concepts of generalized co-ordinates and generalized momentum.

CO7: Students are able to solve the problems on functional

CO8: Students understand the planar and spatial motion of a rigid body.

CO9: Students understand the motion of a mechanical system using Lagrange- Hamiltonian Formulae.

CO10: Students are able to find the Isoperimetric problems and Geodesic.

Fuzzy Mathematics

CO1: Students know the concepts of Crips set and Fuzzy set theory.

CO2: Students understand the methods of fuzzy logic.

CO3: Students can recognize Fuzzy logic membership function.

CO4: Students know the concepts of alpha- cuts and strong alpha- cuts.

CO5: Students understand the first and second characterization theorems.**Linear Integral Equations**

CO1: Students find the solutions to Initial Value Problems and Boundary Value Problems.

CO2: Students can distinguish between pointwise and uniform convergence.

CO3: Students find the derivatives of higher order.

CO4: Students can recall Laplace and Fourier transforms learned at graduation.

CO5: Students identify whether the given kernel is symmetric or seperable kernel.**Fluid Mechanics I & II**

CO1: Students know the types of fluids and Euler‟s equation, equation of continuity and Bernoulli‟s equation.

CO2: Students understand the sources and sink.

CO3: Students learn Blasius and Milne Thomson circle theorem.

CO4: Students studied viscous flows.

CO5: Students learn Navier-Stokes equations and its applications.

Operation Research I & II

CO1: Students learn simplex method.

CO2: Students can solve transportation and assignment problems.

CO3: Students understand Game theory.

CO4: Students understand the sequencing problems of different types.

CO5: Students are able to learn non-linear programming problems.

COs: Microbiology

B.Sc. Microbiology B. Sc. I year- Semester I Paper I. Fundamentals of Microbiology

CO1: To familiarize the students with the basic concepts related with viruses and prokaryoticcells.

CO2: To understand the concepts of microbiology.

CO3: To study molecular and structural unity of microbial life.

B. Sc. I year - Semester I Paper II. Microbiological Techniques and General MicrobiologyCO1: To understand different microbes do not play an important role.

CO2: To exploit the useful microorganisms and control the harmful ones.

CO3: To isolate microorganisms in pure form, understand the significance of pure culture.

CO4: To grasp the methods of cultivation and preservation of microbial cultures.

CO5: To understand and use methods of visualizing microorganisms and practical aspects ofsterilizing techniques.

B. Sc. I year- Semester II Paper V. Cytology and General Microbiology

CO1: To identify and describe the parts of a bacterial cell and state the function of eachbacterial cell structure.

CO2: To describe the types of nutrients that is used by microorganisms for growth andmetabolism.

B. Sc. I year- Semester II Paper VI. Basic BiochemistryCO1: To study microorganisms

CO2: To understand the basic concepts of biochemistry in detail carbohydrates, lipids, proteins, nucleic acids, pH and buffers.

B.Sc. II year- Semester III Paper VII. Environmental Microbiology.

CO1: To understand the significance of air pollution, air sanitation, air as carrier of microorganism and significance of air flora in human health, hospitals and industries.**CO2:** To study the determination of sanitary quality of water.

CO3: To understand the importance of indicators of fecal pollution, ways to sanitize potablewater.

CO4: To understand sewage treatment and disposal.

B.Sc. II year- Semester III Paper VIII. Immunology

CO1: To study the significance of normal flora, normal defensive mechanism of host, virulencefactors of microorganisms and process of infection.

CO2: To understand the various types of immunity and their mechanism, general methods ofprophylaxis.

CO3: To grasp the immunological concepts with reference to antigens, antibody andantigenantibody

reaction.

Paper XI. Applied Microbiology.

CO1: To know the composition of milk, sources of microorganisms in milk, desirable and undesirable changes brought by microorganisms in milk, diseases spread by milk, microbiological examination of milk. Sterilization and pasteurization of milk.

CO2: To understand the groups of microorganisms in food, principles of food preservation, microbial spoilage of canned and non- canned foods, food borne diseases and

intoxication, fermented foods and probiotics.

B.Sc. II year- Semester IV Paper XII. Clinical Microbiology.

CO1: To understand concepts in etiology, pathogenesis laboratory diagnosis, epidemiology,

prophylaxis and chemotherapy of few human diseases caused by bacteria, viruses, fungusand protozoa.

CO2: To study diseases they study are tuberculosis, syphilis, malaria, typhus fever, candidiasis, typhoid, and cholera, infection caused by Staphylococcus aureus, Streptococcus pneumoniae, HIV, Hepatitis virus, and oncogenic viruses.

B.Sc. III year- Semester V Paper XV. Microbial Genetics

CO1: To understand and apply the principles and techniques of molecular biology which prepares students for further education and employment in teaching, basic research, or thehealth professions.

CO2: To study core molecular genetics concepts including molecular biology, genetics, cellbiology, physiology.

B. Sc. III year- Semester V Paper XVI. Microbial Metabolism.

CO1: To acquaint with the basic concepts of metabolism and free energy.

CO2: To introduce the various types of energy yielding metabolism, comparative account offermentation, respiration and photosynthesis.

CO3: To aware the students of the various pathways of carbohydrate fermentation.

CO4: To familiarize students with basic concept of enzyme action, classification of enzymesand enzyme inhibition.

CO5: To understand the aspects of aerobic respiration, biosynthesis of nucleotides andcatabolism of unsaturated fatty acids and nucleic acids.

B.Sc. III year- Semester VI Paper XIX. Recombinant DNA technology

CO1: To understand core molecular genetics concepts including molecular biology, genetics, cell biology, physiology.

CO2: To demonstrate working knowledge in a defined skill set of molecular biology andbiotechnology protocols including PCR, Plasmid isolation, gene isolation and cloning, DNA sequencing.

B. Sc. III year- Semester VI Paper XX. Industrial Microbiology.

CO1: To acquaint with historical events in Industrial microbiology, design of a fermentor, IPand W.H.O. standards of sterility.

CO2: To familiarize with screening methods, preservation of industrial strain, strain improvement methods, inoculum and fermentation medium development.

CO3: To make aware of different typical fermentations like penicillin, vitamin B12, L-Lysin, ethyl alcohol, citric acid, amylase, Baker‟s yeast.

COs: Botany

B. Sc. Botany Diversity of Cryptogams-I

CO1: Introduction about basic plant group like Algae and Fungi.

CO2: To equip the students with all life science fundamental practical skills.

CO3: Make aware about the economic and medicinal value of cryptogrammic plant.

Morphology of Angiosperms

CO1: Introduction about basic structure of plants.

CO2: To develop practical knowledge of Angiosperm plants

Diversity of Cryptogams-II

CO1: To understand the various category of plants with morphological features of Bryophytes and Pteridophytes.

CO2: Analyze the peculiar characteristics features of plant groups in relation with its internal characteristics.

CO3: Make aware of economic and medicinal value of cryptogrammic plant.

Histology, Anatomy and Embryology

CO1: To get detail knowledge of internal structure of plant parts

CO2: To use this knowledge in Wood Industry, Forensic science.

CO3: To understand development of seed and seed certification.

Taxonomy of Angiosperm

CO1: Familiarize with basic terminology, plant systematic and its different classification.

CO2: To identify Angiosperm plants and their use.

Plant Ecology

CO1: Knowledge of anatomical characterization of plant for the understanding ecological adaptation.

CO2: Study its eco-friendly conservation and sustainable utilization.

CO3: Students cop up with the ecosystem mechanism, analyzing plants ecosystem.

Gymnosperms and Utilization of plants

CO1: To make aware about the economic and medicinal value of Gymnosperms and Angiosperms.

CO2: To understand some important terminology in industrial economically important higher plant groups species.

Plant Physiology

CO1: To understand plant physiology, different life process, streams like Plant genetics and

Plant biotechnology.

CO2: To use the knowledge for advance study in plant sciences.

Cell and Molecular Biology

CO1: To create the innovative approaches to aware the students in basic terminology of plant cell

CO2: To get the detailed knowledge of cell at molecular level.

CO3: To apply this information for development of humankind

Diversity of Angiosperms-I

CO1: Create awareness about the plant resources

CO2: To classify plants on the basis of various morphological aspects

CO3: Participate in laboratory experiments for understanding the basic principles of life sciences and helpful for gaining primary information.

Genetics and Biotechnology

CO1: To Study basic terms in Mendelian and Non mendelian genetics

CO2: To focus on Biotechnological importance for improvement and satisfaction of all need of human kinds

CO3: To give basic information regarding the plant biotechnology and its application in agriculture, Horticulture, medicinal and industrial crops.

Diversity of Angiosperms-II

CO1: To study its eco-friendly conservation and sustainable utilization of plants

CO2: Knowledge about flora in the area.

COs: Chemistry

B. Sc. Chemistry Paper I Inorganic Chemistry

CO1: To study the basics of atomic structure - atomic orbitals, Quantum numbers, Heisenberg uncertainty, Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configurations of the elements, Bohr's atomic model.

CO2: To understand some periodic properties - atomic and ionic radii, ionization energy, electron affinity and electro negativity with reference to trends in periodic table and application in predicting chemical behavior.

CO3: To study s and p- block elements.

Paper No. II Organic Chemistry

CO1: To understand basic concepts in organic chemistry- reactions, reagents and mechanisms of organic reactions.

CO2: To study stereochemistry and its importance.

CO3: To familiarize open chain compounds like alkanes, alkenes and aromatic compounds chemistry and their importance.

Paper V Physical Chemistry

CO1: To understand basic mathematical concepts - logarithmic relations, curve sketching, linear graphs and calculation of slopes, differentiation of functions simple mathematical functions, maxima and minima, partial differentiation.

CO2: To understand kinetic theory of gases, kinetic gas equation, and gas laws - Boyles Law, Charles Law, Grahams Law of diffusion, Avogadro's hypothesis, deviation from ideal behavior, van der Waals equation of state.

CO3: Critical Phenomena: PV isotherms of real gases.

CO4: To study chemical kinetics: Factors influencing the rate of reaction, rate law and characteristics of simple chemical reactions - zero order, first order, second order, Pseudoorder, half life. Arrhenius equation, concept of activation energy. Catalysis: Definition, types, and characteristics, Enzyme catalysis.

CO5: To understand basics of liquid and solid state - Intermolecular forces, structures, liquid crystals: Classification, structure of nematic and cholesteric phases.

CO6: To study solids, Miller Indices, laws of crystallography, X-ray diffraction by crystals. Derivation of Bragg equation.

CO7: To familiarize with colloidal state

Paper VI Inorganic Chemistry - II

CO1: To understand chemical properties of the noble gases, chemistry of xenon, structure and

bonding in xenon compounds.

