OFFICE OF THE PRINCIPAL GOVT. DEGREE COLLEGE DABHARA
DIST-JANJGIR-CHAMPA (C.G)
E-mail govtcollegedabharacg@gmail.com Mo:-9303253851 Website : www.govtcollegedabhara.in

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PROGRAM OUTCOME

S.No.	Name of Program	Page No.
1	B.A. (Bachelor Of Arts)	1
2	B.Sc (Bachelor Of Science)	1
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4	M.A. (Political Science)	2
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6	DCA (Diploma in Computer Application)	3
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DIST. – JANJGIR CHAMPA (C.G.) 495688

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PROGRAM OUTCOME

BA (BACHELOR OF ARTS)

Following are the learning outcomes under the Faculty of Arts at the undergraduate level

1. Knowledge of human values.
2. Development of ideological revolution.
3. Development of environmental consciousness.
4. Social service awareness.
5. Development of creative skills.
6. Employment opportunities.
7. Creation of future eligible citizens.

BACHELOR OF SCIENCE

Following are the learning outcomes under the Faculty of Science at the undergraduate level.

1. Basic knowledge of science.
2. The development of scientific thinking through the study of scientific methods and principles.
3. Development of environmental consciousness in the wider context.
4. Understanding the concept and need of sustainable development.
5. Ability to solve natural problems and complexities.
6. Knowledge of animal and plant kingdom.
7. Employment opportunity.
8. Development of mathematical and logical intelligence skills in human life.

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PROGRAM OUTCOME

B.Com. (BACHELOR OF COMMERCE)

Following are the learning outcomes under the Faculty of Commerce at the undergraduate level.

1. Business management knowledge.
2. Basic business knowledge.
3. Development of aptitude for solving business and economic problems and complexities.
4. Understanding the economic and commercial changes of the country in the international context.
5. Practical knowledge of finance, marketing, accounting, management with development of mathematical and statistical aptitude.
6. Knowledge of taxes.
7. Employment opportunity.

M.A. POLITICAL SCIENCE

In this college M.A. Following are the program outcomes of courses conducted under Political Science.

1. Knowledge of various political thought.
2. Analytical knowledge of political theories and ideas.
3. Development of ability to solve political problems with knowledge of political system in contemporary contexts.
4. Developing awareness of fundamental rights and duties.
5. Helpful in the creation of qualified and aware citizens.
6. Ability to solve problems arising out of political crisis.
7. Knowledge of international, national and local political and administrative systems.
8. Research and development of research aptitude in the political field.
9. Awareness of polity and constitution.

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PROGRAM OUTCOME

PGDCA (POST GRADUATE DIPLOMA IN COMPUTER APPLICATION)

1. Full proficiency in Hindi English typing to the students.
2. Knowledge of all parts of a computer such as hardware and software.
3. After doing this course, students can establish their own business, such as printing, photo editing, multimedia, etc., especially helpful in getting employment.
4. Thorough knowledge of assembling computer hardware and installing and uninstalling new software.
5. Keeping students updated in the field of technology.
6. After doing this course, its scope is Banking, Data Entry Operator, Assistant Grade, Patwari and in Railway Sectors.
7. Thorough knowledge of internet among students.
8. Interested in creating new software projects.
9. Complete knowledge of office packages, Accounting, Database programs.
10. Searching Data in the Internet Downloading.
11. Thorough knowledge of internet network.

Program outcome

DCA(DIPLOMA IN COMPUTER APPLICATION)

Following are the program outcome of DCA courses conducted in this college:

1. Full proficiency in Hindi English typing to the students.
2. Knowledge of all parts of a computer such as hardware and software.
3. After doing this course, students can establish their own business, such as printing, photo editing, multimedia, etc., especially helpful in getting employment.
4. Thorough knowledge of assembling computer hardware and installing and uninstalling new software.
5. Keeping students updated in the field of technology.

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6. After doing this course, its scope is Banking, Data Entry Operator, Assistant Grade, Patwari and in Railway Sectors.
7. Thorough knowledge of internet among students.

Program outcomes

B.Sc. Mathematics

1: Scientific temper will be developed in Students.

2: Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.

3: Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.

4: Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.

5: Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.

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Course Outcome

B.A.

B.SC

B.COM

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I B.Sc Part –I B.Com Part - I	F.C. Hindi Language	• पल्लवन, पत्राचार, अनुवाद, पारिभाषिक शब्दावली एवं हिन्दी में पदनाम। • शब्द शुद्धि, वाक्य शुद्धि, शब्द ज्ञान–पर्यायवाची शब्द, विलोम शब्द, अनेकार्थी शब्द, समश्रुत शब्द, अनेक शब्दों के लिए एक शब्द एवं मुहावरे–लोकोक्तियां। • देवनागरी लिति – नामकरण, स्वरूप एवं देवनागरी लिपि की विषेषताएं, हिन्दी अपठीत गद्यांष, संक्षेपण, हिदी में संक्षिप्तीकरण। • कम्प्यूटर का परिचय एवं कम्प्यूटर में हिंदी का अनुप्रयोग। • मानक हिन्दी भाषा का अर्थ, स्वरूप, विषेषताएं, मानक, उपमानक, अमानक, भाषा। • सामाजिक गतिषीलता – प्राचीन काल, मध्यकाल, आधुनिक काल।

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II B.Sc Part –II B.Com Part - II	F.C. Hindi Language	• कार्यालयीन भाषा, मीडिया की शषा, वित एवं वाधिज्य की भाषा, मषीनी भाषा। • संज्ञा, सर्वनाम, विषेषण, क्रिया विषेषण, समास, संधि एवं संक्षिप्तियां। • अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III B.Sc Part –III B.Com Part - III	F.C. Hindi Language	• कथन की शैलियां–विवरणात्मक शैली, मूल्यांकन शैली, व्याख्यात्मक शैली, विचारात्मक शैली। • विभिन्न संरचनाएं–विनम्रता सूचक संरचना, विधि सूचक संरचना, निषेध परक संरचना, काल–बोधक संरचना, स्थान–बोधक संरचना, दिषा बोधक संरचना, कार्य–कारण सम्बन्ध संरचना, अनुक्रम संरचना। • कार्यलयीन पत्र और आलेख–परपित्र, ओदष, अधिसूचना, ज्ञापन, अनुस्मारक, पृष्ठांकन। • अनुवाद : स्वरूप एवं परिभाषा, उद्देष्य स्त्रोत भाषा और लक्ष्य भाषा।

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I B.Sc Part –I B.Com Part - I	F.C. English Language	• Where the mind is without fear – Rabindranath Tagore • The ideal of Indian art – K. Bharatha iyer • The wonder that was Indian – A.L. Basham • The heritage of Indian art – Kapila Chaitanya • The Ramayana and the Mahabharata • Freedom movement in India – Sudhir Chandra • Dandi March – Louis Fischer • Aspects of Indian constitution – M.C. Chagla • Individual Freedom – Jawaharlal Nehru • Fundamental Duties • Delhi in 1957 – Mirza Ghalib • Raja's Diamond – R.L. Stevenson • Tree – Tina Morris

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II B.Sc Part –II B.Com Part - II	F.C. English Language	• Sonnet – To Science • All men Are Scientists • Science in Ancient India • Major Ancient Indian Scientists • J.C. Bose • Srinivasa Ramanujan • Communication in the Modern Age • Computers • Plastic Surgery • Fighting Disease • Water Pollution • Hiroshima • War • October 2026: The Million – Year Picnic

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III B.Sc Part –III B.Com Part - III	F.C. English Language	• Three Years She Grew – William Wordsworth • Death of a Clerk – Anton Chekhov • The Judgement_Seat of Vikramaditya – Sister Nivedita • Rana Pratap – E.L. Turnbull • Bores – E.V. Lucas • The Universality of Religion – Romain Rolland • Communication Education and information technology – K.Aludiapillai • Women and Development – Leela Dube • Democratic Decentralisation • Basic Quality of Life – S.S. Dube

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		• Globalisation and Privatisation • The New Economic Policy – R.S. Tiwari • Management of Change – S.C. Dube • Geo-Economic Profile of Madhya Pradesh – R.S. Tiwari • The Mouse and the Snake – Vikram Seth

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I Paper-I	Sociology	• Sociology : Meaning, Nature, scope, SubjeGl matter and significance. Basic concepts : Society, Community, inStItUtlOn, Association, group, Status and role. • Social Institutions: Marriage, Family and klnShip. Culture and society: Culture, socialization, The individual and society, social control, norms and values. • Social Stratification: Meaning. forms and theories. Social Mobility: Meaning, forms and theories. • Social change: Meaning and patterns, types, factors, evolution and progress. • Social System and process: Social System- meaning, characteristics and elements. Social process- Meaning, elements, characteristics and types.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I Paper-II	Sociology	• Classical View a bout Indian Society: Vern a, Asharam, Karma, Dharma and Purusharth. • The Structure and composition of Indian society. Structure ; Village ,Towns, Cities and Rural Urban Linkage, Compositions: Tribes, Dalits, Women and M inorities. • Basic Institutions of Indian Society: Caste system, Joint I ami ly, Marriage and Changing d1 mensions.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II Paper-I	SOCIOLOGY OF TRIBAL SOCIETY	• Tribes: Concepts, Characteristics. Tribes and Schedule Tribes, Distinction between Tribe and Caste. • Classification of Tribal people: Food gatherers and hunters, Shifting cultivates, Nomads, Peasant settled Agriculturists and Artisans. • Cocio-cultural Profile: Kinship, Marriage, Family, Religion and belief

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		cultural traditions. • Tribal sensitization: Tribal Mobility, Schemes of tribal Development, Various Tribal Movements. • Problems of Tribal People: Poverty, Illiteracy, Indebtedness, Agrarian issues, Exploitation study of tribal communities in Chhattisgarh with special reform to Particularly Venerable Tribal Groups (PVTG).

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II Paper-II	CRIME AND SOCIETY (Sociology)	• Concept of Crime: Meaning, Characteristics and Types. • School of Crime: Classical, Sociological and Psychological. • Structure of Crime: Anomies, Criminality and Suicide, Organized Crime, White Collar Crime And Cyber Crime • Social Evils and Crime: Alcoholism. Drug Addiction, Dowry and Beggary. Major Theories of Punishment. • Correctional Process: Role of Police and Judiciary in India, Development of Jail reforms in India and Modern correctional concepts- Probation, Parole and after care Program.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III Paper-I	Sociology	• August Comte : The Law of Three Stages , Positivism, Hierarchy of Science. Durkheim: Social Solidarity and sucide. • Karl Marx : Dialectic Materialism , Class Struggle and Surplus value. Max Weber : Bureaucracy, Authority and the Protestant Ethic and the spirit of Capitalism. • Pareto : Circulation of Elis and Logical and Nonlogical action. Spencer : Social Darwinism, super organic evolutions. • Thorstein Veblen: The Theory of Leisure Class, Theory of Social Change. R. K. Morton: Functionalism and Reference Group.

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III Paper-II	Sociology	• Social Research : Meaning, Characteristics and Significance. Scientific methods , Hypothesis. • Qualitative Research : Ethnography, Observation, Case Study, Content analysis. • Reasearch design : Exploatory, Descriptive, Explanatory, Experimental, and Diagnostic. • Tools and Techniques of Social Research: Social Survey, Sampling, Questionnaire, Interview - Schedule and Interview - Guide. • Social Statistics: Meaning, Importance and Limitations. Graphs, Diagrams and Measures of Central Tendency- Mean, Mode, Median, Co-relation, Use of Computer in Social Research.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I Paper-I	Political Science Theory	• Meaning and Definition of Political Science (with modern concept). Politics as a specific human behaviour. Power, Authority and Influence : meaning, features and kinds. Method of Study to Political Science : • State and its essential elements:- Marxist theory . Organismic Theory. • Sovereignty and its pluralistic criticism. Rights : meaning, kinds and theories. Duties. Liberty : meaning, kinds , safeguards. Equality : meaning, kinds and relations with Liberty. Democracy merits and demerits. Direct Democracy. • Kinds of Government : Unitary and Federal, Parliamentary and Presidential. Dictatorship. Organs of Government : Executive, Legislature and Judiciary. Theory of Separation of Powers and Checks and Balances. Constitution : meaning and kinds. Theories of representation and Electoral Process. • Public Welfare State. Party System : meaning , kinds , process. Pressure Groups : meaning, kinds and technique. Social Change : meaning, characteristics, theories. Feminis. Nationalism.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – I Paper-II	Indian Government and Politics (Political	• Indian National Movement : • Constitution of India :

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	Science)	• Union Executive • Union Judiciary : • State Legislature :

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II Paper-I	Political Thought (Political Science)	• Plato : Ideal State : Justice, Education, Communism , Philosopher King. • Aristotle : State, Slavery, Citizenship , Revolution. • Machiavelli : Child of his times, Religion and Morality, Duties and Conduct of King. Hobbes :Social Contract Theory: Leviathan. Locke : Social Contract Theory. Rousseau :Social Contract Theory and General Will. • Bentham : Utilitarianisms. Mill : Amendment in Utilitarianisms. Liberty and Representative • Government. Green : Political Thoughts. Marx : Political Thoughts. • Idealism, Individualism, Liberalism, Socialism, Fascism : Features and • Criticism. • Manu and Kautilya : Saptang Theory, King and Kingship, Administrative • System, Rajyamandal. • Gandhi : Truth , Non violence , Satyagrah and Political thoughts. • Ambedkar : Political and Social thoughts. • Deen Dayal Upadhyay : Akatmamanavvad.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – II Paper-II	Comparative Government and Politics (Political Science)	• British Constitution : Evolution , Salient Features, Executive, Legislature and • Judiciary. • Constitution of United States of America : Salient Features, Executive, Legislature and • Judiciary. Theory of Separation of Powers and checks and balances. • Constitution of Switzerland : Salient Features, Executive, Legislature and Judiciary. Direct Democracy. • Constitution of China : Salient Features, Executive, Legislature and Judiciary. • Communist Party. • Comparative Politics : meaning , Definition. System Theory of David

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		Easton, • Structural -functional Approach of Almond. Concept of Political Development, Political • Socialization, Political Culture

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III Paper-I	International Politics and Foreign Policy of India (Political Science)	• International Politics : meaning, Nature, Scope. International Politics : Approaches to the study : Realism, Idealism, New realism, World System theory. National interest and National power: • Various theories of International Politics : System, Game, Decision making, Barganing theory. Balance of Power, Collective Security, Disarmament, Cold war, Diplomacy. • Foreign Policy of India : Determinating elements, characteristics. Non-`alignment : • Indias' relations with neighboring countries : China , Pakistan, Nepal, Sri lanka, Relations with Super Powers - USA, Russia, Britain and France. • Some major issues of International Politics : • Environmentalism, International Terrorism, Globalisation, Human Rights , Nuclear Disarmament.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III Paper-II	Public Administration (Political Science)	• Public Administration : meaning and definition, nature, scope. Public Administration and Private Administration. Method of Studies. New Public Administration. Comparative Public Administration. • Principles of Organisation : Hierarchy, Span of Control, Unity of Command, Delegation. Chief Executive. Line and Staff Agencies. Departmental Organisation. Public Corporation. Personnel Administration : Recruitment, Promotion, Training. • Development Administration : Nature, Issues, Characteristics.Riggs Model. Public participation in Administration.Good Governance and e- Governance. Union Public Service Commission. • Financial Administration: Principles of Budget. Budget procedure in India. Administrative reforms in India. Executive, Legislative, Judicial and Public Control on Administration. • Corruption in Administration: Ombudsman, Lokpal and Lok Ayukta.