CO2: To understand types of bonds- ionic, covalent and coordinate, Hydrogen bonding, Vander-

Waals forces, Metallic bond Therories of bonding - VBT, VSEPR, MOT with formation and shapes of molecules.

CO3: To understand the basics of nuclear chemistry - Isotopes, Isobars mass, Binding Energy,

Packing fraction N/Z ratio, Radio activity, properties of fundamental particles, Artificial transmutation. Applications with respect to trans-uranic elements, carbon dating.

CO4: To study theory of volumetric analysis - Types of titrations, volumetric apparatus, calibration of pipette and burette, indicators used in pH - titrations, oxidizing agents usedin titrations. Theory of Internal, External and self-indicators for redox titration.

(Organic Chemistry) Paper IX

CO1: To understand structure, reactivity, and methods of preparation and chemical reactions of different types of compounds - alcohols, Phenols, aldehydes-ketones, amines and carboxylic acids.

CO2: To study named reactions- Pinacol-Pinacolone rearrangement, Fries Rearrangement, Claisen Rearrangement, Gatterman Synthesis and Reimer Tiemann Reaction, Baeyer- Villeger Oxidation, Benzoin, Aldol Knoenenagel condensations, Mannich Reactions. Hoffmann Bromamide Reactions, Gattermann Koch synthesis, Hell-Volhard-ZelinskyReaction. Regents in organic chemistry - LiAIH4, LTA, PTC.

CO3: To understand the basic functional group transformations, Aromatic electrophilic substitution reactions, nucleophilic additions.

(Physical Chemistry-I) Paper X

CO1: To understand the basic concepts in thermodynamics.

CO2: To understand the laws of thermodynamics and terms like W, q, du and dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process,Hess‟s law.

CO3: To study Carnot cycle, its applications, concept of entropy, Gibbs and Helmholtz Functions, Criteria for thermodynamic equilibrium and spontaneity, their advantage overentropy change. Variation A with P, V and T.

CO4: To understand equilibrium constant and free energy - law of mass action, Le Chatelier's principle, Reaction isotherm and reaction isochore, Clapeyron equation, Clausius-Clapeyron equation.

(Physical Chemistry-II) Paper XIV

CO1: To study the basic terms and laws- Henry law, Raoults law in phase equilibrium and

phase rule.

CO2: To understand different systems- Water, Pb-Ag, Mg-Zn, $FeCl_3$-H_2O, phenol-water, trimethyl amine - water, nicotine- water system, acetone-dry ice.

CO3: To understand the concept of ideal behavior and deviations from ideality.

CO4: To understand the concept of conductivity and its types, Kohlrausch‟s law, Arrhenius Theory of Electrolyte Dissociation, Ostwald‟s dilution law, Transport number: and its determination, Conductometric titrations.

CO5: To familiarize with types of reversible electrodes, Nernst Equation, Cell E.M.F., single electrode potential, Reference electrodes, Electro-chemical series, Electrolytic and galvanic cells, types of cells, Thermodynamic quantities of cell reactions, Concepts - pH, pKa and their determination, Buffers- types, and mechanism of action, Henderson-Hasselbalch equation. Corrosion: Concept, types and electrochemical theory.

(Inorganic Chemistry) Paper XIII

CO1: To familiarize with transition elements, lanthanides and actinides with reference to characteristics, position in periodic table and variation in periodic properties.

CO2: To understand concepts and theories in coordination compounds -Werner‟s co-ordination theory, EAN rule, VBT, isomerism, chelates.

CO3: To understand the concepts of acids and bases - Arrhenius, Bronsted-Lawry, Lux-Flood, Solvent System and Lewis Concept of Acids and Bases

CO4: To study chemical reaction in non-aqueous solvents.

Paper XVII Physical Chemistry

CO1: To understand concepts in Quantum Mechanics - Black body radiation, Planck’s radiation law, photoelectric effect, Bohr's modes of hydrogen atom, Compton Effect. De Broglie Hypothesis, the Heisenberg‟s uncertainty principle, Harmiltonian operator, Schrödinger wave equation postulates of quantum mechanics. Schrödinger wave equationfor H-atom.

CO2: To study the basics of spectroscopy - Electromagnetic radiation, regions of the spectrum, Born-Oppenheimer approximation, Rotational Spectrum - Diatomic molecules, energy levels of a rigid rotor (semi classical principles), selection rule, rotational spectra of rigid diatomic molecule, determination of bond length.

CO3: To understand photochemistry - Photochemical processes, laws of photochemistry, Grothus - Drapper law, Stark-Einstein law, Jablonsiki diagram qualitative description of fluorescence, phosphorescence, nonradiative processes, quantum yield and photosensitized reactions.

CO4: To study some physical properties and their relation with the assignment of molecular

structure- Optical activity, dipole moment, magnetic property.

CO5: To introduce nano-materials - Properties, methods of synthesis and applications.

Paper XVIII Organic Chemistry

CO1: To introduce organic spectroscopy - ^{1}H NMR, shielding and DE shielding, chemical shifts, interpretation of PMR spectra of simple organic molecules, combined problems on UV,IR and PMR spectroscopic techniques.

CO2: To familiarize students with organometallic compounds - Structure, methods of synthesis and synthetic applications of Grignard reagents, Organozinc and organolithiumcompound.

CO3: To understand organic synthesis via enolates - Active methylene compounds, Claisen condensation, Acidity of alpha hydrogen and its synthetic applications.

CO4: To introduce Fats, oils and detergents - Saponification value, iodine value, and acid value. Detergents preparation of sodium alkyl sulphonate, alkyl benzene sulphonate, and amide sulphonate, cleansing action of detergent.

Paper XIX Organic Chemistry

CO1: To understand nature metal-ligand bonding in transition metal complexes - crystal field theory with respect to octahedral, tetrahedral and square planer complex.

CO2: To familiarize with electronic spectra of transition metal complexes.

CO3: To introduce organo metallic compounds - classification, nomenclature, synthesis and reactions.

CO4: To study the roles and biological functions of metals in biological systems.

CO5: To introduce chromatography - types, classification and applications.

Paper No. XVII Organic Chemistry

CO1: Curriculum benefits to study the heterocyclic compounds in details, their aromatic characters and importance in medicinal chemistry, structure elucidation of five- and six-member heterocyclic compounds using molecular orbital theory.

CO2: It covers synthesis and properties of some five- and six-member heterocyclic compounds.

CO3: It helps to study carbohydrates chemistry and their importance.

CO4: It covers synthesis and properties of some polymers, polymerization reactions.

CO5: It covers constitution, classification, synthesis and properties of some dyes.

CO6: It covers constitution, classification, synthesis, properties and applications of some drugs.

COs : Physics

F. Y. B. Sc. Physics 101- Paper No I: Mechanics, properties of matter & sound:

CO1: To familiarize students with basic concepts of Mechanics.
CO2: To have deep understanding of Newton,,s laws of gravitation and their applications.
CO3: To understand the concepts of viscosity and elasticity thoroughly.
CO4: To understand the phenomena of surface tension and its applications.
CO5: To understand the concept of ultrasonic and acoustics effectively.
CO6: To enable students to solve numerical problems involving topics covered.

Paper No II: Heat and Thermodynamics

CO1: To understand the concept of thermal conductivity and its application.
CO2: To understand the concept of real gases and transform phenomena.
CO3: To enable students to understand the laws of thermodynamics and thermodynamic processes.
CO4: To study the concept of entropy thoroughly.
CO5: To study heat engines and their efficiency.
CO6: To enable studnets to solve numerical problems involving topics covered.

Semester II 104- Paper No IV: Geometrical and Physical Optics

CO1: To familiarize students with basic concepts of optics.
CO2: To have deep understanding of cardinal points of optical system.
CO3: To understand the concept of interference thoroughly.
CO4: To enable students to summarize the phenomena of diffraction and polarization.
CO5: To enable to solve numerical problems involving topics covered.

Paper No V: Electricity and Magnetism

CO1: To understand the basic concepts and laws in electrostatics.
CO2: To study the basic concepts and laws in dielectrics.
CO3: To get knowledge of the basic concepts and laws of magnetism.
CO4: To understand the basic concepts of Transient current.
CO5: To enable students to solve numerical problems involving topics covered

S. Y. B. Sc. Physics Semester III 201- Paper No VII: Mathematical, Statistical Physics and Relativity

CO1: To familiarize students with the mathematical methods used in physics.
CO2: To familiarize students with the vector algebra.
CO3: To get acquaintance with the differential equations.
CO4: To familiarize students with partial differential equations.
CO5: To familiarize students with Classical and quantum Statistics.
CO6: To understand the concepts of special theory of relativity.
CO7: To apply these mathematical methods to solve problems in physics.

202- Paper No VIII: Modern and Nuclear Physics

CO1: To familiarize students with basic properties of nucleus.
CO2: To have deep understanding of radioactivity and its applications.
CO3: To familiarize students with nuclear forces and elementary particles.
CO4: To understand construction and working of various particle accelerators and detectors.
CO5: To understand construction and working of photoelectric effect.
CO6: To study different photoelectric cells.
CO7: To enable students to solve numerical problems involving topics covered.

Semester IV 205- Paper No XI: General Electronics

CO1: To familiarize students with the basic electronic components.
CO2: To understand the concept of semiconductors.

CO3: To have deep knowledge about semiconductor devices.

CO4: To familiarize with the transistor circuits and there characteristics.
CO5: To understand oscillators and multivibrators.
CO6: To understand the process of modulation and demodulation.
CO7: To solve numerical problems involving topics covered.

206- Paper No XII: Solid state Physics
CO1: To familiarize students with basic concepts of structure of solids.
CO2: To familiarize with various types of characterization techniques.
CO3: To understand the concept of bonding and band theory of solids deeply.
CO4: To understand the transport properties thoroughly.
CO5: To enable students to solve numerical problems involving topics covered.

T. Y. B. Sc. Semester V 54 301- Paper No XV: Classical and Quantum Mechanics
CO1: To understand the mechanics of the system of particles.
CO2: To understand d‟Albert, principle, Langranges Equation and its application.
CO3: To familiarize students with the historical background of Quantum Mechanics.
CO4: To understand the wave function and its physical interpretation clearly.
CO5: To familiarize with the time dependent and time independent Schrodinger equations and
their applications.
CO6: To familiarize students with various operators used in Quantum Mechanics.
CO7: To enable students to solve numerical problems involving topics covered

Paper No XVI: Electrodynamics
CO1: To familiarize students with various differential operators to study the Gauss law.
CO2: To familiarize with basic concepts and equations related to time varying fields such as Faradays law, Len‟s law etc.
CO3: To write expression for poynting vectors for electromagnetic waves.
CO4: To enable to to write wave equations.
CO5: To solve numerical problems involving topics covered.