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		Public Administration in the age of Globalisation. Liberalisation. Bureaucracy. Public Relation.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part – III Paper-II	Political Science	• Public Administration : meaning and definition, nature, scope. Public Administration and Private Administration. Method of Studies. New Public Administration. Comparative Public Administration. • Principles of Organization : Hierarchy, Span of Control, Unity of Command, Delegation. Chief Executive. Line and Staff Agencies. Departmental Organization. Public Corporation. Personnel Administration : Recruitment, Promotion, Training. • Development Administration : Nature, Issues, Characteristics. Riggs Model. Public participation in Administration. Good Governance and e- Governance. Union Public Service Commission. • Financial Administration: Principles of Budget. Budget procedure in India. Administrative reforms in India. Executive, Legislative, Judicial and Public Control on Administration. • Corruption in Administration: Ombudsman, Lokpal and Lok Ayukta. Public Administration in the age of Globalisation. Liberalisation. Bureaucracy. Public Relation.

CLASS	SUBJECT	COURSE OUTCOME
बी.ए. प्रथम भाग–एक प्रश्न पत्र–प्रथम	हिन्दी साहित्य	• प्राचीन से तात्पर्या है – आधुनिक काल से पूर्व का काल। सही अर्थ में हिन्दी भाषा और साहित्य का विकास आदिकाल से शुरू होता है। इसमें धार्मिक तथा ऐतिहासिक दो प्रकार का साहित्य मिलता है, जो प्रबंध, मुत्तक, रासो, फागु, सुभाषित आदि विविध काव्यरूपों में अभिव्यंजित है। मध्यकालीन साहित्य की पृष्ठभूमि के रूप में इसे प्रतिष्ठापित किया जाता है। • मध्यकालीन काव्य में भक्तिकाव्य, जहां लोक जागरण को स्वर देनपे वाल है, वहीं रीतिकाल अपने लौकिक – श्रंगारिका, परिदृष्य में तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थितियों को बेलौस दृष्टियों से इसका अध्ययन अत्यावष्यक है। • अच्छे अनुवाद की विषेषताएंए अनुवाद प्रक्रियाए अनुवादक • संस्कृति और राष्ट्रीय एकीकरण : योगेष अटल

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		• घटनाओं, समारोहों आदि का प्रतिवेदन, विभिन्न प्रकार के निमंत्रण पत्र।

CLASS	SUBJECT	COURSE OUTCOME
बी.ए. प्रथम भाग–द्वितीय प्रथम–प्रष्न पत्र	हिन्दी साहित्य	• आधुनिक काव्य आधुनिकता की समस्त विषेषताओं को समेटे हुए है। स्वतंत्रता प्राप्ति के पूर्व की भाव – भाषा, षिल्प, अन्तर्वस्तु संबंधि समस्त विकास धारा यहां सजीव रू‍प में देखी जा सकती है। इस अनदेखा करना मनुष्य की विकास यात्रा को नजर अंदाज करना है। इस यात्रा के साक्षात्कार के लिए आधुनिक काव्य का अध्ययन अपेक्षित ही नहीं अपितु अनिवार्य है।

CLASS	SUBJECT	COURSE OUTCOME
बी.ए. प्रथम भाग–द्वितीय द्वितीय–प्रष्न पत्र	हिन्दी साहित्य	• व्याख्या एवं आलोचनात्क प्रष्नों के लिए एक नाटक, पांच प्रतिनिधि निबंध और पांच एकांकी का निर्धारण किया गया है।

CLASS	SUBJECT	COURSE OUTCOME
बी.ए. प्रथम भाग–तृतीय प्रथम–प्रष्न पत्र	हिन्दी साहित्य	• हिन्दी केवल खड़ी बोनी नहीं है, बल्कि एक बहुत बड़ा भाषिक समूह है। हिन्दी जगत में अनेक विभाषाएं, बोलियां और उपबोलियां विद्यामान है निमें सकल साहित्य सम्पदा है। इनके सम्यक अध्ययन और अन्वेषण की आवष्यकता है। जनपदीय भाषा छत्तीसगढ़ी निरन्तर विकास की ओर अग्रसार हो रही है अस्तु, इस भाषा का और इसमें रचित साहित्य का इतिहास – विकास की ओर करते हुए इनसे संबंधित प्रमुख रचनाकारों का अलोचनात्म अनुषीलन करना हिन्दी के वृहत्तर हित में होगा। छत्तीसगढ़ी भाषा का पाठ्यक्रम निम्न बिन्दुओं पर आधारित हैं। • छत्तीसगढ़ी भाषा का इतिहास – विकास • छत्तीसगढ़ी भाषा में रचित साहित्य का इतिहास • छत्तीसगढ़ी भाषा के प्रमुख प्राचीन एवं अर्वाचीन रचनाकारों की

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		• Agriculture: • Land reforms, new agriculture strategies and green revolution MUDRA yojana. • Industry: Growth and productivity, Industrial policy and reforms, National Income, investment, saving and inflation, Current macroeconomic policies and their impact, fiscal policies and monetary policy

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-II PAPER- I PAPER-II	Economics	• National Income • Consumption Function • Nature and Characteristics of trade cycle • investment theory, Keynes's view on trade cycles, • theory and Huckster Ohlin theory, International trade and economic development, • Functions and objectives of international monetary fund, • Basic concepts : Money Value of Money, Inflation, deflation and reflation, push inflation; Measures to control inflation. Phillips curve, Concept of demonetization. • Commercial banking • banking in India after independence; • central bank; • Quantitative and qualitative methods of • credit control; • Bank rate policy; Open market operations; Variable reserve ratio and selective monetary policy with special reference to India. • Meaning and scope of public finance • goods v/s private goods; • Public expenditure • Sources of Public revenue; taxation • Major trends in tax revenue of the Central and State Government in India. • Public debt and financial administration • Methods of debt redemption. The public budget- Kinds of budget, Economic and functional • classification of the budget; Preparation and passing of budget in India.

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-III PAPER -I	Economics	• Economic Growth and Development • Problems of Population and growth pattern of population. Theory of demographic transition. • Harrod and Domar growth model, • Environment: Environmental and use, environmental disruption as an allocation, problem. valuation of, environmental accounting • Concept of Intellectual Capital : Food Security, Education, Health & Nutrition, Role of agriculture in economic development.
PAPER-II		• Statistics : Definition of Statistics, Importance and Limitations of Statistics, Importance of Statistics in Economics, Statistical investigation, Census and sampling methods of statistical investigation, Statistical data, Collections of Data, Primary & Secondary Data. • Measuring of Central Tendency: Mean, Median, Mode, measures of Skewness, Probability-basic concepts meaning and definitions • Dispersion : Meaning of Dispersion, Methods of measuring Dispersion, Range, Quartiles Deviation ,Mean Deviation, Coefficient of Mean Deviation, Standard Deviation. • Correlation Analysis : Meaning and types of correlation ,Degree of correlation, Coefficient of correlation-Karl Pearson's Method, Spearman's Rank Difference Method. Probable error and standard error. • Index Number- Methods of constructing of Index Numbers, Fisher's methods, Dorbish-Bowles method, Paasches method, Laspeyres method, Consumer price index numbers, Reversal test, Circular Test, Time series analysis-Meaning, Components of time series, Measurement of long term trend by average method.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-I Paper-I	PHYSICAL GEOGRAPHY	• **Students able to learn** :- • The Nature and Scope of Physical Geography. Origin of the Earth, Geological Time Scale, Earth's Interior, Continental Drift Theory (Wegner), Plate Tectonics, Isostasy. • Earth movements: Earthquakes and Volcanoes. Rocks,

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		Weathering, Erosion, and Normal cycle of erosion, Evaluation of landscapes- Fluvial, Arid, Glacial, Karts and Coastal landscape. • Elements of Weather and Climate, Composition and Structure of the Atmosphere. World patterns of Atmospheric Temperature, Pressure, and Wind. • Atmospheric Moisture, and Disturbances, Climatic Classification (Koppen and Thornthwait) • Surface relief of Oceans,. Distribution of Temperature and Salinity of oceans and seas, Currents and Tides, Ocean Deposits and Coral Reefs, and Oceanic Resources.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-I Paper-II	HUMAN GEOGRAPHY	• Students Able To Learn :- • Human Geography. Man - environment relationship; Determinism, Possibilism, and Probabilism; Human Development Index (HDI). • Classification of Human Races – their Characteristics and Distribution; Human adaptation to environment: • Growth, Density and Distribution of World Population and factors influencing Spatial distribution; Over , Under, and Optimum Population; Migration of Population. . • Settlements –: Urbanization, Evolution and Classification, Trends of Urbanization. • Rural settlements: Rural Houses in India - Types, Classification and Regional Pattern. • Issues – Global Warming, Climate Change, Deforestation, Desertification, Air, Water and Soil Pollution.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-III Geography	PRACTICAL GEOGRAPHY	• **Students able to learn :-** • Cartography and stastistical methods • Scale: • Contour: Methods of showing relief • Graph and Diagram: • Statistical Technique: Mean, Median and Mode

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-II Paper-I Geography	ECONOMIC AND RESOURCES GEOGRAPHY	• **Students able to learn :-** • Meaning, scope and approaches to economic geography; Main concepts of • economic geography; Resource: concept and classification; Natural resources: • soil, forest and water. • Mineral resources: iron ore and bauxite; Power resources: coal, petroleum and • hydro electricity; Resource conservation; Principal crops: wheat, rice, sugarcane • and tea • Agricultural regions of the world location (Von Thunen); Theory of industrial location (Weber); Major industries: • industrial regions of the world. • World transportation: • International trade: patterns and trends; Major trade blocks: LAFTA, EEC, • ASEAN; Effect of globalization on developing countries. • Conservation of resources; evolution of the concept, principles, philosophy, and • approach to conservation, resources conservation and practices. Policy making • and sustainable development.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-II Paper-II	GEOGRAPHY OF INDIA	• **Students able to learn :-** • Physical Features: Structure, Relief, Climate, Physiographic Regions, Drainage, • Climate-origin and mechanism of monsoon, and regional and Seasonal variation. • Natural Resources: • Resources (major irrigation and hydel power projects); Forests-types, distribution, • economic significance and conservation. Mineral and Power resources-Iron-ore, • Manganese, Copper, Coal, Petroleum and Natural gas, Non

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		conventional sources of energy. • Cultural Features : Major crops, impact of Green Revolution and Agricultural regions. • Industries Localization, Development & Production : Iron and steel, Cotton • Textile, Cement, Sugar, Transport, Foreign Trade. Industrial Region. • Detailed Study of the following regions of India : Kashmir Valley, North East.

CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-II Paper-III Geography	PRACTICAL GEOGRAPHY	• Students able to learn : • Map interpretation, projections and statistical methods • Distribution Maps: Dot Map, Choropleth Map and Isopleth Map. • Map Projections • Interpretation of Weather Maps. Use of Meteorological Instruments. • Statistical Methods: Quartile. Mean Deviation, Standard Deviation and Quartile • Deviation, Relative Variability and Co-efficient of Variation.

CLASS	SUBJECT	COURSE OUTCOME
[illegible]	[illegible]	• Students able to learn : • [illegible] • [illegible] • [illegible] • [illegible] • [illegible]

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CLASS	SUBJECT	COURSE OUTCOME
B.A. Part-II Geography	Practical Geography	• **Students able to learn :-** • Band graph, Hythergraph and Climograph. Square root, cube-root and dernier scales. • Map Projection: • Study and interpretation of Indian topographical sheets with respect to cultural and physical features. • Surveying – Plane Table Survey, Basic Principals of plane table surveying, plane table survey including intersection and resection. • Importance of field work in Geography. Field work and field report: Physical, social and economic survey of micro-region.

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बी.ए. प्रथम वर्ष प्रष्न पत्र–प्रथम	इतिहास	• भारत की भौगोलिक संरचना • भारतीय इतिहास के स्त्रोंतों का सर्वेक्षण • पूर्ण पाषाण काल एवं उत्तर पाषाण काल • हड़प्पा सभ्यता– निर्माता, प्रसार, नगर योजना, राजनीतिक सामाजिक, आर्थिक संरचना • ऋगवैदिक काल – राजनीतिक, सामाजिक, आर्थिक • ईसा पूर्व छठवी सताब्दी का भारत –महाजनपद काल • जैन एवं बौद्ध धर्म • सिंकदर का आक्रमण और उसका प्रभाव • चंद्रगुप्त मौर्य एवं अषोक • मौर्य प्रषासन, कला एवं संस्कृति, अषोक का धम्म • मौर्योत्तरकाल – शुंग, कुषाण एवं सातवाहन • संगमयुग– साहित्य, संस्कृति, चोल एवं पाण्ड्य • गुप्तयुग– समुद्रगुप्त की विजयें एवं चंद्रगुप्त द्वितीय, प्रषासन, आर्थिक, सामाजिक, सांस्कृतिक दषा • राजपूतों की उत्पत्ति एवं प्रषासनिक तथा सामाजिक विषेषताएं • पल्लव, चालुक्य, वर्धन, पाल, राष्ट्रकुट

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		• भारत का दक्षिण पूर्व एषिया एवं श्रीलंका से संबंध • मोहम्मद बिन कासिम, महमूद गजनवी एवं मुहम्मद गोरी का आक्रमण • छत्तीसगढ़ का परिचय– नामकरण एवं भौगोलिक स्थिति • छत्तीसगढ़ के प्रमुख क्षेत्रीय राजवंष–पाण्डुवंष, शरभपुरीय, • छत्तीसगढ़ के प्रमुख राजवंष– नलवंष, छिन्दक नागवंष, • दक्षिण कोसल के कल्चुरी वंष, राजनीतिक एवं प्रषासनिक व्यवस्था

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बी.ए. द्वितीय वर्ष प्रश्न पत्र–प्रथम	इतिहास	• सल्तनत कालीन एवं मुगल कालीन इतिहास के स्त्रोत • दास वंष– ऐबक, इल्तुतमिष, बलबन • खिलजी वंष– अलाउद्दीन खिलजी–सैनिक उपलब्धियां, राजस्व व्यवस्था एवं बाजार नियंत्रण • तुगलक वंष– मोहम्मद बिन तुगलक • मुगल साम्राज्य की स्थापना – बाबर एवं हुमायूँ • शेरषाह सूरी का प्रषासन • अकबर की राजपूत नीति • मुगल शासकों की धार्मिक नीति – अकबर से औरंगजेब तक • मुगल प्रषासन • मध्यकालीन सामाजिक एवं आर्थिक दषा • भक्ति आंदोलन • सूफीवाद • मध्यकालीन साहित्य, कला एवं स्थापत्य • विजयनगर राज्य • बहमनी राज्य • षिवाजी का प्रषासन • पेषवा– बालाजी विष्वनाथ, बालाजी बाजीराव • पानीपत का तृतीय युद्ध– कारण एवं परिणाम • मराठों के अधीन छत्तीसगढ़ – बिम्बाजी भोसले • छत्तीसगढ़ में मराठा प्रषासन

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बी.ए. द्वितीय वर्ष प्रष्न पत्र–द्वितीय	इतिहास	• विलियम द्वितीय की विष्व राजनीतिक • अफ्रीका का विभाजन • जापान का आधुनिकीकरण– मेईजी पुनर्स्थापना एवं जापान का आधुनिकीकरण • रूस–जापान युद्ध : कारण एवं परिणाम • चीन अफीम युद्ध एवं चीन की क्रांति, साम्यवाद • पूर्वी समस्या –बर्लिन कांग्रेस, युवा तुर्क आंदोलन • बाल्कन युद्ध : कारण एवं परिणाम • प्रथम विष्व युद्ध : कारण एवं परिणाम • वर्साय की संधि • रूस की क्रांति 1917 ई. • फासीवाद – मुसोलिनी • नाजीवाद –हिटलर • जापान का सैन्यवाद • राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र • द्वितीय विश्वयुद्ध : कारण एवं परिणाम • संयुक्त राष्ट्र संघ – स्थापना एवं संगठन, उपलब्धियां • शीत युद्ध • गुट निरपेक्ष आंदोलन एवं पंचशील सिद्धान्त • विष्व शांति की चुनौती– कोरिया एवं फिलीस्तीन समस्या • एक ध्रुवीय विष्व

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बी.ए. तृतीय वर्ष प्रष्न पत्र–प्रथम	इतिहास	• भारत में यूरोपीयनों का आगमन • आंग्ल–फ्रांसीसी प्रतिस्पर्धा– कर्नाटक युद्ध • ब्रिटिष साम्राज्य का विस्तार – प्लासी एवं बक्सर युद्ध • ब्रिटिष साम्राज्य का विस्तार – वेलेजली की सहायक संधि, डलहौजी की हड़प नीति • ब्रिटिष प्रषासनिक सुधार – लार्ड विलियम बैंटिंग • लार्ड कर्जन का प्रषासन • यूरोपीय वाणिज्यवाद का भारत में प्रभाव–उद्योगों व व्यापार का पतन • विभिन्न सामाजिक वर्ग–कृषक, मजदूर, महिलाएं

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		• कृषि का पतन एवं कृषक आंदोलन • भूराजस्व व्यवस्थाएं – स्थायी बंदोबस्त, रैयतवाड़ी, महालवाड़ी • भारतीय पुनर्जागरण–ब्रह्म समाज, आर्य समाज • मुस्लिम समाज सुधार आंदोलन–अलीगढ़ आंदोलन • रेल यातायात का उद्भव एवं विकास • हस्तषिल्प उद्योगों का पतन • ईस्ट इंडिया कंपनी का रियासतों से संबंध • पाष्चात्य षिक्षा का विकास एवं प्रेस • ब्रिटिष नियंत्रण काल में छत्तीसगढ़ की प्रषासनिक व्यवस्था • ब्रिटिष कालीन प्रषासनिक व्यवस्था • छत्तीसगढ़ में सामाजिक सुधार–कबीर पंथ एवं सतनाम पंथ • छत्तीसगढ़ की जनजातीय संस्कृति

CLASS	SUBJECT	COURSE OUTCOME
बी.ए. तृतीय वर्ष प्रष्न पत्र–द्वितीय	इतिहास	• .1. राष्ट्रवाद का उदय • 2. 1857ई. की क्रांति : कारण एवं परिणाम • 3. भारतीय राष्ट्रीय कांग्रेस की स्थापना – उद्देष्य, उदारवाद, उग्रवाद • 4. बंगाल का विभाजन एवं स्वदेषी आंदोलन • 5. क्रांतिकारी आंदोलन– प्रथम एवं द्वितीय चरण • 6. भारतीय राजनीति में साम्प्रदायिकता का उदय– मुस्लिम लीग की स्थापना • 7. होमरूल आंदोलन • 8. लखनऊ समझौता • 9. गांधीवादी आंदोलन – असहयोग आंदोलन • 10. सविनय अवज्ञा आंदोलन • 11. आदिवासी मजदूर एवं कृषक आंदोलन • 12. भारत छोड़ो आंदोलन • 13. आजाद हिन्द फौज • 14. भारत का विभाजन एवं स्वतंत्रता

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		• 15. रियासतों का विलिनीकरण • 16. भारतीय संविधान की प्रमुख विषेषताएं • 17. छत्तीसगढ़ में 1857ई. की क्रांति– नारायण सिंह एवं हनुमान सिंह • 18. बस्तर का मुरिया विद्रोह एवं भूमकाल आंदोलन • 19. छत्तीसगढ़ में गांधीवादी आंदोलन • 20. छत्तीसगढ़ में रियासतों का विलिनीकरण

CLASS	SUBJECT	COURSE OUTCOME
B.A. I Paper - I	ENGLISH LITERATURE	• Shakespeare - Sonnet No. 1 From Fairest Creatures, Sonnet No. 154., The little Love God. • Milton - How Soon Hath Time the Subtle Theif of Youth ... • John Donne - Sweetest Love I Don't go, This is my play's Last Scene. • John Dryden - Portrait of Shadwell. • Alexander - Pope- From An Essy on Criticism (True case in writing ....) and the world's Victor Stood subdned by sound. • Bacon Of Studies, Of Health, Of Friendship • Addison-Sir Roger at Home (c) Steele Of the Club. ▪ DRAMA Shake spear - The Merchant of Venice ▪ Fiction - Swift - The Battle of the Books. ▪ UNIT-7 Historical and Literary Topics

CLASS	SUBJECT	COURSE OUTCOME
B.A. I Paper-II	ENGLISH LITERATURE	• Blake - Tiger, Tiger Burning Bright. • Wordsworth - Daffodils and Solitary Reaper. • Coleridge - Frost at Midnight.

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		• Shelley - Ode to a skylark. • Keats - Ode to Autumn. • Tennyson - Crossing the Bar. • Browing - Prospice. • Lamb - Dream Children : A Reverie • Hazlit - On Actors and Acting ○ Fiction Jane Austen - Pride and prejudice. ○ Fiction Charles Dickens - David Copperfield ○ Historical and Literary Topics.

CLASS	SUBJECT	COURSE OUTCOME
B.A. II Paper-I	MODERN ENGLISH LITERATURES	• Annotations • (Poetry) W.B. Yeats - 'A Prayer for My Daughter, The Second Coming T.S. Eliot - 'Love Song of J. Alfred Prufrock' • (Poetry) Dylan Thomas - 'Lament, 'A Refusal to Mourn the Death Larkin - 'Toads', At Grass' • (Prose) Bertrand Russell - On the Value of Scepticism Oscar Wilde - Happy Prince • (Drama) G.B. Shaw – Pygmalion (Fiction and short-stories) Rudyard Kipling-Kim Short-Stories Katherine mansfield - A Cup of Tea

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		Elegy, Sonnet, Ode, Morality & Miracle Play, One Act Play, 6. Interlude

CLASS	SUBJECT	COURSE OUTCOME
B.A. II Paper-II	MODERN ENGLISH LITERATURES	• Poetry) Sassion - At the Grove of Henry Vaughan. Owen, W.H. - Strange Meeting • (Poetry) Auden - Seascape Ted Hughes - The Howling of Wolves • Prose) Robert Lynd - Forgetting H. Belloc - A conversation with A Reader • (Drama) John Galsworthy - Strife R J.M. Synge - Riders of the Sea William Golding - Lord of the Flies (Fiction)

CLASS	SUBJECT	COURSE OUTCOME
B.A. III Paper-I	ENGLISH LETERATURE	• Toru Dutt - 'Our Casurina Tree' • Tagore - Songs 1 & 103 from 'Gitanjali' • Sarojini Naidu - 'The Ecstasy', 'The Lotus' • Kamla Das - 'The old playhouse' • Gauri Deshpandey Or ' The female of the species • Jayant Mahapatra - 'Dawn at Puri' • K.N. Daruwala Or 'Death by Burial' • Shiv K. Kumar - 'Indian Women' • Nirad C.Choudhary - My Birth Place. • Dr. S. Radhakrishnan - The call of the suffering. • Girish Karnad – Hayavadana • Tendulkar - Silence ! The Court is in session.

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		• R.K. Narayan – Guide

CLASS	SUBJECT	COURSE OUTCOME
B.A. III Paper-II	ENGLISH LETERATURE	• The Two world wars. • The Russian Revolution.B.A.-Part-III (16) • The Great Depression. • The Vietnam war. • Freudian Thought • Existentialism. • Absurdism • Modernism and Post Modernism. • New Development in fiction and Drama. • W.B. Yeats (1865-1939) • Siegfried Sasson (1886-1967) • Rupert Brooke (1887-1915) • T.S. Eliot (1888-1965) • Wilfred Owen (1893-1918) • W.H. Auden (1907-1937) • Louis Macneice (1907-1963) • Stephen Spender (1909-) • Dylan Thomas (1914-1953) • Philip Larkin (1922-1985) ○ T.S. Eliot - 'The Waste Land' ○ Wilfred Owen - 'Disabled' ○ Siegfried Sassoon - 'Attack', 'Falling Asleep' ○ Rupert Brooke - 'The Hill' ○ W.H. Auden - 'Miss Gee' ○ Joseph Conrad - 'Heart of Darkness' ○ Achebe - 'Things Fall Apart' ○ Virginia Woolf - 'The Death of the Moth' ○ Graham Greene - 'The Lost Childhood' ○ Bernard Shaw - 'Pygmalion' Samuel Beckett - 'Waiting for Godot'

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बी.ए. I,II,III वर्ष	पर्यावरण अध्ययन	• पर्यावरण, • प्राकृतिक संसाधन • पारिस्थितिक तंत्र • जैव विविधता • पर्यावरण प्रदूषण • सामाजिक समस्याऐं और पर्यावरण • पर्यावरण एवं मानव जनसंख्या • पर्यावरण – अध्ययन एवं अवलोकन

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-I MATHEMATICS	ALGEBRA AND TRIGONOMETRY	• Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, column rank and rank of a matrix. Equivalence of column and row ranks. Eigenvalues, eigenvectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. • Application of matrices to a system of linear (both homogeneous and nonhomogeneous) equations. • Mappings, Equivalence relations and partitions.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-II MATHEMATICS	CALCULUS DIFFERENTIAL CALCULUS	• Definition of the limit of a function. Basic properties of limits differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions. • Asymptotes. Curvature. • Integration of transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution. • Degree and order of a differential equation. Equations reducible to the linear form. Exact differential equations. • Linear differential equations of second order.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-II MATHEMATICS	CALCULUS DIFFERENTIAL CALCULUS	• Definition of the limit of a function. Basic properties of limits. Continuous functions and classification of Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in cartesian and polar coordinates. • Integration of transcendental functions • Degree and order of a differential equation. Equations reducible to the linear form • Linear differential equations of second order.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-I	MATHEMATICS	• Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. • Cauchy's convergence criterion. Leibnitz's theorem. Absolute and conditional convergence. • Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain • rule of differentiability, • Limit and continuity of functions of two variables. Partial differentiation. Change of variables. • Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. • Jacobians. • Envelopes, evolutes. Maxima, minima and saddle points of functions of two variables. Lagrange's • multiplier method. • Beta and Gamma functions, Double and triple integrals, Dirichlet's integrals, Change of order of • integration in double integrals.