Semester VI 305- Paper No XIX: Atomic, Molecular Physics and LASER
CO1: To familiarize students with conceptual development of atomic model.
CO2: To understand one or two valence electron systems deeply.
CO3: To understand Zeeman effect, paschan back effect, Stark effect.
CO4: To understand Molecular Raman Spectroscopy.
CO5: To have deep introduction to lasers.
CO6: To familiarize students with different types of laser.
CO7: To understand construction and working of various types of lasers.
CO8: To be aware with various applications of lasers.
CO9: To enable students to solve numerical problems involving topics covered.

Paper No XX: Non-conventional Energy sources and Optical Fibers
CO1: To introduce students with various types of renewable energy sources.
CO2: To familiarize students with various applications of solar energy.
CO3: To familiarize students with various applications of biomass energy.
CO4: To familiarize students with the wind mechanics.
CO5: To create awareness among students about energy conservation.
CO6: To familiarize students with optical fibers.
CO7: To familiarize students with various applications of optical fibers.
CO8: To enable students to solve numerical problems involving topics covered.

BIOTECHNOLOGY

COs POs PSOs

Programme Outcomes - B. Sc.

PO1: Scientific temperament: It inculcates scientific attitude in the minds of learners in physical, chemical, material, life and mathematical sciences. Students acquire scientific abilities like logical thinking, problem solving approach, data collection and decision making.

PO2: Basic scientific knowledge: Students acquire scientific knowledge to extract information, formulate and solve problems in systematic manner.

PO3: Technical competence and practical skills: The learners acquire skills to handle basic scientific instruments following the general lab safety practices through experimental skills

PO4: Creative thinking and numerical ability: It empowers the learners with creative thinking and numerical ability.

PO5: Environment and sustainability: It provides understanding of current environmental scenario and necessity of sustainability along with solutions. Students are made aware of environment related issues and sustainable technology development.

PO5: Competency: The programme prepares learners for post-graduation and higher education. Students get eligible for appearing to the competitive exams such as MPSC and banking sectors.

Programme Outcomes – M. Sc.

PO1: Scientific knowledge: Leaners acquire scientific knowledge. Students acquire ability to integrate and in-depth knowledge in the concerned subject. The programme gives the interdisciplinary applications of the respective subject.

PO2: Problem analysis and analytical thinking: Learners can identify, formulate, review research literature, formulate research problem, and analyze them and derive conclusions. Learner can develops ability to formulate research problem using the basic principles of mathematical, biological, physical and chemical sciences.

PO3: Research skills: Students can acquire research skills through project works which are the foundations of research.

PO4: Basic instrumentation handling: Learners acquire skills of handling basic instrumentation skills.

PO5: Design / development of solutions: Learners can design solutions for scientific problems through practical based experiential learning for cultural, societal, and environmental considerations.

PO6: Development: Learners can acquire knowledge independently for personal and professional development.

PO7: **Research Aptitude:** Basic orientations of students towards research methodology and project work.

PSOs of B.Sc. Biotechnology

PSO01: Graduates will gain and apply knowledge of Biotechnology, Science and Engineering concepts to solve problems related to field of Biotechnology (**BL3**).
PSO02: Graduates will be able to identify, analyze and understand problems related to biotechnology and finding valid conclusions with basic knowledge in biotechnology (**BL4**).
PSO03: Graduates will be able to design and develop solution to Biotechnology problems by applying appropriate tools while keeping in mind safety factor for environmental & society (**BL6**).
PSO04: Graduates will be able design, perform experiments, analyze and interpret data for investigating complex problems in biotechnology and related fields (**BL6**).
PSO05: Graduates will be able to decide and apply appropriate tools and techniques in biotechnological manipulation (**BL5**).
PSO06: Graduates will be able to justify societal, health, safety and legal issues and understand his responsibilities in biotechnological engineering practices (**BL2**).
PSO07: Graduates will be able to understand the need and impact of biotechnological solutions on environment and societal context keeping in view need for sustainable solution (**BL5**).
PSO08: Graduates will have knowledge and understanding of related norms and ethics in biotechnology product / technique development (**BL2**).
PSO09: Graduates will be able to undertake any responsibility as an individual and as a team in a multidisciplinary environment (**BL3**).
PSO10: Graduates will develop oral and written communication skills (**BL6**).
PSO11: Graduates will have thorough knowledge in Biotechnology and will also be ready to engage themselves in lifelong learning (**BL2**).
PSO12: Graduates will be able to demonstrate knowledge of project and finance management when dealing with Biotechnology problems (**BL3**).

PSOs of M. Sc. Biotechnology

The course aims to provide an advanced understanding of the core principles and topics of Biotechnology and their experimental basis, and to enable students to acquire a specialized knowledge and understanding of selected aspects by means of a lecture series and a research project. Hence, the main objectives of the program are:

PSO01: To provide an introduction to the basic concepts of Biotechnology and its recent advances (**BL2**).

PSO02: For the basic understanding, this course includes advanced biochemistry, cell and molecular biology, immune technology, and microbial biotechnology. Moreover, several laboratory courses given in the individual sections of the curriculum with detailed information on the importance of biotechnology in basic and applied research (**BL2**).

PSO03: Finally this course explains the advanced sections of biotechnology like genetic engineering, nano-biotechnology, computational biology and medical biotechnology (**BL3**).

PSO04: This course provides necessary theoretical and practical experience in all divisions of biotechnology to pursue a professional career in this field (**BL2**).

PSO05: To provide broad exposure to various societal, ethical and commercial issues in the various aspects of biotechnology (**BL3**).

COs : Biotechnology

B.Sc. Biotechnology Paper-I: Physical Chemistry

After completion of course/paper students will be able to:

CO1: To acquaint students with concepts in thermodynamics, kinetics and redox reactions.

CO2: To impart skills in kinetics and chemical reactions.

Paper-II: Organic and Inorganic Chemistry

After completion of course/paper students will be able to:

CO1: To acquaint students with bioorganic molecules.

CO2: To impart the knowledge of classification, structure and characterization of biomolecules.

Paper-III: Microbial cell diversity

After completion of course/paper students will be able to:

CO1: To study origin, evolution, and genetic diversity of microbial life

CO2: To study physiological diversity of metabolic and bioenergetics pathways

CO3: To understand the process of microbial speciation.

Paper-IV: Biostatistics

After completion of course/paper students will be able to:

CO1: Use and interpret results of, descriptive statistical methods effectively.

CO2: Demonstrate an understanding of the central concepts of modern statistical theory and their probabilistic foundation.

CO3: Select from, use, and interpret results of, the principal methods of statistical inference and design.

CO4: Communicate the results of statistical analyses accurately and effectively.

CO5: Make appropriate use of statistical software.

CO6: Read and learn new statistical procedures independently.

Paper-V: Instrumentation

After completion of course/paper students will be able to:

CO1: To understand safety measures in laboratory, handling and care of instruments.

CO2: Determination of pK_a, Standard solutions.

CO3: Monochrome staining, negative staining, Gram s staining.

CO4: Biochemical test, specific gravity, viscocity.

CO5: Motility testing by hanging drop method

Paper-VI: Biomolecules

After completion of course/paper students will be able to:

CO1: To understand the basic component or biomolecules of living organisms

CO2: To understand the classification, biological function and chemical and physical properties of carbohydrates, lipids, nucleic acids and proteins.

Paper-VII: Organic Chemistry

After completion of course/paper students will be able to:

CO1: Demonstrate an intermediate ability to use effective written and/or oral communication through the application of organic chemistry concepts and reasoning using the language of chemistry.

CO2: Demonstrate a basic understanding of how organic chemistry impacts the natural and technological environments.

CO3: Demonstrate an intermediate ability to use detailed data collection and analysis in order to explore organic chemical principles, effectively communicate, and critically evaluate results in the context of the material covered in Organic Chemistry I.

CO4: Demonstrate a basic understanding of organic chemistry principles to effectively solve problems encountered in everyday life and in science using appropriate computational skills.

Paper-VIII: Inorganic and Physical Chemistry

CO1: Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.

CO2: Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

CO3: Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

CO4: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

Paper-IX: Microbial growth and control

After completion of course/paper students will be able to:

CO1: Recognize and explain the significant role that microbes play in the world around us.

CO2: Recognize and be able to explain the similarities and differences of microbes as compared to higher forms of life.

CO3: Identify microbes and explain methods of growth and cultivation as well as structural and biochemical differences.

CO4: Demonstrate an understanding of microbial structure, function, metabolism, growth, genetics, and control including antibiotic usage.

CO5: Be able to explain the basic principles of immunology relating to host resistance, antigenantibody
reactions, vaccination, organism virulence and their ability to cause disease.

CO6: Evaluate the physical and chemical method s of microbial control.

Paper-X: Biomathematics

After completion of course/paper students will be able to:

CO1: Apply mathematical concepts and principles to perform computations in life sciences.

CO2: Apply mathematics to solve problems in biology.

CO3: Create, use and analyze graphical representations of mathematical relationships

CO4: Communicate mathematical knowledge and understanding

CO5: Apply technology tools to solve problems in biological systems.

Paper-XI: Macromolecules

After completion of course/paper students will be able to:

CO1: Name and outline mechanisms for the non-covalent forces that operate on biomolecules

CO2: Discuss the four structure levels of proteins

CO3: Explain the significance of hydrophobic and hydrophilic forces for the structure of biomolecules and give examples thereof.

CO4: Explain the significance of steric effects for the structure of biomolecules and give examples thereof.

CO5: Outline and exemplify the relation between structure and function of biomolecules

CO6: Draw the basic structure of carbohydrates, nucleic acids, peptides/proteins and lipids.

CO7: Name the functional groups in carbohydrates, nucleic acids, peptides/proteins and lipids.

CO8: Name heterocyclic rings.

CO9: Sketch common chemical and enzymatic reactions for the above mentioned functional groups and heterocyclic rings.

CO10: Be familiar with the principles in chemical syntheses of nucleic acids and peptides.
CO11: Use nomenclature from stereochemistry on biomolecules.
CO12: Sketch biomolecules and heterocyclic rings at various pH values.

Paper-XII: Biotechniques

After completion of course/paper students will be able to:
CO1: The student will demonstrate an understanding of practical techniques used in biotechnology, including basic background information and theory, applications, limitations, advantages and disadvantages, common problems and troubleshooting.
CO2: The student will demonstrate a thorough understanding of fundamental biochemical calculations.
CO3: The student will demonstrate an understanding of the principles behind searching, finding and evaluating pertinent scientific information.
CO4: The student will demonstrate an understanding of the structure, format and principles of writing in a technical scientific format.
CO5: The student will demonstrate an awareness of current events in biotechnology and their financial, social and ethical implications.

B.Sc. Biotechnology S.Y. (III semester) Paper-XIII: Basics of immunology

After completion of course/paper students will be able to:
CO1: Conceptualize how the innate and adaptive immune responses coordinate to fight invading pathogens.
CO2: Determine what immunomodulatory strategies can be used to enhance immune responses or to suppress unwanted immune responses such as might be required in hypersensitivity reactions, transplantations or autoimmune diseases.
CO3: Critically review the sample literature to determine the strengths and weaknesses of the data published in immunology and its novelty.
CO4: Explore strategies to improve existing vaccines and how to approach these.

Paper-XIV: General Virology

After completion of course/paper students will be able to:
CO1: Describe elements of the viral life cycle.
CO2: Explain viral replication strategies and compare replication mechanisms used by viruses relevant for human disease.
CO3: Explain host antiviral immune mechanisms.
CO4: Describe viral strategies to evade host immune and cellular factors (by use of examples of viruses relevant for human disease).
CO5: Discuss principles of virus pathogenesis,
CO6: Describe methods used for laboratory diagnosis of viral infections.
CO7: Explain vaccine strategies and mechanisms of antiviral drugs,
CO8: Coherently report outcomes of virological research in oral and written output

Paper-XV: Developmental Biology

After completion of course/paper students will be able to:
CO1: To understand the process of animal development.
CO2: To know the process of early embryonic development.
CO3: To understand the process of morphogenesis & organogenesis in animals.
CO4: To study the cell death and regeneration.

Paper-XVI: Chromosome structure and inheritance

After completion of course/paper students will be able to:

CO1: Describe how cellular information is relayed and the process of genetic replication is undertaken in cells.
CO2: Demonstrate an understanding of the basic concepts of genetics, including Mendelian genetics, DNA and chromosome structure and gene expression and apply that knowledge to real life problems and case studies.
CO3: Solve simple problems arising from changes in genetic and biochemical processes at the cellular level, especially as these may relate to the activities of whole organisms.
CO4: Defend an opinion on ethical issues relating to controversial procedures, and offer informed comment on current views and hypotheses dealing with cell level biology and biotechnology.

Paper-XVII: Basics of enzymology

After completion of course/paper students will be able to:
CO1: Understand the major classes of enzyme and their functions in the cell.
CO2: Role of co-enzyme cofactor in enzyme catalyzed reaction.
CO3: Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km. Vmax, Kcat etc).
CO4: To define and describe the properties of enzymes in and regulates biochemical pathways (inhibition, allosterism).

Paper-XVIII: Animal Physiology

After completion of course/paper students will be able to:
CO1: Understand the physiological processes that regulate body functions and the regulation of an organ system from the molecular all the way to the whole animal level.
CO2: Be able to describe interactions between different organ systems (homeostasis).
CO3: Know the anatomy of different physiological systems and their specific functions.
CO4: Understand how changes in one system may impact a different system
CO5: Be able to apply knowledge of a physiological mechanism to explaining how a whole animal physiological process occurs (i.e. gestation, lactation, etc.)

Paper-XIX: Cell Biology

After completion of course/paper students will be able to:
CO1: Basic chemical composition of living matter.
CO2: Structural characteristics of prokaryotic and eukaryotic cells.
CO3: Taxonomy and characteristics of the major kingdoms.
CO4: Mechanics of membrane transport.
CO5: Basic concepts of bioenergetics, photosynthesis, and cellular respiration. 6. Mechanics of cellular reproduction.
CO7: Mendelian genetics and genetic change.
CO8: Nucleic acids and basic concepts of protein synthesis and gene regulation.

Paper-XX: Plant physiology

After completion of course/paper students will be able to:
CO1: The aim is to give the students increased knowledge of metabolism, physiology and structure of plants together with a better understanding of regulation of growth and development and influence of environment.

Paper-XXI: Genetics

After completion of course/paper students will be able to:
CO1: Comprehensive, detailed understanding of the chemical basis of heredity
CO2: Comprehensive and detailed understanding of genetic methodology and how

quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms.
CO3: Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc.
CO4: Understanding the role of genetic mechanisms in evolution.

Paper-XXII: Central dogma

After completion of course/paper students will be able to:
CO1: Differentiate among the three kinds of RNA in terms of structure and function.
CO2: Understand the kind of code present in the nucleotide sequence of DNA.
CO3: Describe the process of transcription, its machinery, and end products.
CO4: Describe the process of translation, its machinery, and end products.
CO5: Understand how specific amino acids are added to the proper tRNAs.
CO6: Describe the process of protein synthesis.
CO7: Understand how transcription, translation, and protein synthesis are interrelated.
CO8: Know the differences between prokaryotic and eukaryotic protein synthesis.
CO9: Understand why eukaryotic gene transcripts must be spliced.

Paper-XXIII: Advanced enzymology

After completion of course/paper students will be able to:
CO1: Understand the theories of enzyme catalytic power.
CO2: Understand the relationship between 3D enzyme structure and catalytic and kinetic properties.
CO3: Understand the diversity of catalytic strategies.
CO4: Possess the knowledge about enzymes‟ application in recent biotechnology.

Paper-XXIV: Advanced Immunology

CO1: To have a detailed understanding of lymph node microanatomy and know how B and T cells encounter antigen and develops in different locations.
CO2: To know antigen presentation and autophagy on a detailed molecular level
CO3: To understand immunology of mucosal surfaces and the interplay between commensal flora and and the immune system in the gut.
CO4: To understand the cellular and molecular basis for autoimmune disease and allergies.
CO5: To get the knowledge of tumor immunology and the development of novel recombinant antibodies for treatment of cancer and autoimmune disease.
CO6: To gain in depth knowledge of a relevant research article and present this for the group.

Paper-XXV: Regulation of gene expression

After completion of course/paper students will be able to:
CO1: Explain the mechanism by which transcription is initiated in eukaryotic cells.
CO2: Illustrate methods to identify key regulatory elements within a eukaryotic promoter.
CO3: Explain how transcriptional control is achieved through alterations in chromatin structure and methylation.
CO4: Outline the mechanisms by which post-transcriptional control is achieved.
CO5: Explain the structure, formation and function of micro RNAs.
CO6: Outline the mechanisms and factors that control the process of translation.
CO7: An ability to critically evaluate and discuss original research articles in the area of gene regulation.

Paper-XXVI: Introduction to Bioinformatics

After completion of course/paper students will be able to:

CO1: Have a deep knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics.
CO2: Existing software effectively to extract information from large databases and to use this information in computer modeling.
CO3: Problem-solving skills, including the ability to develop new algorithms and analysis methods.
CO4: Understand the intersection of life and information sciences, the core of shared concepts, language and skills the ability to speak the language of structure-function relationships, information theory, gene expression, and database queries.

Paper-XXVII: Principles of genetic engineering

After completion of course/paper students will be able to:
CO1: Technical know, how on versatile techniques in recombinant DNA technology.
CO2: An understanding on application of genetic engineering techniques in basic and applied experimental biology.
CO3: Proficiency in designing and conducting experiments involving genetic manipulation.

Paper-XXVIII: Fermentation design and process

After completion of course/paper students will be able to:
CO1: To understand the various concepts of fermentation.
CO2: To know the differences between aerobic and anerobics fermentation and the classification of microorganisms.
CO3: To understand the growth of micro-organisms.
CO4: Isolation and identification of micro-organisms from fermenting fruits, cereals and milk.
CO5: Design a simple containment system (Bioreactor/Fermenter).

Paper-XXIX: Plant Tissue Culture

After completion of course/paper students will be able to:
CO1: Explain the various steps taken to established and optimize medis for particular purposes in particular species.
CO2: Explain the various components of plant tissue culture media.
CO3: Explain various cell lines used in tissue culture and their origins and uses.

Paper-XXX: Clinical Biochemistry

After completion of course/paper students will be able to:
CO1: Clinically assess the laboratory indicators of physiologic conditions and diseases.
CO2: Know the biochemical and molecular tools needed to accomplish preventive, diagnostic and therapeutic intervention on hereditary and acquired disorders.

Paper-XXXI: Genomics and Proteomics

After completion of course/paper students will be able to:
CO1: Infer the basic concepts of genomics, transcriptomics and proteomics.
CO2: List and discuss the use of genomics and proteomics in human health.
CO3: Suggest and outline solution to theoretical and experimental problems in genomics and proteomics fields.

Paper-XXXII: RDT

After completion of course/paper students will be able to:
CO1: To illustrate creative use of modern tools and techniques for manipulation and analysis of genomic sequences.
CO2: To expose students to application of recombinant DNA technology in biotechnological

research.
CO3: To train students in strategizing research methodologies employing genetic engineering techniques.

Paper-XXXIII: Fermentation Technology

After completion of course/paper students will be able to:
CO1: Understand the various concepts of fermentation.
CO2: Know the differences between aerobic and anerobics fermentation and the classification of micro-organisms.
CO3: Understand the growth of micro-organisms.
CO4: Isolation and identification of micro-organisms from fermenting fruits, cereals and milk.
CO5: Design a simple containment system (Bioreactor / Fermenter).

Paper-XXXIV: Bioethics

After completion of course/paper students will be able to:
CO1: Identify the historical forces that have contributed to the current global systems and these systems‟ consequences for humanity and/or the environment.
CO2: Explain how the theoretical approaches of the social sciences analyze and evaluate the impact of social class, race and/or gender on self and group identity and people‟s responses to diversity.
CO3: Communicate effectively about major social and cultural trends of people living in non-Western regions, particularly their religious patterns.
CO4: Critically integrate academic insights in global systems and social and cultural trends as well as theoretical approaches of the social sciences into coherent arguments in the field of global bioethics.
CO5: Research and write brief scholarly essays that present cogent argument(s), engage scholarly literature, and demonstrate critical thinking and analysis regarding global bioethics.

Paper-XXXV: Ecology and evolution

After completion of course/paper students will be able to:
CO1: Understand the structure and function of ecosystem.
CO2: Population study
CO3: Pollution and its effect on population.

Paper-XXXVI: Metabolism

After completion of course/paper students will be able to:
CO1: Demonstrate and understanding of metabolic pathways.
CO2: Understanding of disease related metabolic pathways.

M.Sc. Biotechnology Paper-I: Biomathematics and statistics

After completion of course/paper students will be able to:
CO1: Apply basic statistical concepts commonly used in Health and life Sciences.
CO2: Use basic analytical techniques to generate results.
CO3: Interpret results of commonly used statistical analyses in written summaries.
CO4: Demonstrate statistical reasoning skills correctly and contextually.