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B.Sc II Paper-II	MATHEMATICS	• Series solutions of differential equations- • Laplace Transformation- • Partial differential equations of the first order. • Partial differential equations of second and higher orders, • Calculus of Variations

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-I	MATHEMATICS	• Series of arbitrary terms. Convergence, divergence and oscillation. Abel's and Dirichlet's test.. • Riemann integral. Intergrability of continuous and monotonic functions. • Complex numbers as ordered pairs. • Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-II	MATHEMATICS	• Group-Automorphisms, inner automorphism. • Ring theory-Ring homomorphism. Ideals and quotient ringsDefinition and examples of vector spaces. Subspaces. • Linear transformations and their representation as matrices. • Inner Product Spaces-Cauchy-Schwarz inequality. process.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-I Inorganic Chemistry	CHEMISTRY	• Bohr's theory, atomic spectrum,of hydrogen atom, de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, quantum numbers, Atomic orbital and shapes of s, p, d orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule. • Periodic Properties : s and p-block, trends in periodic table

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		• Chemical Bonding I : Ionic Bond, lattice energy Born- Haber cycle, Fajans rule, Ionic character in covalent compounds: Bond moment and dipole moment, Percentage ionic character from dipole moment and electronegatiity difference, Valence bond & band theories. • Chemical Bonding II: Covalent bond: Lewis structure, Valence bond theory, Concept of hybridization. Valence shell electron pair repulsion theory (VSEPR), Molecular orbital theory. • S-Block Elements: Introduction to alkyl & aryls, Derivatives of alkali and alkaline earth metals. • P BLOCKS ELEMENTS: Halides, hydrides, oxides and oxyacides of Boron, Aluminum, Nitrogen and Phoshorus. Boranes, Borazines, fullerenes. • Chemistry of noble gases: Chemical properties of the noble gases, xenon and xenon compounds. • Theoretical Principles in Qualitative analysis: principles involved in the analysis of cations and anions and solubility products, common ion effect, interfering anions.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-II Chemistry	ORGANIC CHEMISTRY	• Basics of Organic Chemistry: Hybridization, Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation, Introduction to types of organic reactions. • Introcuction to stereochemistry: Optical Isomerism, Enantiomers, Diastereoisomers, Fischer, Newmann and Sawhorse Projection, Erythrose and threose, D/L, d/l system of nomenclature, Cahn-Ingold-Prelog system of nomenclature (C.I.P rules), R/S nomenclature. Geometrical isomerism. • Conformational Analysis of alkanes: Conformational analysis of alkanes, cyclohexane and sugars, Types of cycloalkanes, Baeyer strain theory: Theory of strainless rings, Chair, Boat and Twist boat conformation of cyclohexane with energy diagrams.mono-substituted cycloalkanes and disubstituted cyclohexane. • Chemistry of Aliphatic Hydrocarbons: chemistry of alkanes, wurz reaction, wurtz-fittig reaction. • Formation of alkenes and alkynes by elimination reactions, Saytzeff and Hofmann eliminations. • Reactions of alkenes markownikoff/ antimarkownikoff addition, diels-Alder reaction • Reactions of alkynes • Aromaticity: Hückel's rule, Electrophilic aromatic substitution.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-III	Chemistry	**MATHEMATICAL CONCEPTS FOR CHEMIST** Logarithmic relations, vectors and matrices; **GASEOUS STATE CHEMISTRY** Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; Maxwell distribution, Joule Thompson effect, Liquification of Gases. Behaviour of real gases: van der Waals equation of state, calculation of Boyle temperature. van der Waals isotherms. **LIQUID STATE CHEMISTRY** Intermolecular forces, magnitude of intermolecular force, structure of liquids, Properties of liquids, viscosity and surface tension. **COLLOIDS and SURFACE CHEMISTRY** Classification, Optical, Kinetic and Electrical Properties of colloids, Coagulation, Hardy Schulze law, Emulsion, micelles and types, adsorption isotherms (Langmuir and Freundlich). Qualitative discussion of BET. **SOLID STATE CHEMISTRY** Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Crystal defects. **CHEMICAL KINETICS** Rate of reaction, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions. Arrhenius theory, collision theory, transition state theory. **CATALYSIS** Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristic of catalyst, Enzyme catatysed reactions.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Chemistry	Practical	**INORGANIC CHEMISTRY** **A.** Semi-micro qualitative analysis (using H_2S or other methods) of mixtures - not more than four ionic species (two anions and two cations, excluding interfering, insoluble salts) out of the following: Cations : NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Na^+ Anions : CO_3^{2-}, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO_2^-, CH_3COO^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-} (Spot tests may be carried out wherever feasible) **B. Acid-Base Titrations** • Standardization of sodium hydroxide by oxalic acid solution. • Determination of strength of HCl solution using sodium hydroxide as intermediate. • Estimation of carbonate and hydroxide present together in mixture. • Estimation of carbonate and bicarbonate present together in a mixture. • Estimation of free alkali present in different soaps/detergents

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C. Redox Titrations

- Standardization of $KMnO_4$ by oxalic acid solution.
- Estimation of Fe(II) using standardized $KMnO_4$ solution.
- Estimation of oxalic acid and sodium oxalate in a given mixture.
- Estimation of Fe(II) with $K_2Cr_2O_7$ using internal (diphenylamine, anthranilic acid) and external indicator.

D. Iodo / Iodimetric Titrations

- Estimation of Cu(II) and $K_2Cr_2O_7$ using sodium thiosulphate solution iodimetrically.
- Estimation of (a) arsenite and (b) antimony iodimetrically.
- Estimation of available chlorine in bleaching powder iodometrically.
- Estimation of Copper and Iron in mixture by standard solution of $K_2Cr_2O_7$ using sodium thiosulphate solution as titrants.

ORGANIC CHEMISTRY

1. Demonstration of laboratory Glasswares and Equipments.
2. Calibration of the thermometer. 80_o–82_o (Naphthalene), 113.5_o–114_o (Acetanilide), 132.5_o-133_o (Urea), 100_o (Distilled Water).)

- Purification of organic compounds by crystallization using different solvents.
- Phthalic acid from hot water (using fluted filter paper and stemless funnel).
- Acetanilide from boiling water.
- Naphthalene from ethanol.
- Benzoic acid from water.

- Determination of the melting points of organic compounds.

Naphthalene 80_o–82_o, Benzoic acid 121.5_o–122_o, Urea 132.5_o–133_o Succinic acid 184.5_o–185_o, Cinnamic acid 132.5_o–133_o, Salicylic acid 157.5_o–158_o, Acetanilide 113.5_o–114_o, m-Dinitrobenzene 90_o, p-Dichlorobenzene 52_o, Aspirin 135_o.

5. Effect of impurities on the melting point – mixed melting point of two unknown organic compounds.
   - Urea – Cinnamic acid mixture of various compositions (1:4, 1:1, 4:1).

- Determination of boiling point of liquid compounds. (boiling point lower than and more than 100 °C by distillation and capillary method).
- Ethanol 78_o, Cyclohexane 81.4_o, Toluene 110.6_o, Benzene 80_o.

i. Distillation (Demonstration)

- Simple distillation of ethanol-water mixture using water condenser.
- Distillation of nitrobenzene and aniline using air condenser.

ii. Sublimation

- Camphor, Naphthalene, Phthalic acid and Succinic acid.
- Decolorisation and crystallization using charcoal.
- Decolorisation of brown sugar with animal charcoal using gravity filtrations crystallization and decolorisation of impure naphthalene (100 g of naphthalene mixed with 0.3 g of Congo red using 1 g of decolorizing carbon) from ethanol.
- Qualitative Analysis

Detection of elements (N, S and halogens) and functional groups (Phenolic,

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		Carboxylic, Carbonyl, Esters, Carbohydrates, Amines, Amides, Nitro and Anilide) in simple organic compounds. **PHYSICAL CHEMISTRY** 1. Surface tension measurements. • Determine the surface tension by (i) drop number (ii) drop weight method. • Surface tension composition curve for a binary liquid mixture. 2. Viscosity measurement using Ostwald's viscometer. • Determination of viscosity of aqueous solutions of (i) sugar (ii) ethanol at room temperature. • Study of the variation of viscosity of sucrose solution with the concentration of solute. • Viscosity Composition curve for a binary liquid mixture. 3. Chemical Kinetics • To determine the specific rate of hydrolysis of methyl/ethyl acetate catalysed by hydrogen ions at room temperature. • To study the effect of acid strength on the hydrolysis of an ester. • To compare the strengths of HCl & H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate. 4. Colloids • To prepare colloidal solution of silver nanoparticles (reduction method) and other metal nanoparticles using capping agents.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-I	**Chemistry**	• Chemistry of transition series elements: Position in periodic table, electronic configuration, General Characteristic's comparative treatment of 4d and 5d elements with their 3d analogues with respect to ionic radii, oxidation states and magnetic properties. • Oxidation and Reduction: Redox potential, electrochemical series and its applications, Principles involved in extraction of the elements. • COORDINATION COMPOUNDS: Werner's theory IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelates, polynuclear complexes. • COORDINATION CHEMISTRY: Valence bond theory Crystal field theory, Octahedral vs. tetrahedral coordination. • Chemistry of lanthanide elements: Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, • CHEMISTRY OF ACTINIDES: chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the later actinides and the later lanthanides • Acids bases: Arrhenius, Bronsted-Lowry, conjugate acids and bases,

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		Lux-flood, solvent system and Lewis concepts of acids and bases. • Non-aqueous solvents: Physical properties of a solvent, types of solvents liquid ammonia and liquid sulphur dioxide, HF, H_2SO_4 ,Ionic liquids.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-II	Chemistry	CHEMISTRY OF ORGANIC HALIDES: Alkyl halides: Methods of preparation, nucleophilic substitution reactions Aryl halides: Preparation, including preparation from diazonium salts, Nucleophilic Aromatic Substitution; SNAr, Benzyne mechanism. • Alcohols: Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Dihydric alcohols – methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol-pinacolone rearrangement. • Phenols: Structure and bonding in phenols, physical properties and acidic character, Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction. • Aldehydes And Ketones: Nomenclature, structure and reactivity of carbonyl group. Preparation of aldehydes and ketones. Mechanism of nucleophilic addition to carbonyl groups: Condensation with ammonia and its derivatives, Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen reduction, Wolf-Kishner reaction, $LiAlH_4$ and $NaBH_4$ reduction. Halogenation of enolizable ketones, An introduction to α,β-unsaturated aldehydes. • Carboxylic Acids & Derivatives: Preparation, Structure and bonding, acidity of carboxylic acids, effects of substituents on acid strength, Hell-Volhard Zeilinsky reaction.Reduction of carboxylic groups, Mechanism of decarboxylation. Structure of acid chlorides, esters, amides and acid anhydrides, Relative stability of acyl derivatives. Physical properties, inter-conversion of acid derivatives by nucleophilic acyl substitution. • Organic Compounds Of Nitrogen: Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Gabriel-Phthalimide reaction, Hofmann-Bromamide reaction, Reactions of amines, electrophilic aromatic substitution of aryl amines.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-III	Chemistry	• THERMODYNAMICS-I: Intensive and extensive variables; state and path functions; isolated, closed and open systems; First law: Concept of heat, work, internal energy and statement of first law; enthalpy, Relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thompson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition • Thermochemistry: Laws of Thermochemistry, Heats of reactions, standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; Kirchhoff's equations and pressure on enthalpy of reactions. • Thermodynamics-II: Second Law of Thermodynamics: Carnot's theorem, Concept of entropy: Molecular and statistical interpretation of entropy. Gibbs and Helmholtz free energy, variation of G and A Gibbs-Helmholtz equation, Maxwell relations, Elementary idea of Third law of Thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule. • Chemical Equilibrium: Criteria of thermodynamic equilibrium, chemical equilibria in ideal gases. Concept of Fugacity, relation between Gibbs free energy of reaction and reaction quotient. Thermodynamic derivation of relations between Kp, Kc and Kx. Le Chatelier principle • Ionic Equilibria: Ionization of weak acids and bases, common ion effect, Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis, Solubility and solubility product of sparingly soluble salts • Phase Equilibrium: Phase rule, Phase, component and degree of freedom, derivation of Gibbs phase rule, Clausius-Claperon equation , applications of phase rule to one component system, two component system, Three component system, Nernst distribution law, Henry's law, application, solvent extraction. • Photo Chemistry: electromagnetic radiation, Interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law, Laws of photochemistry, Jablonski diagram, fluorescence, phosphorescence, non-radiative processes.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Chemistry	Practical	INORGANIC CHEMISTRY Qualitative semimicro analysis of mixtures containing 5 radicals. Mixtures should preferably contain one interfering anion, or insoluble component. Volumetric analysis (a) Determination of acetic acid in commercial vinegar using NaOH. (b) Determination of alkali content-antacid tablet using HCl. (c) Estimation of calcium content in chalk as calcium oxalate by permanganometry. (d) Estimation of hardness of water by EDTA. (e) Estimation of ferrous & ferric by dichromate method. (f) Estimation of copper using thiosulphate. Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions: i. Ni (II) and Co (II) ii. Fe (III) and Al (III) ORGANIC CHEMISTRY Detection of elements (X, N, S). Qualitative analysis of unknown organic compounds containing simple functional groups (alcohols, carboxylic acids, phenols, nitro, amine, amide, and carbonyl compounds,carbohydrates) Preparation of Organic Compounds: (i) m-dinitrobenzene, (ii) Acetanilide, (iii) Bromo/Nitro-acetanilide, (iv) Oxidation of primary alcohols-Benzoic acid from benzylacohol, (v) azo dye. PHYSICAL CHEMISTRY Transition Temperature Determination of the transition temperature of the given substance by thermometric/dialometric method (e.g. $MnCl_2.4H_2O$/$SrBr_2.2H_2O$). THERMOCHEMISTRY Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system (method of back calculation of heat capacity of calorimeter from known enthalpy of solution or enthalpy of neutralization). Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide. To determine the solubility of benzoic acid at different temperature and to determine ΔH of the dissolution process. To determine the enthalpy of neutralization of a weak acid/ weak base versus strong base/strong acid and determine the enthalpy of ionization of the weak acid/ weak base. To determine the enthalpy of solution of solid calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born Haber cycle. Phase Equilibrium To study the effect of a solute (e.g. NaCl, Succinic acid) on the critical solution temperature of two partially miscible liquids (e.g. phenol-water system) and to determine the concentration of that solute in the given phenol-water system. To construct the phase diagram of two component system (e.g. diphenylamine–benzophenone) by cooling curve method. Distribution of acetic/ benzoic acid between water and cyclohexane. Study the equilibrium of at least one of the following reactions by the distribution method:

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		(i) $I_2(aq) + I^- \rightarrow I^-_3(aq)^{2+}$ (ii) $Cu^{2+}(aq) + nNH_3 \rightarrow Cu(NH_3)n$ Determination of molecular weight by Rast Camphor and Landsburger method.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-I	Chemistry	• Metal –Ligand Bonding In Transition Metal Complexes: Limitations of valence bond theory, Limitation of Crystal Field Theory, Application of CFSE, Qualitative aspect of Ligand field and MO Theory , Trans- effect ,thermodynamic stability of metal complexes and factors affecting the stability.
		• Magnetic Properties Of Transition Metal Complexes : Types of magnetic behavior, methods of determining magnetic susceptibility, spin only formula, L-S coupling, application of magnetic moment data for 3d metal complexes, Electronic spectra of Transition Metal Complexes. Types of electronic transitions,electronic transitions,Orgel-energy level diagram
		• Organometallic Chemistry :General methods of preparation of mono and binuclear carbonyls of 3d series, Alkene hydrogenation, Polymeration of ethane using Ziegler – Natta Catalyst
		• Bioinorganic Chemistry:- Essential and trace elements in biological processes, Excess and deficiency of some trace metals ,Biological role of alkali and alkaline earth metals with special reference to Ca^{2+} and Mg^{2+}, nitrogen fixation. • Hard And Soft Acids And Bases:Pearson's HSAB concept , Symbiosis, Applications of HSAB principle. • INORGANIC POLYMERS

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-II	Chemistry	• Heterocyclic Compounds :Classification and nomenclature, Structure, aromaticity in 5-membered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions • Organometallic Reagent:Organomagnesium,Organozinc , Organolithium compounds • Organic Synthesis Via Enolates:alkylation of diethylmalonate and ethyl acetoacetate ,Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Robbinson annulations reaction. • Biomolecules:Carbohydrates ,Monosaccharides ,glucose and fructose, epimers and anomers, mutarotation ,Haworth projections and conformational structures ,Disaccharides ,Polysaccharides . • Amino acids, proteins and nucleic acids • Synthetic Polymers:Addition or chain growth polymerization , Ziegler-Natta polymerization, Condensation or Step growth polymerization,natural and synthetic rubbers . • Synthetic Dyes:Classification of Dyes ,Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, phenolphthalein, fluorescein, Alizarine and Indigo. • Spectroscopy: IR,UV-VISIBLE,NMR

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-III	Chemistry	• QUANTUM MECHANICS –I:Black-body radiation, Planck's radiation law, photoelectric effect, Compton effect. Operator ,postulate of quantum mechanics, eigen values, eigen function, Schrodinger time independent wave equation ,one dimensional box, hydrogen atom radial and angular wave functions. • QUANTUM MECHANICS –II:Basic ideas-criteria for forming M.O. and A.O., LCAO approximation, formation of H^{2+} ion .bonding and antibonding wave functions, Concept of σ, σ*, π, π* orbitals and their characteristics, Hybrid orbitals-sp,sp^2,sp^3. • SPECTROSCOPY:Electromagnetic radiation, regions of the spectrum,Rotational Spectrum of Diatomic molecules ,isotopic effect . • Vibrational Spectroscopy: Fundamental vibration and their symmetry ,Energy levels of simple harmonic oscillator ,pure vibrational spectrum • RAMAN SPECTRUM:Concept of polarizability, quantum theory of Raman spectra ,pure rotational and pure vibrational Raman spectra • ELECTRONIC SPECTROSCOPY:Basic principles ,Franck-Condon principle, types of electronic transition, application of electronic spectra.

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		• ELECTROCHEMISTRY-I:Electrolytic conductance: Specific and equivalent conductance ,Kohlrausch law ,Theories of strong electrolyte,weak and strong electrolytes, Elementary ideas of Debye-Huckel-Onsager's equation for strong electrolytes ,Migration of ions: Transport number,ionic strength • ELECTROCHEMISTRY-II:Electrochemical cell and Galvanic cells ,EMF of the cell and effect of temperature on EMF of the cell, Nernst equation Calculation of ΔG, ΔH and ΔS for cell reactions,Single electrode potential : standard hydrogen electrode, calomel electrode, quinhydrone electrode, redox electrodes, electrochemical series ,Concentration cell ,Corrosion-types , theories and prevention .

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Chemistry	Practical	• **INORGANIC CHEMISTRY** • Gravimetric analysis: • Estimation of nickel (II) using Dimethylglyoxime (DMG). • Estimation of copper as CuSCN • Estimation of iron as Fe_2O_3 by precipitating iron as $Fe(OH)_3$. • Estimation of Al (III) by precipitating with oxine and weighing as $Al(oxine)_3$ (aluminium oxinate). • Estimation of Barium as $BaSO_4$ • Inorganic Preparations: • Tetraamminecopper (II) sulphate, $[Cu(NH_3)_4]SO_4.H_2O$ • Cis and trans $K[Cr(C_2O_4)_2.(H_2O)_2]$ Potassium dioxalatodiaquachromate(III) • Tetraamminecarbonatocobalt (III) ion • Potassium tris(oxalate)ferrate(III)/ Sodium tris(oxalate)ferrate(III) • Cu(I) thiourea complex, Bis (2,4-pentanedionate) zinc hydrate; Double salts (Chrome alum/ Mohr's salt) • **ORGANIC CHEMISTRY** • Preparation of organic Compounds • Acetylation of one of the following compounds: amines (aniline, o-, m-, p- toluidines and o-,m-, p-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) • Benzolyation of one of the following amines (aniline, o-, m-, p-toluidines and o-, m-, panisidine) and one of the following phenols (β-naphthol, resorcinol, p cresol) by Schotten-Baumann reaction. • Bromination of any one of the following: a. Acetanilide by conventional methods b.Acetanilide using green approach (Bromate-bromide method)

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- Nitration of any one of the following: a. Acetanilide/nitrobenzene by conventional method b. Salicylic acid by green approach (using ceric ammonium nitrate).
- Reduction of p-nitrobenzaldehyde by sodium borohydride.
- Hydrolysis of amides and esters.
- Semicarbazone of any one of the following compounds: acetone, ethyl methyl ketone, cyclohexanone, benzaldehyde.
- Benzylisothiouronium salt of one each of water soluble and water insoluble acids (benzoic acid, oxalic acid, phenyl acetic acid and phthalic acid).
- Aldol condensation using either conventional or green method.
- Benzil-Benzilic acid rearrangement.
- Preparation of sodium polyacrylate.
- Preparation of urea formaldehyde.
- Preparation of methyl orange.
- The above derivatives should be prepared using 0.5-1g of the organic compound. The solid samples must be collected and may be used for recrystallization, melting point and TLC.
- Qualitative Analysis Analysis of an organic mixture containing two solid components
- using water, $NaHCO_3$, NaOH for separation and preparation of suitable derivatives.
- Extraction of caffeine from tea leaves.
- Analysis of Carbohydrate: aldoses and ketoses, reducing and non-reducing sugars.
- Identification of simple organic compounds by IR spectroscopy and NMR spectroscopy. (Spectra to be provided).
- Estimation of glycine by Sorenson's formalin method.
- Study of the titration curve of glycine.
- Estimation of proteins by Lowry's method.
- Study of the action of salivary amylase on starch at optimum conditions.
- Effect of temperature on the action of salivary amylase.
- **PHYSICAL CHEMISTRY**
- Conductometry
- Determination of cell constant
- Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
- Perform the following conductometric titrations:
    - Strong acid vs. strong base
    - Weak acid vs. strong base
    - Mixture of strong acid and weak acid vs. strong base
    - Strong acid vs. weak base
- To determine the strength of the given acid conductometrically using standard alkali solution.
- To determine the solubility and solubility product of a sparingly soluble electrolyte conductometrically

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		• To study the saponification of ethyl acetate conductometrically. • Potentiometry/pH metry • Perform the following potentio/pH metric titrations: • Strong acid vs. strong base • Weak acid vs. strong base • Dibasic acid vs. strong base • Potassium dichromate vs. Mohr's salt • Determination of pKa of monobasic acid • UV/ Visible spectroscopy :Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/$KMnO_4$/$K_2Cr_2O_7$ in a solution of unknown concentration. • Determine the concentrations of $KMnO_4$ and $K_2Cr_2O_7$ in a mixture. • Study the kinetics of iodination of propanone in acidic medium. • Determine the amount of iron present in a sample using 1,10-phenathroline. • Determine the dissociation constant of an indicator (phenolphthalein). • Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide. • Study of pH-dependence of the UV-Vis spectrum (200-500 nm) of potassium dichromate. • Spectral characteristics study (UV) of given compounds (acetone, acelaldehyde, acetic acid, etc.) in water. • Absorption spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine $\square_{max}$ values.
B.Sc I Paper-I	Botany	• **VIRUSES:** General characteristics, types of viruses based on structure and genetic material. Economic importance. Structure and multiplication of Bacteriophages. • **BACTERIA:** General characteristics and fine structure mode of nutrition and reproduction. Economic importance. Microbial Biotechnology, *Rhizobium, Azatobactor, Anabena.* • **FUNGI:** General account in fungi. Heterothallism and Parasexuality. Economic importance of fungi. Life cycles of *Saprolegnia, Albugo,, Aspergillus, Peziza, Agaricus, Ustilago, Puccinia, Alternaria and Cercospora*. VAM Fungi • **ALGAE:** General characters, life cycle of following genera : *Nostoc, Gloeocaspsa, Volvox,, Oedogonium, Vaucheria, Chara, Ectocarpus, Polysiphonia.* • **Lichens**- General account, Mycoplasma: Structure and importance. Blue Green Algae (BGA) in nitrogen economy of soil and reclamation of Ushar land.Mushroom Biotechnology

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-II	Botany	• **BRYOPHYTA:** General characteristics, reproductive structure in *Riccia, Marchantia, Pellia, Anthoceros, Funaria.* • **PTERIDOPHYTES:** General characteristics heterospory and seed habit, stellar system in Pteridophytes, Aposory and apogamy, Telome theory, *Azolla* as Biofertilizer. life cycle and reproductive structure of *Psilotum, Lycopodium, selaginella, Equisetum, Marsilea.* • **Gymnosperm:** General characteristics, economic importance Morphology, anatomy and reproduction in *Cycas, Pinus* and *Ephedra.* • **PALAEOBOTANY:** Geological time scale, types of fossils and fossilization, Rhynia, study of some fossil gymnosperms. *Lygenopteris*

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-I Botany	Botany	• Bentham and Hooker system of classification.Binomial Nomenclature, Preservation of Plant material and Herbarium techniques. • Systematic position, distinguishing characters and economic importance of the important families. • Economic Botany: Botanical name, family, part used and uses of the economically important plants. • Ethnobotany in context of Chhattisgarh. • Plant Anatomy: Root and shoot apical meristems theories of root and shoot apex organization, • Embryology: Flower as a reproductive organ, anther, microsporogenesis, types of ovules.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-II	Botany	• Introduction and scope of ecology, environmental and ecological factors, Soil formation and soil profile. • Population and community characteristics, Biogeochemical cycles:carbon cycle, nitrogen cycle and phosphorus cycle • Plant water relations: Diffusion, permeability, osmosis,

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		imbibitions, plasmolysis, osmotic • Photosynthesis: Photosynthetic apparatus and pigments, light reaction mechanism of ATP synthesis. C3, C4 CAM pathway of carbon reduction, photorespiration, factors affecting. Respiration: Aerobic and anaerobic respiration. • Plant growth hormones: Auxin, Gibberellin, Cytokinin, Ethylene and Abscissic acid. Physiology of flowering, Florigen concept, Photoperiodism and Vernalization. Seed dormancy and germination, plant movement.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-I Botany	Botany	• Structure, Principle and applications of analytical instrumentation. • Chromatography technique, Oven, Incubator, Autoclave, Centrifuge, Spectrophotometere • Plant Tissue culture techniques. • General principles of plant pathology. • Rust diseases of wheat, Tikka diseases of groung nut, Red rot of sugar can, Bacterial blight of rice, Yellow vein mosaic of b hindi, Little leaf of brinjal. • Introduction to pollution, green house gases, Ozone depletion, Dissolve oxygen, B.O.D., C.O.D. • ELEMENTARY BIOSTATISTICS: • Introduction and application of Biostatics.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-II Botany	Botany	• Cell and cell organelles. • Nucleic acids, structure and forms of DNA and RNA, DNA/RNA as genetic material. • Recombinant DNA, Enzymes in recombinant DNA technology, cloning vectors (Plasmid, Bacteriophages, Cosmids, Phagemids. • Protein: Carbohydrate Fat: Structure and properties of fats and fatty acids, synthesis and breakdown. • ENZYMES: Nomenclature and classifaction, components of enzyme, theories of enzyme action, enzyme kinetics (Michaelis-Menten constant), allosteric enzymes, isozymes,

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		Abzymes. Ribozymes, factors affecting enzyme activity.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-I Zoology	Cell Biology and Non-chordata	• **Students able to learn** • The cell • Organization of Cell: Extra-nuclear and nuclear • Nucleus, Chromosomes, DNA and RNA • Cell division • An elementary idea of Cancer cells And Cell transformation. • An elementary idea of Immunity: • General characters and classification of Phylum Protozoa, Porifera, and Coelenterata up to order. • 2. Protozoa: Type study - Paramecium, • 2. Porifera: Type study - Sycon. • Coelenterata: Type study – Obelia • General characters and classification of Phylum Platyhelminthes, Nemathelminthes, Annelida and Arthropoda up to order. • 2. Platyhelminthes and Nemathelminthes: Type Study – Fasciola, Ascaris • Annelida: Type Study - Pheretima. • Arthropoda: Type Study - Palaemone. • General characters and classification of Phylum Mollusca and Echinodermata up to order. • 2. Mollusca: Type Study - Pila. • 3. Echinodermata- Type Study- Asterias