Paper-II: Biomolecules and Bioenergetic

After completion of course/paper students will be able to:
CO1: Describe/recognize amino acid structures, describe their physical and chemical properties, and predict how their ionic charges change with pH.
CO2: Define primary, secondary, tertiary and quaternary structure in proteins and identify the

types of interactions important in each case.
CO3: Describe the chemical nature of enzymes and their function in biochemical reactions.
CO4: Explain how enzyme activity is (a) regulated, and (b) affected by temperature, pH, and concentration.
CO5: Explain what happens during digestion of proteins, catabolism of amino acids and the urea cycle.
CO6: List the essential and non-essential amino acids and describe the general strategies for amino acid synthesis.
CO7: Describe/recognize the structure of mono-, di-, and polysaccharides; describe their physical and chemical properties and their function in living organisms.
CO8: Predict the products of chemical reactions of carbohydrates (acetal/hemiacetal formation or oxidation).
CO9: Describe what happens during carbohydrate digestion, glycolysis, glycogenesis, and glycogenolysis.
CO10: Describe/recognize lipid structures including lipids found in cell membranes and their transport across membranes.
CO11: Describe what happens in fatty acid oxidation and synthesis as well as in ketogenesis.

Paper-III: Microbiology

After completion of course/paper students will be able to:
CO1: Acquire, articulate, retain and apply specialized language and knowledge relevant to microbiology.
CO2: Acquire and demonstrate competency in laboratory safety and in routine and specialized microbiological laboratory skills applicable to microbiological research or clinical methods, including accurately reporting observations and analysis.
CO3: Communicate scientific concepts, experimental results and analytical arguments clearly and concisely, both verbally and in writing.
CO4: Demonstrate engagement in the Microbiology discipline through involvement in research or internship activities, the Microbiology Student Association club (MSA) and outreach or mentoring activities specific to microbiology.

Paper-IV: Inheritance biology

After completion of course/paper students will be able to:
CO1: Apply quantitative problem-solving skills to human genetics problems and issues.
CO2: Evaluate biological factors that influence human heredity.
CO3: Demonstrate their ability to reason both inductively and deductively with experimental information and data.
CO4: Explain the molecular and biochemical basis, diagnosis and treatment of genetic disease.
CO5: Select and apply experimental procedures to genetic screening.

Paper-V: Molecular biology

After completion of course/paper students will be able to:
CO1: Apply problem-solving skills to biological problems and issues.
CO2: Write up the results of an experimental study in a lab report.
CO3: Demonstrate their ability to reason both inductively and deductively with experimental information and data.
CO4: Explain the function, replication and evolution of genomes.
CO5: Select and apply experimental procedures to solve biological problems.

Paper-VI: Enzyme Technology

After completion of course/paper students will be able to:
CO1: Appreciate the suitability of enzyme biotechnology as a sustainable alternative to the chemical industry.
CO2: Understand the various applications of enzymes in varied industrial processes.
CO3: Justify the critical conditions involved in the selection of typical enzymes in industrial processes.

Paper-VII: Cell Biology

After completion of course/paper students will be able to:
CO1: Describe cytological, biochemical, physiological and genetic aspects of the cell, including cellular processes common to all cells, to all eucaryotic cells as well as processes in certain specialized cells.
CO2: Relate normal cellular structures to their functions.
CO3: Explain cellular processes and mechanisms that lead to physiological functions as well as examples of pathological state.
CO4: Apply modern cellular techniques to solve aspects of scientific problems.
CO5: Describe the intricate relationship between various cellular structures and their corresponding functions.

Paper-VIII: Basic immunology

After completion of course/paper students will be able to:
CO1: Conceptualize how the innate and adaptive immune responses coordinate to fight invading pathogens.
CO2: Determine what immunomodulatory strategies can be used to enhance immune responses or to suppress unwanted immune responses such as might be required in hypersensitivity reactions, transplantations or autoimmune diseases.
CO3: Critically review the sample literature to determine the strengths and weaknesses of the data published in immunology and its novelty.
CO4: Explore strategies to improve existing vaccines and how to approach these.

Paper-IX: Applied immunology and virology

CO1: Have a detailed understanding of lymph node microanatomy and know how B and T cells encounter antigen and develops in different locations.
CO2: Know antigen presentation and autophagy on a detailed molecular level.
CO3: Understand immunology of mucosal surfaces and the interplay between commensal flora and and the immune system in the gut.
CO4: Have deep knowledge of the cellular and molecular basis for autoimmune disease and allergies.
CO5: Have basic knowledge of tumor immunology and the development of novel recombinant antibodies for treatment of cancer and autoimmune disease.
CO6: Explain vaccine strategies and mechanisms of antiviral drugs, coherently report outcomes of virological research in oral and written output.
CO7: Gain in depth knowledge of a relevant research article and present this for the group.
CO8: Describe elements of the viral life cycle.
CO9: Explain viral replication strategies and compare replication mechanisms used by viruses relevant for human disease.
CO10: Explain host antiviral immune mechanisms.
CO11: Describe viral strategies to evade host immune and cellular factors (by use of examples of viruses relevant for human disease).

CO12: Discuss principles of virus pathogenesis, Describe methods used for laboratory diagnosis of viral infections.

Paper-X: Gene expression and engineering

After completion of course/paper students will be able to:

CO1: Explain the mechanism by which transcription is initiated in eukaryotic cells.

CO2: Illustrate methods to identify key regulatory elements within a eukaryotic promoter

CO3: Explain how transcriptional control is achieved through alterations in chromatin structure and methylation.

CO4: Outline the mechanisms by which post-transcriptional control is achieved.

CO5: Explain the structure, formation and function of micro RNAs.

CO6: Outline the mechanisms and factors that control the process of translation.

CO7: An ability to critically evaluate and discuss original research articles in the area of gene regulation.

Paper-XI: Developmental biology

After completion of course/paper students will be able to:

CO1: To understand the process of animal development.

CO2: To know the process of early embryonic development.

CO3: To understand the process of morphogenesis & organogenesis in animals.

CO4: To study the cell death and regeneration.

Paper-XII: Bioinstrumentation

After completion of course/paper students will be able to:

CO1: To understand safety measures in laboratory, handling and care of instruments.

CO2: Determination of pKa, Standard solutions.

CO3: Monochrome staining, Negative staining, Gram s staining.

CO4: Biochemical test, specific gravity, Viscocity.

CO5: Motility testing by hanging drop method.

Paper-XIII: Industrial technology

After completion of course/paper students will be able to:

CO1: Have a working knowledge of business practices in industry.

CO2: Convey good people and communication skills.

CO3: Demonstrate knowledge of common practices of employer and employee relationships.

Paper-XIV: RDT

After completion of course/paper students will be able to:

CO1: To illustrate creative use of modern tools and techniques for manipulation and analysis of genomic sequences.

CO2: To expose students to application of recombinant DNA technology in biotechnological research.

CO3: To train students in strategizing research methodologies employing genetic engineering techniques.

Paper-XV: Tissue technology

After completion of course/paper students will be able to:

CO1: Explain the various steps taken to established and optimize media for particular purposes in particular species.

CO2: Explain the various components of plant tissue culture media.

CO3: Explain various cell lines used in tissue culture and their origins and uses.

Paper-XVI: Bioinformatics

After completion of course/paper students will be able to:

CO1: To understand the basic principles and concepts of biology, computer science and mathematics.

CO2: Existing software effectively to extract information from large databases and to use this information in computer modeling.

CO3: Have problem-solving skills, including the ability to develop new algorithms and analysis methods.

CO4: Understand of the intersection of life and information sciences, the core of shared concepts, language and skills the ability to speak the language of structure-function relationships, information theory, gene expression, and database queries.

M.Sc Chemistry

COs POs PSOs

Programme Outcomes - B. Sc.

PO1: Scientific temperament: It inculcates scientific attitude in the minds of learners in physical, chemical, material, life and mathematical sciences. Students acquire scientific abilities like logical thinking, problem solving approach, data collection and decision making.

PO2: Basic scientific knowledge: Students acquire scientific knowledge to extract information, formulate and solve problems in systematic manner.

PO3: Technical competence and practical skills: The learners acquire skills to handle basic scientific instruments following the general lab safety practices through experimental skills

PO4: Creative thinking and numerical ability: It empowers the learners with creative thinking and numerical ability.

PO5: Environment and sustainability: It provides understanding of current environmental scenario and necessity of sustainability along with solutions. Students are made aware of environment related issues and sustainable technology development.

PO5: Competency: The programme prepares learners for post-graduation and higher education. Students get eligible for appearing to the competitive exams such as MPSC and banking sectors.

Programme Outcomes – M. Sc.

PO1: Scientific knowledge: Leaners acquire scientific knowledge. Students acquire ability to integrate and in-depth knowledge in the concerned subject. The programme gives the interdisciplinary applications of the respective subject.

PO2: Problem analysis and analytical thinking: Learners can identify, formulate, review research literature, formulate research problem, and analyze them and derive conclusions. Learner can develops ability to formulate research problem using the basic principles of mathematical, biological, physical and chemical sciences.

PO3: Research skills: Students can acquire research skills through project works which are the foundations of research.

PO4: Basic instrumentation handling: Learners acquire skills of handling basic instrumentation skills.

PO5: Design / development of solutions: Learners can design solutions for scientific problems through practical based experiential learning for cultural, societal, and environmental considerations.

PO6: Development: Learners can acquire knowledge independently for personal and professional development.

PO7: **Research Aptitude:** Basic orientations of students towards research methodology and project work.

COs : M.Sc Chemistry

M. Sc. - I Organic and Analytical Chemistry CHE-101: Analytical Chemistry
CO1: To understand basic concepts in analytical chemistry - Role of analytical chemistry, qualitative and quantitative analysis, the analytical process, validation of a method.
CO2: To understand the methods of statistical treatment of analytical data.
CO3: To study the basic separation techniques in analytical chemistry.
CO4: To familarize with different chromatographic techniques- therory, experimental and different parameters - TLC, column, liquid-liquid partition, gel permeation, ion exchange, gas and HPLC.
CHE-102: Inorganic Chemistry
CO1: To familiarize with different spectroscopic term symbols, Orgel diagrams and Tanabe Sugano diagrams for different configurations.
CO2: To understand the interpretation electronic spectra of metal complexes.
CO3: To study the preparations, reactions and structures of metal carbonyls and nitrosyls and EAN rule.
CO4: To understand the chemistry of dioxygen, dinitrogen complexes and non-carbonyl metal
clusters.
CO5: To understand bioinorganic chemistry involved in biological systems.
CHE-103: Organic Chemistry
CO1: To study aromatic electrophilic and nucleophilic substitutions with reference to

orientation and reactivity, energyprofile diagram, ortho/para ratio, IPSO substitution, orientation in other ring system, Recapitulation of halogenation, nitration, sulphonation and Fridel Craft‟s reaction, diazonium coupling.
CO2: To understand nucleophilic substitution - S_{Ar}, S_{N1}, benzyne mechanisum
CO3: Effect of substrate structure, leaving group and attacking nucleophile on reactivity.
CO4: To study reaction mechanism and reaction intermediates- carbocations, carbanions, free radicals.
CO5: To study mechanism and stereochemical aspect of addition reaction involving electrophile, nucleophile and free radicals.
CO7: To understand regioselectivity and chemoselectivity, orientation and reactivity in addition to carbon-carbon multiple bond; Michael addition, Sharpless asymmetric epoxidation.
CO8: Study of elimination and rearrangement reactions.

CHE-104: Physical Chemistry
CO1: To understand ionic equilibria and biological reactions.
CO2: To study therories of reaction rates, kinetics of reactions, methods of determing rates of reactions.
CO3: To study deeply classical and statistical thermodynamics.
CO4: Concepts and models to understand surface chemistry.
CO5: To understand advanced concepts in electrochemistry.

CHE-205: Spectroscopic methods of analysis
CO1: General introduction to spectral methods.
CO2: Basic concetps, instrumentation and applications of Microwave, Vibrational and Ramna spectroscopy.
CO3: To understand the concept of photoelectron spectroscopy.
CO4: To study the thermal methods of analysis –TGA, DTA.
CO5: To understand the rpiciple, instrumentation, applications of UV, IR and NMR spectroscopy.
CO6: To enable studnets for structure elucidation of compounds using combined spectral data.

CHE-206: Inorganic chemistry
CO1: To understand spectroscopic term symbols, microstates, Orgel diagram.
CO2: Study of elelctronic spectra and magnetic properties of transition metal complexes.
CO3: To understand the preparation, properties and reactions of metal carbonyls and nitrosyls.
CO4: Inorganic chemistry of haemoglobin and myoglobin.

CHE-207: Organic chemistry
CO1: To understand aliphatic and aromatic electrophilc as well as nulceoplhilic substitutions reactions.
CO2: Mechanisms and sterochemical aspects of addiotns to C-C double bonds and carbonheteroatom multiple bonds.
CO3: To understand various named reactions with mechanisms.

CHE-208: Physical chemistry
CO1: To understands basics and advanced concepts in quantum mechanics.
CO2: To understand phase rule and its applications to different systems.

CO3: To study crystallography- law, symmetry elements, prilcples of crystal structure.
CO4: To understand cocpets in photochemistry, photochemical processes and mathematicall equations.

M.Sc. II- Organic Chemsitry Structural elucidation by spectral methods [CHEO-313]
CO1: To understand spin-spin and different types of couplings.
CO2: To study principles and applications of mass and NMR Spectroscopy.
CO3: To study the basic principles and applications of Massbauer and ESR spectroscopy.
CO4: To understand structure elucidation of organic molecules by analysis of spectral data.

Organic Synthesis [CHEO-314]
CO1: To study aplications of different oxidizing reagents.
CO2: To study applications of various reducing reagents.
CO3: Synthesis and synthetic applications of of organic reagents applicable in synthetic organic
chemistry.
CO4: To study carbon-carbon and carbon-heteroatom bond forming reactions.
CO5: Study of ylides and enamines.

Asymmetric synthesis of and bio-organic chemistry [CHEO-315]
CO1: To understand classification and extraction of enzymes.
CO2: To introduce the studendets to enzyme as catalysts.
CO3: To study chemical structure of co- enzymes and cofactor.
CO4: To study chiral poll and Falkinanh model.

Photochemistry, free radical and pericyclic reaction [CHEO-316]
CO1: To study the principles and applications of pericyclic reactions.
CO2: To understand electro cyclic reactions and their applications.
CO3: To study importance of cycloadition reactions with examples.
CO4: To understand applications of photochemistry.
CO5: To understand free radical reactions.

Organic Synthesis retro synthetic Approach [CHEO-417]
CO1: To study importance and applications of disconnection approach.
CO2: To understand protecting groups for different functional groups in organic synthesis.
CO3: To study disconnection approach of cycloadition reactions.
CO4: To study disconnection strategies for ring synthesis.
CO5: To understand retrosynthesis of complex organic molecules.

Advanced organic and heterocyclic chemistry [CHEO-418]
CO1: To study structure, synthesis and recations of mono and fused ring heterocyclic compounds.
CO2: To have deep understanding advanced name reactions or reerach level in synthetic organic chemistry.
CO3: To study rearrangement reaction and its application.
CO4: To study the nomenclature and classification of heterocyclic compounds.
CO5: To understand synthesis and reactions of simple mono as well as fused heterocyclic compounds.

Chemistry of Natural product [CHEO-419]
CO1: To study terpenoides and carotenoides.
CO2: To understand chemistry of natural products and its applications.
CO3: To study sources, synthesis and applications of steroids.
CO4: To understand the biogenesis of natural products.

Medicinal Chemistry [CHEO-420]
CO1: To understand the classification of drugs.

CO2: To study synthesis and applications of antibiotics drugs in common medicines.
CO3: To understand the basic principles and applications of medicinal chemistry.
CO4: To study concepts in pharmacokinetics.
CO5: To understand synthetic pathways for the synthesis of common drugs.

M. Sc. Analytical Chemistry Paper: CHE-313

CO1: To familiarize students with spectral methods of analysis.
CO2: To understand H1 NMR and its principle with numericals.
CO3: To understand C13 NMR and its principle with numericals.
CO4: To understand mass and its principle, working, terms related with mass and numericals.
CO5: To familiarize students with ESR, hyperfine splitting, related with ESR and numericals.
CO6: To understand Mossbauer spectroscopy principle, working, terms related with Mossbauer, and numericals.

Paper: CHEA-314

CO1: To familiarize students with general introduction of electro analytical techniques and their applications.
CO2: To understand potentiometer, coulometry, their principles, working, types, techniques, applications.
CO3: To understand polarography & cyclic voltametry -their principles, working, types, techniques applications.
CO4: To understand electro gravimetry - its principle, working, types, techniques, applications.

Paper: CHEA-315

CO1: To familiarize students with air pollution, types of pollution, effect of different pollutants
on air, effect of pollution on climate, human, its analysis & control.
CO2: To understand water pollution, aquatic environment, different types of trace elements causing water pollution, oxygen demanding, wastes, BOD, COD, monitoring techniques & methodology.
CO3: To understand chemical texology, soil analysis & terms related with it.
CO4: To understand industrial chemistry & terms related with it.
CO5: To familiarize students with green chemistry & terms related with it.

Paper: CHEA-316

CO1: To familiarize students with molecular luminescence spectroscopy.
CO2: To understand surface characterization by spectroscopy and microscopy.
CO3: To understand properties of supercritical fluid, principle, instrumentation, applications.
CO4: To understand radioactive nuclides and atomic X-ray spectroscopy.
CO5: To familiarize students the principles and applications of LC-MS, GC-IR, GC-MS, ICPMS,
MS-MS
CO6: To understand principle of automatio and flow injection analysis.

Paper: CHEA-417

CO1: To familiarize students with the analysis of ores & alloys.
CO2: To understand analysis of paints & pigments.
CO3: To understand analysis cement & building meterials.
CO4: To understand analysis of glass.
CO5: To familiarize students with explosive and cosmetic analysis.

Paper: CHEA-418

CO1: To familiarize students with general concepts of food analysis.

CO2: To understand analysis of oils, fats & detergents.
CO3: To understand analysis of fertilizers & their classification.
CO4: To familiarize students with analysis of vitamins.
Paper: CHEA-419
CO1: To familiarize students with polymers & their classification.
CO2: To understand study of individual polymers.
CO3: To understand fuels and their analysis.
CO4: To familiarize students with petroleum, its occurrence and classification.
Paper: CHEA-420
CO1: To familiarize students with pharmaceutical analysis.
CO2: To understand pharmaceutical legislation.
CO3: To understand clinical analysis.
CO4: To familiarize students with forensic analysis, toxicology and classification
CO5: To understand pharmaceutical analysis II, introduction, types and properties.
ACH - 202 papers - X Classical & spectral methods of Analysis.
After studying this paper the student is able to understand
CO1: Titrimetric method of analysis
CO2: Gravimetric analysis
CO3: Spectral methods of analysis
CO4: Precipitation titrations
CO5: Complexometric titrations & some basic concepts of redox titrations.

BCA COs

POs

PSOs

PSOs of BCA

PSO01: B.C.A. programme facilitates the graduates to use and apply current technical concepts and practices in the core computer applications (**BL3**).

PSO02: Identify computer application related problems, analyze them and design the system or provide the solution for the problem considering legal, ethical and societal issues (**BL3**).

PSO03: The program also empowers the graduates to appear for various competitive examinations or choose the post graduate programme of their choice (**BL3**).

PSO04: Students learn to work and communicate effectively in interdisciplinary environment, either independently or in team, and demonstrate scientific leadership in academic and industry (**BL3**).

PSO05: Recognize the need for and an ability to engage in continuing professional development **(BL4**).

COs : BCA

BCA (Science) CA101-T-Computer Fundamental:

CO1: To familiar with computer environment.
CO2: To familiarize with the basics of Operating System and business communication tools.
CO3: To identify the parts of the computer system.
CO4: To explain functioning of computer components.
CO5: To explain the process of problem solving using computer
CO6: To design an algorithmic solution for a given problem.

CA102-T- Digital Electronics:

CO1: To familiar with concepts of digital electronics
CO2: To learn number systems and their representation
CO3: To understand basic logic gates, Boolean algebra and K-maps
CO4: To study arithmetic circuits, combinational circuits and sequential circuits
CO5: To study comparative aspects of logic families.

CA103-T- 8086 Microprocessor:

CO1: To understand basic architecture of 16 bit microprocessors.
CO2: To understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.
CO3: To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.
CO4: Microprocessor instruction sets, assembly language programming
CO5: Write programs to run on 8086 microprocessor based systems.

CA104-T-Programming in C –I:

CO1: To make the student learn a programming language.
CO2: To learn problem solving techniques.
CO3: To teach the student to write programs in C and to solve the problems.
CO4: To read, understand and trace the execution of programs written in C language.
CO5: To write the C code for a given algorithm.
CO6: To implement programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
CO7: To write programs those perform operations using derived data types.