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B.Sc I Paper-II Zoology	Chordata and Embryology	• **Students able to learn** • Classification of Hemichordata • Hemichordata- Type study-Balanoglossus • Classification of Chordates upto orders.. • Protochordata-Type study - Amphioxus. • A comparative account of Petromyzon and Myxine. • Fishes-Skin & Scales, migration in fishes, Parental care in fish. • Amphibia-Parental care and Neoteny. • Reptilia- Poisonous & Non-poisonous Snakes, • Birds- Flight Adaptation, Migration, • Mammals-Comparative account of Prototheria, Metatheria, Eutheria and Affinities. • Aquatic Mammals and their adaptations. • **Fertilization** • Gametogenesis, Structure of gamete and Typesof eggs • Cleavage • Development of Frog up to formation of three germ layers. • Parthenogenesis • Embryonic induction, • Development of Chick (2) Extra-embryonic • membranes. • Placenta in mammals.
B.Sc. Part I Practical		The practical work will, in general be based on the syllabus prescribed in theory and the candidates will be required to show knowledge of the following:- • Dissection of Earthworm, Cockroach, Palaemon and Pila • Minor dissection—appendages of Prawn & hastate plate, mouth parts of insects, radulla of Pila. **(Alternative methods: By Clay/Thermacol/drawing/Model etc.)** • Adaptive characters of Aquatic, terrestrial, aerial and desert animals. • Museum specimen invertebrate • Slides- Invertebrates, frog embryology, Chick embryology and cytology,

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B.Sc II Paper-I Zoology	Anatomy and Physiology	• **Students able to learn** Integument and its derivatives: • Alimentary canal and digestive glands in vertebrates • Respiratory organs : Gills and lung , air-sac in birds • Endoskeleton: (a) Axial Skeleton- Skull and Vertebrae, (b) Appendicular Skeleton Limbs and girdles • Circulatory System: Evolution of heart and aortic arches • Urinogenital System: Kidney and excretory ducts • Nervous System: General plan of brain and spinal cord • Ear and Eye: structure and function • Gonads and genital ducts • Digestion and absorption of dietary components • Physiology of heart • Respiration: • Excretion: Physiology of excretion, • Physiology of muscle contraction • Physiology of nerve impulse

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II Paper-II Zoology	VERTEBRATE ENDOCRINOLOGY, REPRODUCTIVE BIOLOGY BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY	• **Students able to learn** • Structure and function of Endocrine glands · Hormone receptor · Biosynthesis and secretion of thyroid, adrenal, ovarian and testicular hormones · Endocrine disorder of pituitary, thyroid, adrenal and pancreas · Reproductive cycle in vertebrates · Menstruation, lactation and pregnancy · Mechanism of parturition · Hormonal regulation of gametogenesis · Evidences of organic evolution.

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		· Theories of organic evolution. · Variation, Mutation, Isolation and Natural selection. · Evolution of Horse · Introduction to Etiology: Branches and concept of ethnology. · Patterns of Behavior, Taxes, · Reproductive behavioral patterns. · Prawn Culture · Sericulture · Apiculture · Pisciculture · Poultry keeping · Elements of Pest Control: Chemical & Biological Control
	Zoology **B.Sc. Part II** **Practical**	The practical work in general shall be based on the syllabus prescribed and the students will be required to show the knowledge of the following: • Study of the representative examples of the different chordates (Classified characters). • Dissection of various systems of scoliodon-Afferent and Efferent branchial cranial nerves, internal ear. Alternative methods: By Clay/Thermacol/ Drawing/ Model etc.) • Simple microscopic technique through unstained or stained permanent mount. • Study of prepared slides histological, as per theory papers. • Study of limb girdles and vertebrae of Frog, Varanus, Fowl and Rabbit. • Identification of species and individual of honey bee. • Life cycle of honey bee and silkworm. • Exercise based on Evolution and Animal behavior.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III **Paper-I**	**Zoology**	• **Students able to learn** • Aims and scopes of ecology • Major ecosystems of the world-Brief introduction • Population- Characteristics and regulation of densities • Communities and ecosystem

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		• Bio-geo chemical cycles • Air & water pollution • Ecological succession • Laws of limiting factor • Food chain in fresh water ecosystem • Energy flow in ecosystem- Trophic levels • Conservation of natural resources • Environmental impact assessment • Definition and classification of Toxicants • Basic Concept of toxicology • Animal poisons- snake venom, scorpion & bee poisoning • Food poisoning • General and applied microbiology • Microbiology of domestic water and sewage • Microbiology of milk & milk products • Industrial microbiology: • Brief introduction to pathogenic microorganisms, Ricketssia, Spirochaetes, AIDS and Typhoid • Brief account of life history & pathogenicity of the following pathogens with reference to man: prophylaxis & treatment • Pathogenic protozoan's- Entamoeba, Trypanosome & Plasmodium • Pathogenic helminthes- Schistosoma • Nematode pathogenic parasites of man • Vector insects

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III Paper-II Zoology	GENETICS, CELL PHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES	• **Students able to learn** Linkage Sex Determination and Sex Linkage • Gene interaction- Incomplete dominance & Codominance, Supplementary gene, Complementary gene, Epistasis Lethal gene, Pleiotropic gene and multiple alleles. • Mutation: Gene and chromosomal mutation • Human genetics: chromosomal alteration: Down, Edward, Patau, Turner and Klinefelter Syndrome Single gene disorders, Sickle cell anemia, albinism and colour

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		blindness • General idea about pH & buffer • Transport across membrane: Diffusion and Osmosis • Active transport in mitochondria & endoplasmic reticulum • Enzymes- • Amino acids & peptides- • Carbohydrates & its metabolism- Glycogenesis; Gluconeogenesis; Glycolysis; Glycogenolysis; Cosi-cycle • Lipid metabolism- Oxidation of glycerol; Oxidation of fatty acids • Protein Catabolism- Deamination, transamination, transmethylation • Application of Biotechnology • Recombinant DNA & Gene cloning • Cloned genes & other tools of biotechnology 1. Principles & techniques about the faollowing: (i) pH meter (ii) Colorimeter (iii) Microscopy- Light microscopes: Compound, Phase contrast & Electron microscopes (iv) Centrifuge (v) Separation of biomolecules by chromatography
B. Sc. Part III **Zoology** Practical		The practical work in general shall be based on syllabus prescribed in theory. The candidates will be required to show knowledge of the following: • Estimation of population density, percentage frequency, relative density. • Analysis of producers and consumers in grassland. • Detection of gram-negative and gram-positive bacteria. • Blood group detection (A,B,AB,O) • R. B. C. and W.B.C count • Blood coagulation time • Preparation of hematin crystals from blood of rat • Observation of Drosophila, wild and mutant. • Chromatography-Paper or gel. • Colorimetric estimation of Protein. • Mitosis in onion root tip. • Biochemical detection of Carbohydrate, Protein and Lipid.

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		• Study of permanent slides of parasites, based on theory paper. • Working principles of pH meter, colorimeter, centrifuge and microscope.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-I PHYSICS	MECHANICS, OSCILLATIONS AND PROPERTIES OF MATTER	• Cartesian, Cylindrical and Spherical coordinate system, Coriolis force, Kepler's laws. motion of C.M. of system of particles subject to external forces, elastic, and inelastic collisions in one and two dimensions, Conservation of linear and angular momentum, Conservation of energy. • Rigid body motion, Potential well and Periodic Oscillations, case of harmonic small oscillations, differential equation, kinetic and potential energy, simple harmonic oscillations: • Bifilar oscillations, Helmholtz resonator, LC circuit, Superposition of two simple harmonic motions of the same frequency, Lissajous figures, damped harmonic oscillator, Power dissipation, quality factor, driven (forced) harmonic oscillator, power absorption, resonance. • E as an accelerating field, electron gun, linear accelerator, E as deflecting field- CRO sensitivity, Transverse B field, mass spectrograph, principle of a cyclotron. velocity selector, Parallel E and B fields, positive ray parabolas, discovery of isotopes, elements of mass spectrography, principle of magnetic focusing lens. • Elasticity: Hooke's law, Modulus of rigidity, Poisson's ratio, Bulk modulus, twisting couple of a cylinder Bending moment, Cantilever, Young modulus by bending of beam. • Viscosity: Poiseulle's equation of liquid flow through a narrow tube, equations of continuity. Euler's equation,

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		Bernoulli's theorem, viscous fluids, streamline and turbulent flow. Poiseulle's law, Coefficient of viscosity, Stoke's law.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc I Paper-II PHYSICS	ELECTRICITY, MAGNETISM AND ELECTROMAGNETIC THEORY	• Gradient of a scalar field and its geometrical interpretation, divergence and curl of a vector field, Gauss's divergence theorem, Green's theorem and Stoke's theorem. Kirchoff's law, Ideal Constant-voltage and Constant-current Sources. Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem and Maximum Power Transfer theorem. • Coulomb's law in vacuum expressed in Vector forms, dipole and quadrupole fields. Gauss's law • Dielectric constant, Polar and Non Polar dielectrics, Dielectrics and Gauss's Law, Dielectric Polarization, Lorentz local field, Clausius Mossotti equation, Debye equation, • Ferroelectric and Paraelectric dielectrics, rise and decay of current in LR, CR and LCR circuits, AC circuits, series and parallel resonance, Q factor, power consumed by an a AC circuit, power factor. • Magnetization Current and magnetization vector M, B.H. Curve, cycle of magnetization and hysteresis, Hysteresis loss. • Biot-Savart's Law: B due to (1) a Straight Current Carrying Conductor and (2) Current Loop. Ampere's Circuital law (Integral and Differential Forms). • Electromagnetic induction, Faraday's law, electromotive force, Transformers, Maxwell's displacement current, Maxwell's equations, The wave equation satisfied by E and B, plane electromagnetic waves in vacuum, Poynting's vector.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc I PRACTICAL PHYSICS	PRACTICAL	A • Study of laws of parallel and perpendicular axes for moment of inertia. • Moment of inertia of irregular bodies by inertia table. • Study of a compound pendulum. • Study of damping of a bar pendulum under various mechanics. • Study of oscillations under a bifilar suspension. • Study of modulus of rigidity by Maxwell's needle. • Determination of Y, k, η by Searl's apparatus. • To study the oscillation of a rubber band and hence to draw a potential energy curve from it. • Study of oscillation of a mass under different combinations of springs. • Study of torsion of wire (static and dynamic method). • Poisson's ratio of rubber tube. • Study of bending of a cantilever or a beam. • Study of flow of liquids through capillaries. • Determination of surface tension of a liquid. • Study of viscosity of a fluid by different methods. B • 1.Use of a vibration magnetometer to study a field. • 2. Study of magnetic field B due to a current. • 3. Measurement of low resistance by Carey-Foster bridge. • 4. Measurement of inductance using impedance at different frequencies. • 5. Study of decay of currents in LR and RC circuits. • 6. Response curve for LCR circuit and response frequency and quality factor. • 7. Study of waveforms using cathode-ray oscilloscope. • 8. Characteristics of a choke and Measurement of inductance. • 9. Study of Lorentz force. • 10. Study of discrete and continuous LC transmission line. • 11. Elementary FORTRAN programs, Flowcharts and their interpretation.

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc II PAPER-I PHYSICS	PHYSICS	• The laws of thermodynamics : Carnot's cycle , carnot theorem , Claussius theorem inequality . Entropy , Entropy of the universe . Entropy change in reversible and irreversible processes , Entropy of Ideal gas , S - T diagram , Principle of increase of entropy . The thermodynamic scale of temperature , , Concept of negative temperature . • Thermodynamic functions , Maxwell's thermodynamical equations , TdS equations , Energy and heat capacity equations Application of Maxwell's equation in Joule Thomson cooling , adiabatic cooling of a system , Van der Waals gas , Clausius - Clapeyron heat equation . Blackbody spectrum , Stefan - Boltzmann law , Wien's displacement law , Rayleigh - Jean's law , Planck's quantum theory of radiation . • Maxwellian distribution of speeds in an ideal gas : Distribution of speeds and velocities . Doppler broadening of spectral lines . Transport phenomena in gases : Molecular collisions mean free path and collision cross sections . Transport of mass , momentum and energy and interrelationship. Behaviour of Real Gases : Deviations from the Ideal Gas Equation . The Virial Equation . Andrew's Experiments on CO_2 Gas , Critical Constants . • 4 The statistical basis of thermodynamics , principle of equal a priori probabilities , statistical postulates . Concept of Gibb's ensemble , accessible and inaccessible states . Concept of phase space. probability and entropy , Boltzmann entropy relation . Boltzmann canonical distribution law, law of equipartition of energy . • Indistinguishability of particles, Bose - Einstein & Fermi - Dirac conditions , Concept of partition function, Derivation

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		of Maxwell - Boltzmann , Bose Einstein and Fermi - Dirac Statistics , Limits of B - E and F - D statistics to M - B statistics . Application of B - E statistics to black body radiation , Application of F - D statistics to free electrons in a metal .

CLASS	SUBJECT	COURSE OUTCOME
B.Sc II PAPER-II PHYSICS	PHYSICS	• Waves in media : Speed of transverse waves on uniform string , speed of longitudinal waves in a fluid . Waves over liquid surface : gravity waves and ripples . Group velocity and phase velocity . Production and detection of ultrasonic and infrasonic waves . Reflection , refraction and diffraction of sound Acoustic impedance of a medium, impedance matching for transducers , diffraction of sound , principle of sonar system , sound ranging . • Fermat's Principle of extremum path . Cardinal points of an optical system, Lagrange equation of magnification , telescopic combinations , telephoto lenses . Monochromatic aberrations aspherical mirrors and Schmidt corrector plates , aplanatic points , oil immersion objectives , meniscus lens . Optical instruments : Entrance and exit pupils , need for a multiple lens eyepiece (Ramsdon and Hygen's eyepieces) . • Interference of light : Theory of interference , Thin films . Newton's rings and Michelson interferometer. Multiple beam interference in parallel film and Fabry – Perot interferometer . Rayleigh refractometer , Twyman - Green interferometer and its uses . • Diffraction , Fresnel's diffraction , half - period zones , phasor diagram and integral calculus methods , the intensity distribution , Zone plates, Fraunhofer diffraction due to a single slit and double slit , Diffraction at N Parallel slit , Plane Diffraction grating , Rayleigh criterion , resolving power of grating , Prism , telescope . • Laser system : Coherence length and coherence time , spatial coherence of a source , Einstein's A and B coefficients , Spontaneous and induced emissions , population inversion .Holography and Basics of non linear optics and Generation of Harmonic .