CA105-T -Communication skill:

CO1: To demonstrate preparation and research skills for oral presentations.
CO2: To develop proper listening skills.
CO3: To articulate and enunciate words and sentences clearly and efficiently.
CO4: To show confidence and clarity in public speaking projects.
CO5: To demonstrate ability to gather information and apply it to persuade or articulate one's own point of view.

Goal Two: Written Communication

CO1: To understand the rules of spelling and grammar.
CO2: To read and analyze text and be able to summarize ideas in writing.
CO3: To organize thoughts in a manner that emphasizes flow and paragraph development
CO4: To learn proper footnoting and bibliography skills.
CO5: To understand different writing techniques and styles based on the communication medium being used.

Course code: CA106-T - Mathematical Foundation:

CO1: To distinguish between statement logic and predicate logic.
CO2: To visualize data numerically and/or graphically.
CO3: To evaluate mathematical principles and logic design.
CO4: To apply induction, other proof techniques towards solving recurrences and other problems in elementary algebra, adapt, and design elementary deterministic and randomized algorithms to solve computational problems.
CO5: To illustrate by examples the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations and the knowledge of mathematical modeling.
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CO6: To demonstrate effectively mathematical ideas/results verbally or in writing and utilize the knowledge of computing and mathematics appropriate to the discipline.
CO7: To understand the functions concepts and distinguish different types of functions.
CO8: Identify and describe various types of relations.
CO9: To explain trees and graphs to formulate computational problems.
CO10: Develop the ability to solve the recurrence relations by using various methods.
107P - Office Suite Practical (LAB):
A student is able to
CO1: Demonstrate the mechanics and uses of Word tables to organize and present data.
CO2: Demonstrate working knowledge of using Word‟s themes and clip art to create a variety of visual effects.
CO3: Demonstrate working knowledge of Word‟s advanced formatting techniques and presentation styles.
CO4: Demonstrate applicable knowledge and uses of accepted business style formatting conventions.
CO5: Create and design a spreadsheet for general office use.
CO6: Demonstrate the basic mechanics of creating a Power point presentation.
CA107P - Digital Electronics Practical (LAB) A student will be able to
CO1: Describe how analog signals are used to represent digital values in different logic families, including characterization of the noise margins.
CO2: Create the appropriate truth table from a description of a combinational logic function.
CO3: Create a gate-level implementation of a combinational logic function described by a truth table using and/or/inv gates.
CO4: Evaluate combinational and sequential logic designs using various metrics.
120
CA109-P - Microprocessor-I (8086) Practical (LAB): A student is able to understand
CO1: Intel 8086 microprocessor architecture and real mode memory addressing.
CO2: Intel microprocessor addressing modes.
CO3: Assembly language programming and debugging.
CO4: Arithmetic calculations using 8086 microprocessor kit.
CO5: Transfer of data and exchange of data between various memory units.
CA110-P - C Programming-I Practical (LAB) A student is able to
CO1: Understand the fundamentals of C programming.
CO2: Choose the loops and decision making statements to solve the problem.
CO3: Implement different operations on arrays.
CO4: Basic mathematical calculations.
CA201-T - Data Structures:

CO1: Students are able to choose appropriate data structure as applied to specified problem definition.
CO2: Students are able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
CO3: Students can apply concepts learned in various domains like DBMS, compiler construction etc.
CO4: Students can use linear and non-linear data structures like stacks, queues, linked list etc.

CA202-T -Operating System:

CO1: To understand functions, structures and history of operating systems.
CO2: To understand design issues associated with operating systems.
CO3: To understanding process management concepts including scheduling, synchronization, and deadlocks.
CO4: To familiarize with multithreading.
CO5: To study the concepts of memory management ncluding virtual memory.
CO6: To understand resources sharing among the users.
CO7: Master issues related to file system interface and implementation, disk management.
CO8: To familiar with protection and security mechanisms.
CO9: To familiar with various types of operating systems including UNIX.

CA203-T - I.T. Tools & Web Designing –I:

CO1: To learn the basics of internet and web designing.
CO2: To understand architecture of browser, server, web page, web sites & clients.
CO3: To know about internet domains, protocols and browser and server communication.
CO4: To get basic knowledge of HTML and DHTML language for web page development.
CO5: To know & understand concepts of internet programming using JavaScript.

CA204-T - C-Programming-II:

CO1: To understand creation of user defined functions for specific task in C language.
CO2: To understand about functions and its types and working.
CO3: To understand use of user defined data types such as structures & unions.
CO4: To enable students capable of dealing with memory using pointers.
CO5: To get information about library functions and storage classes in c language.
CO6: To get knowledge about preprocessor directives and different operators used in c language.
CO7: To deal with Files stored on computer memory using File handling.

CA205-T - Communication Skill –II:

CO1: To demonstrate preparation and research skills for oral presentations.
CO2: To develop proper listening skills.
CO3: To articulate and enunciate words and sentences clearly and efficiently.
CO4: To show confidence and clarity in public speaking projects.
CO5: To demonstrate ability to gather information and apply it to persuade or articulate one's own point of view.

Goal Two: Written Communication

CO1: To understand the rules of spelling and grammar.
CO2: To read and analyze text and be able to summarize ideas in writing.
CO3: To organize thoughts in a manner that emphasizes flow and paragraph development
CO4: To learn proper footnoting and bibliography skills.
CO5: To understand different writing techniques and styles based on the communication

medium being used.
CO6: To develop group communication skill
CO7: To develop listening Comprehension, reading Comprehension and Vocabulary.
CA206-T -Numerical Methods:
CO1: To demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.
CO2: To apply numerical methods to obtain approximate solutions to mathematical problems.
CO3: To derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
CO4: To analyze and evaluate the accuracy of common numerical methods.
CA207-P -Data Structure (LAB):
CO1: To understand the concept of Dynamic memory management, data types, algorithms, Big O notation.
CO2: To understand basic data structures such as arrays, linked lists, stacks and queues.
CO3: To describe the hash function and concepts of collision and its resolution methods.
CO4: To solve problem involving graphs, trees and heaps.
CO5: To apply algorithm for solving problems like sorting, searching, insertion and deletion of data.

CA208-P -I.T. Tools & Web Designing – I (LAB): A student will be able to
CO1: Explain the history of the internet and related internet concepts that are vital in understanding web development.
CO2: Discuss the insights of internet programming and implement complete application over the web.
CO3: Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.
CA209-P- C Programming – II (LAB):
The course will enable students to
CO1: Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
CO2: Write programs that perform operations using derived data types.
CO3: Use of pointers and user defined data types.
CO4: Use of functions used in C language.
CA210-P - Numerical Method (LAB):
A student will be able to
CO1: Identify different mathematical problems and reformulate them in a way that is appropriate for numerical treatment.
CO2: Choose appropriate numerical method for treatment of the given problem.
CO3: Explain choice of method by accounting for advantages and limitations.
CO4: Choose an algorithm that implies efficient calculations and implement it in a programming language, suited for calculations e.g. C-language.
CO5: Estimate the reliability of the results.
CO6: Use functions from the programming language library for efficient calculations and visualization.
CO7: Apply computer science for the solution of practical problems.

CA301-T - Database Management System:
CO1: To know about database system basic concepts, architecture, features, purpose, advantage of DBMS.
CO2: To learn about component of a DBMS: Users, facilities & structure.
CO3: To learning about data modeling & design.
CO4: To learn about entity-relationship data model.
CO5: To understanding about basics of relational model, normalization, relational algebra.
CO6: To introduce students to oracle s/w.
CA302-T - Mobile Maintenance -I:
CO1: To know about basic Electronics and Microcomputers.
CO2: To enable students to handle mobile phones with the knowledge of testing of batteries and battery charger.
CO3: To gain the knowledge of different mobile phones and also able to handles it.
CO4: To identify the different chips and crystals on the mobile PCB Board.
CO5: To get the brief knowledge of motherboard, different software for mobile repairing.
CA303-T - Principle of Management:
CO1: To understand basic concepts, scope and importance, evaluation of management.
CO2: To handle administrative section by thoroughly knowledge of work authority and responsibility.
CO3: To learn various function of management such as planning, organizing, staffing and so on.
CO4: To get additional knowledge of human factors in business administration and organization.
CO5: To enable students to control and coordinate with their colleagues.
CA304-T -Programming in CPP:
CO1: To acquire an understanding of basic object oriented concepts and the issues involved in effective class design.
CO3: To write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc.
CA305-T - Personality Development:
CO1: To develop and exhibit and accurate sense of self.
CO2: To develop and nurture a deep understanding of personal motivation.
CO3: To develop an understanding of and practice personal and professional responsibility.
CO4: To learn to balance confidence with humility.
CO5: To identify, understand, and apply contemporary theories of leadership to a wide range of situations and interactions.
CO6: To develop and articulate a personal philosophy of leadership.
CO7: To understand concepts of democratic leadership and processes.
CA306-T -Statistical Method:
CO1: To prepare for competitive examinations.
CO2: To know application of statistics in real life.
CO3: To nderstand and to calculate various types of averages and variations.
CO4: To understand how to apply discrete & continuous probability distributions to various business problems.
CO5: To know how to organize, manage, and present data.
CO6: To carry out in these courses exercises or small projects that incorporate data

presentation.
CO7: To demonstrate ability to write reports of the results of statistical analyses giving summaries and conclusions using nontechnical language.

CA307-P - Programming in C++ & aDBMS (LAB): A student will able to

CO1: Be familiar with using C++ functions and the concepts related to good modular design.
CO2: Be familiar with one-dimensional and two-dimensional arrays.
CO3: Be familiar with using C++ structures.
CO4: Be familiar with using pointers and reference parameters.
CO5: Be familiar with using text file input/output
CO6: Be familiar with C++ classes.
CO7: Explain the features of database management systems.
CO8: Design conceptual models of a database using ER modeling.
CO9: Understanding about basics of relational model, normalization, relational algebra.
CO10: Introduction to oracle s/w.

CA308P- Mobile Maintenance-I & SM using Excel (LAB): A student will be able

CO1: To understand the basic internal structure of mobile phones.
CO2: To learn how to connect the mobile chips and battery.
CO3: To explain different types of mobile phones with its IC‟s.
CO4: To learn applications and security issues of mobile phones
CO5: To draw the different graphical representation of the raw data in statistical method using Excel.
CO6: To differentiate one graph with another graph.
CO7: To describe the quantitative results easily.
CO8: To handles every statistical functions of Excel.

CA401-T - Advance Database Management System:

CO1: Student will able to deal with database system using SQL to manipulate data.
CO2: Information about physical storage of data.
CO3: Knowledge about architecture of database system.
CO4: Learning about transaction processing and concurrency control.

CA402-T - Advance Mobile Repairing:

CO1: Student will get knowledge of Mobile Phone Technology.
CO2: Student will familiar with Micro chip and Microprocessor Technology.
CO3: Student will get practical training of handling various components of Mobile phone.
CO4: Learning of circuit diagram of Mobile phone with complete software installation.
CO5: Student able to find the fault in Hardware and Software and also able to read the track of mobile phone.

CA403-T - Software Project Management:

CO1: To manage the selection and initiation of individual projects and of portfolios of projects in the enterprise.
CO2: Implement processes for successful resource, communication, and risk and change management.
CO3: To conduct project planning activities that accurately forecast project costs, timelines, and quality.
CO4: To demonstrate effective project execution and control techniques that result in successful projects.
CO5: To conduct project closure activities and obtain formal project acceptance.

CO6: To demonstrate a strong working knowledge of ethics and professional responsibility.
CO7: To demonstrate effective organizational leadership and change skills for managing projects, project teams, and stakeholders.

CA404-T - Core Java

CO1: To implement Object Oriented Programming Concepts.
CO2: To use and create packages and interfaces in a Java program
CO3: To use graphical user interface in Java programs.
CO4: To create applets.
CO5: To implement exception handling in Java.
CO6: To implement Multithreading.
CO7: To use Input/output Streams.
CO8: To handle security implementations in Java.

CA405-T - Aptitude and Logical Reasoning:

CO1: To prepare for competitive examinations.
CO2: To evaluate critically various real life situations by resorting to Analysis of key issues and factors.
CO3: To read between the lines and understand various language structures.
CO4: To demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

100 CA406-T - Linear Programming Problem:

CO1: To know various importance of Linear Programming Problem.
CO2: To understand various applications which were applied in different fields.
CO3: To define the LPP and formulate the LPP in general and graphical form.
CO4: To understand various methods of LPP such as Simplex method and duality method.
CO5: To learn transportation and assignment problems using simple steps.

CA407-T - Programming in Java &Adv. DBMS using SQL (LAB):

A student will able to
CO1: Get knowledge of the structure and model of the Java programming language, (knowledge)
CO2: Use the Java programming language for various programming technologies (understanding)
CO3: Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
CO4: Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)
CO5: Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)
CO6: Define database system concepts and apply normalization to the database.
CO7: Explain the basic processing and optimization techniques for high level query.

CO8: Describe different transaction processing concepts and use different concurrency control techniques.
CO9: Discuss different types of databases such as object oriented and distributed databases.
CO10: Identify different types of database failures and techniques to recover from such failures.
CO11: Discuss advanced database technologies and products used in enterprise

CA408-T - Mobile Maintenance-II & Mini project (LAB):

A student will able to….
CO1: Know about various features of Mobile phones.
CO2: Handle every internal part of mobile.
CO3: Handle the different software‟s of mobile phones.
CO4: Formulate a real world problem and develop its requirements.
CO5: Develop a design solution for a set of requirements.
CO6: Test and validate the conformance of the developed prototype against the original requirements of the problem.
CO7: Work as a responsible member and possibly a leader of a team in developing software solutions.
CO8: Express technical and behavioral ideas and thought in oral settings.
CO9: Prepare and conduct oral presentations
CO10: Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project.
CO11: Generate alternative solutions, compare them and select the optimum one.
Code: CA501-T - Software Project Management II:
CO1: To recognize, trace and resolve IT related crises using project management software.
CO2: To identify the impact of IT projects on the performance of the organizations.
CO3: To manage the phases and infrastructure of IT projects.
CO4: To develop strategies to calculate risk factors involved in IT projects.
CO5: To use project management software to control the design, implementation, closure, and evaluation of IT projects.
CO6: To estimate, plan, calculate, and adjust project variables.
CA502-T - Computer Graphics-I:
CO1: To learn basic concept in Computer Graphics which includes different input and output devices, Graphics file formats and so on.
CO2: To use different functions of Graphics for creating any object.
CO3: To be able to move an object from one place to another, rotate, scale, reflect the object easily.
CO4: To generate the character / alphabets using various methods.
CA503-T- Core Java-II:
CO1: To understand input/output stream used in java.
CO2: To learn different utilities in java language.
CO3: To have an overview of database access and details for managing information using the JDBC API.
CO4: To be able to write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles.
CO5: To learning how to use Java applets to create interactive web programs: Fonts, color, graphics, and animation.
CO6: To learn how to use Java applets to create interactive web programs by sending and receiving parameters in an applet.
CA504-T- Data Warehousing:
CO1: To evaluate the different models of OLAP and data preprocessing.
CO2: To enlist various algorithms used in information analysis of Data Mining Techniques.
CO3: To demonstrate the knowledge retrieved through solving problems.
CA506-T - Data Communication & Networks

CO1: To understand different types of networks, various topologies and application of networks.
CO2: To understand types of addresses, data communication.
CO3: To understand the concept of networking models, protocols, functionality of each layer.
CO4: To learn basic networking hardware and tools.
CO5: To understand wired and wireless networks, its types, functionality of layer.
CO6: To understand importance of network security and cryptography.

Course Code: CA507-T- Beginners Programming with PHP

CO1: To understand how server-side programming works on the web.
CO2: To learn PHP Basic syntax for variable types and calculations.
CO3: To create conditional structures.
CO4: To store data in arrays.
CO5: To use PHP built-in functions and creating custom functions.

CA509-P - Pr. Based on Comp. Graphics & Pr. Based on Core Java-II (LAB):

CO1: To study and make an object based on various graphical functions.
CO2: To learn how to draw different shapes using various algorithms such as line, circle.
CO3: To handle the various movements of an object for animation such as translate, rotate, scaling and reflection.
CO4: To have knowledge about Input/output Stream used in java.
CO5: To learn different utilities in java language.
CO6: To have an overview of database access and details for managing information using the JDBC API.
CO7: To be able to write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles.
CO8: To learn use of Java applets to create interactive web programs: Fonts, color, graphics, and animation.
CO9: To learn use of Java applets to create interactive web programs by sending and receiving parameters in an Applet.

CA510-P -Pr. Based on DCN & Pr. Based on PHP (LAB):

CO1: To describe various standard network models.
CO2: To understand various guided transmission media.
CO3: To analyze error detection and error correction codes.
CO4: To understand the concepts behind medium access control sub layer.
CO5: To understand how server-side programming works on the web.
CO6: To learn PHP Basic syntax for variable types and calculations.
CO7: To create conditional structures.
CO8: To store data in arrays.
CO9: To use PHP built-in functions and creating custom functions.

CA601-T - Software Testing and Quality Assurance:

CO1: The student will be able to identify benefits of and the needs to enforce software quality.
CO2: The students will be able to differentiate between quality control, quality management and quality assurance.
CO3: The students will be able to discuss different software quality factors models.
CO4: Student learns systematic approach to the development, operation, maintenance, and retirement of software.
CO5: To understand methods and tools of testing and maintenance of software‟s.

CO6: Student learns how to use available resources to develop software, reduce cost of software and how to maintain quality of software.

CA602-T - Computer Graphics-II

CO1: Student will get knowledge of Three (3)-Dimensions (D) basic concept.
CO2: Students will be able to perform different operations on an object such as 3D-Rotation, Scaling and Translation.
CO3: Students can clip any object using various methods/algorithms.
CO4: To understand the curves and fractals concept.
CO5: To enable students to identify and describe different color model for defining any object.
CO6: To understands the concept of animation and can be implemented in real time application.

CA603-T- Java Server Pages (JSP)

CO1: Students get knowledge of Java server pages by its life cycle.
CO2: Studnets can learn different scripting tags.
CO3: To understand different tags which are helpful to the server pages such as directive tags, action tags and also depth knowledge of Java Beans.
CO4: To handle the Database Access to JSP page.
CO5: To get additional knowledge of JSTL, Core and XML tag library.

Code: CA604-T - Data Mining:

CO1: To build basic terminology.
CO2: To display a comprehensive understanding of different data mining tasks and the algorithms most appropriate for addressing them.
CO3: To evaluate models/algorithms with respect to their accuracy.
CO4: To demonstrate capacity to perform a self directed piece of practical work that requires the application of data mining techniques.
CO5: Critique the results of a data mining exercise.
CO6: To develop hypotheses based on the analysis of the results obtained and test them.
CO7: To understand a data mining solution to a practical problem.

CA606-T - Cloud computing:

CO1: Studnets learn cloud computing fundamentals with various cloud services.
CO2: Students learn different cloud computing technologies and its applications.
CO3: Students can understand key enabling technologies for virtual private clouds and its applications.
CO4: Students understand different role of networks in cloud computing.
CO5: Students learn architecture of cloud and additional information about data-intensive technologies with its characteristics and system architecture for cloud computing.

Course Code: CA607-T - Advanced Programming with PHP:

CO1: To maintain state using cookies, session variables, hidden form fields and query strings.
CO2: To use PHP to manipulate files
CO3: To identify and handle the types of errors that can occur when programming with PHP
CO4: To introduce to OOP (Object Oriented Programming) in PHP
CO5: To understand use of an object-oriented API to access SQL to SELECT, INSERT, UPDATE and DELETE data from tables.
CO6: Using the phpMyAdmin utility to administer the MySQL database.
CO7: Using OOP in PHP to define and use classes.

Code: CA609-P - Pr. Based on PHP & JSP (LAB)

CO1: To identify and handle the types of errors that can occur when programming with PHP
CO2: To ntroduce to OOP (Object Oriented Programming) in PHP
CO3: To use an object-oriented API to access SQL to SELECT, INSERT, UPDATE and DELETE data from tables
CO4: To use the php MyAdmin utility to administer the MySQL database
CO5: To use OOP in PHP to define and use classes.
CO6: To choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (Evaluation)
CO7: To implement the program using various action tags in JSP.
CO8: To understand scripting tags manipulations.
CO9: To learn JSP & Java Beans.
CO10: To study session API in JSP
CO11: To understand database access to JSP page.
CO12: To study SQL tagged library and function tag library in JSP.

CA610P - Major Project:

CO1: To formulate a real world problem and develop its requirements.
CO2: To develop a design solution for a set of requirements.
CO3: To test and validate the conformance of the developed prototype against the original requirements of the problem.
CO4: To work as a responsible member and possibly a leader of a team in developing software solutions.
CO5: To express technical and behavioral ideas and thought in oral settings.
CO6: To participate in and possibly moderate, discussions that lead to making decisions.
CO8: To express technical ideas, strategies and methodologies in written form.
CO9: To prepare and conduct oral presentations.
CO10: To learn new tools, algorithms, and/or techniques that contributes to the software solution
of the project.
CO11: To generate alternative solutions, compare them and select the optimum one.