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CLASS	SUBJECT	COURSE OUTCOME
B.Sc II PRACTICAL PHYSICS	PRACTICAL	1. Study of Brownian motion . 2. Study of adiabatic expansion of a gas . 3. Study of conversion of mechanical energy into heat . 4 . 5 . 6 . 7 . Heating efficiency of electrical kettle with varying voltage . Study of temperature dependence of total radiation . Study of temperature dependence of spectral density of radiation . Resistance thermometry . 8. Thermo emf thermometry . 9. Conduction of heat through poor conductors of different geometries . 10. Experimental study of probability distribution for a two - option system using a coloured dice . 11. Study of statistical distribution on nuclear disintegration data (GM counter used as a black box) . 12. Speed of waves on a stretched strings . 13. Studies on torsional waves in a lumped system . 14. Study of interference with two coherent source of sound . 15. Chlandi's figures with varying excitation and loading points . 16 , Measurements of sound intensities with different situations . 17. Characteristics of a microphone - loudspeakers system 18. Designing an optical viewing system . 19. Study of monochromatic defects of images .. 20. Determining the principle point of a combination of lenses . 21. Study of interference of light (biprism or wedge film) . 22. Study of diffraction at a straight edge or a single slit . 23. Study of F - P etalon fringes . 24. Study of diffraction grating and its resolving power . 25. Resolving power of telescope system . 26. Polarization of light by reflection , also cos - squared law . 27. Study of optical retation for any system . 28. Study of laser as a monochromatic coherent source . 29. Study of a divergence of laser beam . 30. Calculation of days between two dates of a year . 31. To check if triangle exists and the type of a triangles . 32. To find the sum of the sine and cosines series and print out the curve

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B.Sc III PAPER-I PHYSICS	RELATIVITY, QUANTUM MECHANICS, ATOMIC MOLECULAR AND NUCLEAR PHYSICS	• Reference systems, inertial frames, Galilean invariance propagation of light, Michelson-Morley experiment, search for ether. Postulates for the special theory of relativity, Lorentz transformations, length contraction, time dilation, velocity addition, variation of mass with velocity, mass-energy equivalence, particle with zero rest mass. • Origin of the quantum theory: The concept of Phase and group velocities, experimental demonstration of mater waves. Davisson and Germer's experiment. Consequence of de Broglie's concepts, Bohr's complementary Principle, Bohr's correspondence principle, Bohr's atomic model, energies of a particle in a box, wave packets. Consequence of the uncertainty relation, gamma ray microscope, diffraction at a slit. • Quantum Mechanics: Schrodinger's equation, Statistical interpretation of wave function, Orthogonality and normalization of wave function, Probability current density, Postulatory basis of quantum mechanics, operators, expectation values, Ehrenfest's theorem, transition probabilities, harmonic oscillator in one dimension, reflection at a step potential, transmission across a potential barrier. • Spectra of hydrogen, deuteron and alkali atoms spectral terms, doublet fine structure, selection rules. Discrete set of electronic energies of moleculers, quantisation of vibrational and rotational energies, pure rotational and rotation vibration spectra. Transition rules for pure vibration and electronic vibration spectra. Raman effect, complimentary character of Raman and infrared spectra, Raman spectroscopy. • Structure of nuclei:- Basic Properties of Nucler, Nuclear Models:- Liquid Drop Model, Mass formula, Shell Model, Types of Nuclear reactions, laws of conservation, Q-value of reactions, Ionization chamber, GM Counter, Cloud Chambers, Fundamental Interactions, Classification of Elementary Particles, Particles and Antiparticles: Baryon Number, Lepton Number, Strangeness, Electric Charge, Hypercharge and Isospin, introductory idea of discovery of Higg's Boson.

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B.Sc III PAPER-II PHYSICS	SOLID STATE PHYSICS, SOLID STATE DEVICES AND ELECTRONICS	• Amorphous and crystalline solids, Elements of symmetry, seven crystal system, Cubic lattices, Crystal planes, Miller indices, Laue's equation for X-ray diffraction, Bragg's Law, Bonding in solids. Madelung constant, Specific heat of solids, classical theory (Dulong-Petit's law), Einstein and Debye theories, Vibrational modes of one dimensional monoatomic lattice, Dispersion relation, Brillouin Zone. • One dimensional Schrödinger equation, Density of states, Fermi Energy, Energy bands in a solid (Kronig-Penny model without mathematical details), Difference between Metals, Insulator and Semiconductors, Hall effect, Langevin's theory of dia and para-magnetism, Curie- Weiss's Law, B-H curve and Hysteresis loss. • Intrinsic and extrinsic semi conductors, Concept of Fermi level, Generation and recombination of electron hole pairs in semiconductors, p-n junction diode, I-V characteristics, Tunnel diode, Zener diode, Light emitting diode, solar cell, Bipolar transistors, pnp and npn transistors, different configurations, current amplification factor, FET and MOSFET Characteristics. • Half and full wave rectifier, rectifier efficiency ripple factor, Bridge rectifier, Filters, Inductor filter, L and π section filters, Zener diode, h-parameter, Transistor as power amplifier, Transistor as oscillator, principle of an oscillator and Bark Hausen's condition, Wein-Bridge oscillator and Hartley oscillator. • Digital Circuits: Difference between Analog and Digital Circuits, Binary Numbers, Decimal to Binary and Binary to Decimal Conversion, AND, OR and NOT Gates (Realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNOR Gate, De Morgan's Theorems, Boolean Laws.

CLASS	SUBJECT	COURSE OUTCOME
B.Sc III PRACTICAL PHYSICS	PRACTICAL	• Determination of Planck's constant. • Determination of e/m by using Thomson tube. • Determination of e by Millikan's methods. • Study of spectra of hydrogen and deuterium (Rydberg constant and ratio of masses of electron proton).

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		• Absorption spectrum of iodine vapour. • Study of alkali or alkaline earth spectra using a concave grating. • Study of Zeeman effect for determination of a Lande g-factor. • Analysis of a given band spectrum. • Study of Raman spectrum using laser as an excitation source. • Study of absorption of alpha and beta rays. • Study of statistics in radioactive measurement. • Coniometric study of crystal faces. • Determination of dielectric constant. • Hysteresis curve of transformer core. • Hall-probe method for measurement of magnetic field. • Specific resistance and energy gap of semiconductor. • Characteristics of transistor. • Characteristics of tunnel diode. • Study of voltage regulation system. • Study of regulated power supply. • Study of lissajous figures using CRO. • Study of VTVM. • Study of RC and TC coupled amplifiers. • Study of AF and RF oscillators. • Find roots of f(x) = 0 by using Newton-Raphson Method. • Find root of f(x) = 0 by using secant method. • Integration by Simpson rule. • To find the value of V at • String manipulations. • Towers of Hanoi (Non-recursive). • Finding first four perfect numbers. • 32. Quadratic interpolation using Newton's forward-difference formula of degree two.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-I **PAPER-I**	**Financial Accounting**	• Meaning and Scope of Accounting. • Accounting Standard • Accounting Transaction • Trail balance • Final Accounts • Rectification of errors; Classification of errors; Location of

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		errors; Rectification of errors; Suspense account; Effect on profit. • Depreciation, Provisions, and Reserves; Concept of depreciation; Causes of deprecation; • Special Accounting Areas : • Branch Account : Dependent Branch : Debtors system, stock and debtor system • Partnership Account Sharing Ratio. • Reconstitution of a partnership firm-Admission of a partner

CLASS	SUBJECT	COURSE OUTCOME
B.Com-I PAPER-II	BUSINESS COMMUNICATION	• Introducing Business Communication • Corporate Communication : Formal and Informal communication networks; Grapevine; Miscommunication (Barriers) • Writing skill : Planning business messages; Rewriting and editing; The first draft; Reconstructing the final draft. • Report Writing : Introduction to a proposal, Short report and formal report , report preparation. • Oral Presentation : • Non-Verbal Aspects of Communicating. Body Language : Kinesics, Proxemics, Para Language. • Effective listening : Principles of effective listening; Factor affective listening exercisesInterviewing skills : Appearing in interviews; Conducting E-Mail; video conferencing; etc. • International Communication ; Cultural sensitiveness and cultural

CLASS	SUBJECT	COURSE OUTCOME
B.Com-I PAPER-I	Business Mathematics	• Calculus (problems and theorems involving trigonometrical ratios are not to be doneMaxima And MinimaMatrices and Determinants : Definition of a matrix; Calculation of values of determinants upto third order ; Linear Programming Transportation Problem, Ratio &

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		Proportion. • Compound interest and compounding; Valuation of simple loans and debentures; Problems relating to sinking funds. • Average, Percentages, Commission Brokerage, Profit and loss.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-I PAPER-II	BUSINESS REGULATORY FRAMEWORK	• Law of Contract (1872) : Nature of contract ; • Special contracts; Indemnity; Guarantee; Bailment and pledge; Agency. • Sale of Goods Act (1930) • The Consumer Protection Act 1986 : Sailent features; Definition of consumer ; Grievance redressal machinery; • Foreign Exchange Management Act 2000 • Negotiable instruments Act, 1881.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-I PAPER-I	BUSINESS ENVIRONMENT	• Indian Business Environment. • Problems of Growth: Unemployment; Poverty. • Review of Previous Plans, the current five year Plan, major policy, Resources Allocation. • International Environment. • International economic groups.

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B.Com-I PAPER-II	BUSINESS ECONOMICS	• Introduction : Basic problems of an economy ; • Theory of cost • Objectives of a business firm. • Perfect Competition. • Market Structure • Monopolistic competition • Factor Pricing-1 and monopoly; Exploitation of labour. • Factor pricing-II

CLASS	SUBJECT	COURSE OUTCOME
B.Com-II PAPER-I	CORPORATE ACCOUNTING	• Issue, Forfeiture, and Re-issue of Shares • : Redemption of preference shares; Issue and redemption of debentures. • Final Accounts; Excluding computation of managerial remuneration, and disposal of profit, Liquidation of Company. • Valuation of Goodwill and Shares. • Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re- construction schemes. • Consolidated Balance Sheet of holding companies with one subsidiary only. • Final Account of Banking Companies.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-II PAPER-II	COMPANY LOW	• Corporate personalities; Kinds of Companies, promotion on and incorporation of companies. • Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission. • Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties. • Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes. • Majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.

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CLASS	SUBJECT	COURSE OUTCOME
B.Com-II PAPER-I	COST ACCOUNTING	• Introduction : Nature and scope of cost • Installation of costing system. Accounting for material pricing of material issues. • Accounting for Labour, Accounting for overheads • Cost Ascertainment: Unit costing; Job, batch and contract costing. • Operating costing. • Cost Records : Intergal and non - integral • System; Reconciliation of cost and financial accounts; Break Even Point.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-II PAPER-II	PRINCIPLES OF BUSINESS MANAGEMENT	• Introduction : Concept, nature, process, and significance of management • Management roles. • Planning, Decision making - concept and Bounded rationality; Management by objectives corporate planning Environment analysis and diagnosis strategy formulation. • Organizing • Centralization and Decentralization, Departmentation, Organization Structure. • Motivating and Leading People at work : • Leadership • Communication • Managerial Control : Concept and process; • Management of Change.

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B.Com-II PAPER-I	BUSINESS STATISTICS	• Introduction: Statistics as a subject; Descriptive Statistics. • Dispersion - and their measures; Partition Values; Moments; Skewness and measures; Kurtosis and measures. • Analysis of Bivariate Data: Linear regression two variables and correlation. • Index Number • Analysis of time series • Forecasting and Methods • Probability

CLASS	SUBJECT	COURSE OUTCOME
B.Com-II PAPER-II	FUNDAMENTALS OF ENTREPRENEURSHIP	• Introduction: The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteri-stics. • Promotion of a Venture • Entrepreneurial Behavior : Innovation and • Entrepreneur; Entrepreneurial behavior and psycho - Theories, Social responsibility. • Entrepreneurial Development Programs (EDP) : EDP, • Role of Entrepreneur • Promotion and import substitution, forex earnings, and augmenting and meeting local demand.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-I	INCOME TAX	• Basic Concepts : Income, agricultural Income, casual income, assessment year, • Previous year, gross total income, total income, and person. • Basis of charge: Scope of total income, residence and tax liability, income which does not form part of total income. • Heads of Income: Salaries; Income from house property. • Profit and gains of business or profession, including

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		provisions relating to specific business; Capital gains, Income from other sources. • Computation of Tax Liabilty, Aggregation of income: computation of total income and tax liability of and individual, H.U.F., and firm. • Tax Management

CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-II	AUDITING	• Introduction: Meaning and objectives of auditing; Types of audit; internal audit.Audit Process: Audit programme; Audit note books; Working papers and evidences. • Internal Check System: Internal control. • Audit Procedure: Vouching: Verification of assets and liabilities. • Audit of Limited Companies: Company auditor, divisible profits and dividend. • Auditor's report • Special audit of banking companies. • Audit of educational institutions. • Audit of Insurance companies. • Investigation : Investigation; Audit of non profit companies, • Where fraud is suspected, and When a running a business is proposed. Varifications & Valuation of assets. • Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; • Management audit. Company auditing - Qualification, Appointment, Resignation and liabilities.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-I	INDIRECT TAXES	• Central Excise : under the Central Excise Act; General procedures of central excise; Clearance and Excisable goods; Concession to small scale industry under Central Excise Act. • State Excise, CENVAT. Detail study of State Excise during calculation of Tax. • Customs , import-export • Central Sales Tax • State Commercial Tax

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CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-II	MANAGEMENT ACCOUNTING	• Management Accounting : • Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement. • Absorption and Marginal Costing, Marginal and Differential Consting. • Budgeting for profit Planning and control • Control ratios; Zero base budgeting; budgeting. • Standard Costing and Variance Analysis : Meaning of standard cost and standard • costing; Advantages and application; Variance analysis - material; Labour and • Overhead (Two-way analysis); Variances.

CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-I	PRINCIPLES OF MARKETING	• Introduction : Nature and scope of marketing; • Marketing concept • Consumer Behaviour and Market Segmentation : • Product : • Packaging Price • Service; Discounts and rebates. • Distributions Channels and Physical Distribution; Promotion : • Personal selling

CLASS	SUBJECT	COURSE OUTCOME
B.Com-III PAPER-II	INTERNATIONAL MARKETING	• International Marketing : Nature, definiton, and scope of international marketing; • Domestic marketing vs. International marketing; International environment external and internal. • Identifying and Selecting Foreign Market • Promotion of Product/Services Abroad

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		• International Distribution • Export Policy and Practices in India • Selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives.

CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-I	FUNDAMENTALS OF COMPUTERS	• **Students able to learn** • Brief History of Development of Computers • ,Computer System Concept, • Computer System Characteristics and Limitations, Types of Computers- • Personal Computer (PCs) – • Computer organization: • Input Devices & OUTPUT Device: • Memory Unit/Storage Device ,Ports And Slots • Software Operating system- Definition, Function, • Network- Direction of Transmissions Flow- Types of Network. Topologies of LAN- Computer Virus.

CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-II	WINDOWS & PC PACKAGES	• **Students able to learn** • **Disk Operating System (DOS) and MS Windows 7:** Introduction, History & Versions of DOS,Internal and External, **MS Windows 7:** Introduction to MS Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; Files & Folders Installing and Uninstalling new Hardware & Software program on your computer. • **MS Word 2007:** Introduction to MS Office, Introduction to MS Word, Features & area of use. Working with MS Word, Bullets, Numbering, Auto formatting, Printing & various

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		print options. • **Advanced Features of MS-Word 2007 :** Spell Check, Thesaurus, Find & Replace; Headers & Footers,Mail Merge, Envelops & Mailing Labels. • **MS Excel 2007:** Introduction and area of use, Working with MS Excel, concepts of Workbook & Worksheets Inserting, Removing & Resizing of Columns & Rows, Working with Data & Ranges, Different Views of Worksheets, Column Freezing, Labels, Hiding, Splitting etc., Use of Formulas, Calculations & Functions, Working with Different Chart Types; Printing of Workbook & Worksheets with various options. • **MS PowerPoint 2007:** Introduction & area of use, Working with MS PowerPoint, Creating a New Presentation, Using Wizards; Slides & its different views, Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Adding Graphics, Sounds and Movies to a Slide;, Printing Presentations, Notes, Handouts with print options.

CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-III	PRINT TECHNOLOGY AND DESKTOP PUBLISHING	• **Students able to learn** • **Print Technology:** Introductions to Printing, Types of Printers Screen Printing, Offset Printing, Working of offset Printing, Transparent Printout,. • **Page Maker:** Page Maker Icon and help, Tool Box, Styles, Menus etc., Different screen Views, Importing text/Pictures, Auto Flow, Columns, Master Pages and Stories, Story Editor, Menu Commands and short-cut commands, Spell check, Find & Replace, Import Export etc. Fonts, Points Sizes, Spacing etc., Installing Printers, Scaling Printer setup Books & Magazines, News Paper, Table Editor. • **Adobe Photoshop:** Adobe Photoshop CS4: Menus and panels, Exploring the Toolbox, Rulers, Guides & Grids, Image Size Command, Adjusting Canvas Size & Canvas Rotation, Creating, Selecting, Linking & Deleting Layers,

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		Painting with Selections, Red Eye Tool, Clone Stamp Tool, Color creation, Quick Mask Options, Creating Straight & Curved Paths, • **CorelDraw X4:**CorelDraw X4 Command Bars & Tools, Drawing Area-Objects-Lines, Drawing and Editing Curves and Lines, Three-point Tools, Clipart, Special Characters and Creating Symbols, Working with Layers & Creating a Master Layer. • **Other Work in DTP:** Scanning, Type of Scanner, Importing image, text from scanner, Acrobat (PDF) to Word, and Word to PDF, PDF Editor, PDF Annotator, PDF Infix, Voice to word conversion.

CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-IV	INTERNET AND WEB TECHNOLOGY	• **Students able to learn** • **Internet :** Evolution, Protocols, Interface Concepts, Internet Vs Internet, Growth of Internet, ISP, Connectivity - Dial-up, Leased line, VSAT etc., URLs, Domain names,. • **E-Mail: Concepts**, Basics of Sending & Receiving, E-mail, Free E-mail services. • Transfer Protocols, Telnet & Chatting, Client/Server Architecture Characteristic, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Internet chatting - Voice chat, text chat. • Searching the Web, HTTP, URLs, Web Servers, Web Protocols. HTML, Design Tools, HTML Editors, Image Editors. • HTML Concepts of Hypertext, Versions of HTML, Elements of HTML Syntax, , Inserting Texts, Images, Hyperlinks, HTML Tags, List types and its Tags.

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CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-V	PROGRAMMING IN 'C'	• **Students able to learn** • C Language – Character set, Tokens of C - tokens- constant-keywords and identifiers - variables- data types constants.- Operators and Expressions: Types of Operators-, precedence and associatively - mathematical functions. • Control Branching and Decision-Making in C - If statement Switch statement - GOTO statement - The? : Operators. - Decision - Making and Looping, Types of Loop, nesting in a loop. • Arrays in C Single Two-dimensional and Multi-dimensional arrays,string variables , String handling functions. • Functions: Definition, Library Functions User Defined Functions • Structures and Unions: Definitions initialization unions - size of structures. • Declaration and initialization of pointers - pointer expression - pointer and arrays - pointer and character strings pointers and functions • File Maintenance in "C":Input/Output operations on a file.

CLASS	SUBJECT	COURSE OUTCOME
DCA PAPER-VI	INTRODUCTION TO OPERATING SYSTEM	• **Students able to learn** • **Introduction to Operating System** • What is an Operating System, Operating Systems Architecture, Types of Operating Systems, Process Model, Process States and Transitions, System Calls. • **Process Management** • Processes: Process Scheduling, Cooperating Processes, Inter-process Communication, CPU Scheduling: Deadlocks.

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		• **Memory Management** • Main Memory Management Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Virtual Memory: Demand Paging. • **Device and Storage Management** • File-System Interface, Mass-Storage Structure, Device Management: Techniques for Device Management, Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management. • **File-System Implementation** • A Simple File System, Logical & Physical File System, File-System Interface:

CLASS	SUBJECT	COURSE OUTCOME
DCA	Practical pc package & dtp lab.	• **Students able to learn** 1. What is dos operating system? Explain 7 internal command and 7 external command with syntax. 2. What is windows Operating system? Explain various features of windows operating system. 3. What is MS word? Expalin Various features of Ms Word. 4. What is spreadsheet program? Explain various feature of spreadsheet program. 5. Explain any five statistical, mathematical function available in Ms excel with the help of example. 6. Explain various chart of Ms excel? 7. What is Ms-powerpoint how to add a new slide and delete slide.
DCA	Practical programming in c lab.	• **Students able to learn** 1. Write a c program to print your name? 2. Write a c program to find simple interest. 3. Write a C program to find greatest between two integer numbers. 4. Write a C program to check wheather the given number is even or odd using if else statement. 5. Write a C program to find enter year is leap year or not? 6. Write a C Program to check given number is prime or not? 7. Write a c program to find factorial number.

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CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-I	FUNDAMENTALS OF COMPUTER & INFORMATION TECHNOLOGY	• **Students able to learn** • Introduction to Computer and Information Technology: • Brief history of development of computer • generations of computer, • Computer system characteristics. Capabilities and limitations • block diagram of computer • Types of computer • Personal computer • Number system • Coding system ASCII, BCD, EDCDIC etc. • INPUT/OUTPUT DEVICES • Storage device and retrieval methods • Computer software and Computer virus: • Data Communication & networks: Types of connections- dialup leased lines, ISDN, broadband.

CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-II	PC PACKAGES & COMPUTERIZED ACCOUNTING SYSTEM	• **Students able to learn** • Fundamental of DOS & Windows: Fundamental of DOS booting process, internal and external command. Introduction to windows features, various versions of windows, origin of windows parts of windows screen types • Introduction to word processing (MS-word): Advantages of word processing, , bullets, Formatting features, printing the documents, header and footer, page no., and footers. mail merge table handing. • Introduction to spread sheet (MS-Excel): Definition

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		and advantages of electronic worksheet, working of spread sheet, graphs, creation, types of graphs creating a chart sheet 3D column charts, • Introduction to Powerpoint (MS- Powerpoint): Creating a presentation, inserting/deleting slides, different slide views, editing slides,. Slide transition & editing special effects inserting sound, picture, chart, • Accounting software Tally ERP 9: Basic principles of accounting system, creating new company, ledger, voucher type, modifying, new company, voucher entry, generating profit & loss account, trial balance and balance sheet,

CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-III	DATA COMMUNICATION & COMPUTER NETWORK	• **Students able to learn** • Introduction to Data Communication– Network models, protocols and architecture, topology, transmission mode, classification of networks, OSI reference model, TCP/IP model. • Analog and digital signals,. • Multiplexing, LLC, error detection and correction, flow control, HDLC, LANs- • Principles of internetworking– connection–oriented, connectionless, Routing concepts, routing algorithms– distance-vector routing, routing, shortest path routing. Congestion control, network devices. • Network security requirements and attacks, public key and private key encryption and digital signatures, digital certificate, firewalls,

CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-IV	PROGRAMMING IN C & C++	• **Students able to learn** • Introduction to "C" Language: Fundamentals, simple I/O statements, reading and writing, data types constants, variable, operators, library function,

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		control statements, if-else, while, do-while, goto, for statements switch, break, looping statements, functions recursion, arrays, , strings & pointers. • Programming in C++, functions, class, object, constructor and destructor: • Operator overloading & type casting: • Inheritance, virtual function: virtual base class, abstract class. • Pointer & File:

CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-V	RELATIONAL DATABASE MANAGEMENT SYSTEM (ORACLE)	• **Students able to learn** • Overview of Database Management: Data, information, database administration roles, DBMS architecture, different kinds of DBMS users, types of database languages. Data models: Introduction to distributed database, client/server databases, object-relational databases, introduction to ODBC concept • Relational Model: -entities attributes and relationships. ER diagrams, concept of keys: generalization,specialization and aggregation, , introduction to UML. • Structured Query Language (SQL): Relational Algebra: select, project, cross product different types of joins set operations, introduction to SQL constructs (SELECT...FORM, WHERE... GROUP BY... HAVING ... ORDERBY...), VIEW definition and use, integrity constrains,triggers. • Relational database design: Normalization concept in logical model; Normal form ,decomposition, functional dependency concepts of indexes, de-normalization, • Introduction to Query processing and protection the database, security and recovery, Domain constraints,

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		referential integrity, assertion, triggers, security & authorization in SQL

CLASS	SUBJECT	COURSE OUTCOME
PGDCA PAPER-VI	SYSTEM ANALYSIS AND DESIGN	• **Students able to learn** • The system concept: characteristics, elements and types of a system, the system development life cycle, considerations, for candidate systems prototyping. The role of system analyst. • System planning and initial investigation: Information Gathering, information gathering tools. Structured analysis, the tools of structured analysis (DFD, Data Dictionary, Decision tree and Pseudo codes Decision Tables), feasibility study. Cost/ Benefit analysis, Data analysis, input design, output design forms design, types of forms, • File structure: File organization, objectives of database, data structure, system testing and quality assurance, why system testing, the test plan quality assurance, trends in testing, , training and documentation. • Implementing and software maintenance: conversion combating resistance to change, post implementation review, software maintenance, hardware/software selection and the computer contract, , the computer contract system security disaster recovery planning.

CLASS	SUBJECT	COURSE OUTCOME
PGDCA	Practical PC-Package & Tally ERP Lab	• **Students able to learn** 1. What is dos operating system? Explain 7 internal command and 7 external command with syntax. 2. What is windows Operating system? Explain various features of windows operating system. 3. What is MS word? Expalin Various features of Ms Word. 4. What is spreadsheet program? Explain various feature of spreadsheet program. 5. Explain any five statistical, mathematical function available in Ms excel with the help of example.

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		6. Explain various chart of Ms excel? 7. What is Ms-powerpoint how to add a new slide and delete slide. 8. What is tally? Write the step for creating company in tally.
PGDCA	Practical C,C++ & Oracle Lab.	• **Students able to learn** 1. Write a c program to print your name? 2. Write a c program to find simple interest. 3. Write a C program to find greatest between two integer numbers. 4. Write a C program to check wheather the given number is even or odd using if else statement. 5. Write a C program to find enter year is leap year or not? 6. Write a C Program to check given number is prime or not? 7. Write a c program to find factorial number. 8. Write a c ++ program to print your name using class and object. 9. Explain function overloading with example? 10. What is constructor in c++? Expalin parameterized constructor with Example? 11. Write a SQL query to create Employee tabnle and insert five records into a table?
PGDCA	Project	• **Students able to learn** 1. Creating project c & c++.

CLASS	SUBJECT	COURSE OUTCOME
एम.ए. प्रथम सेमेस्टर प्रष्न पत्र – प्रथम	पाष्चात्य राजनीतिक चिंतन	• यूनानी राजनीतिक चिंतन की विषेषताएं – प्लेटो–आदर्ष राज्य – न्याय षिक्षा साम्यवाद, दार्षनिक शासक, अरस्तू–राजनीति विज्ञान का जनक, राज्य संबंधी विचार, संविधानों का वर्गीकरण, दासता का सिद्धांत, ससंपत्ति व परिवार संबंधी विचार एवं क्रांति विचार एवं क्रांति का सिंद्धांत। • रोमन राजनीतिक चिंतन की विषंषताएं – मध्यकालीन राजनीतिक चिंतन की विषेषता, मैकियावेली पुर्जागरण का षिषु, मानव स्वभाव संबंधि विचार, राज्य संबंधि विचार, आधुनिक राजनीति चिंतन का जनक। • हॉब्स सामाजिक समझौता संबंधी विचार लॉक सामाजिक समझौता संबंधी विचार रूसो सामाजिक समझौता संबंधी विचार, सामान्य इच्छा सिंद्धांत मान्टेस्क्यू शक्ति पृथक्करण सिद्धांत। • बेन्थम उपयोगितावादी सिद्धांत जे.एस.मिल उपयोगितावाद में संषोधन, स्वतंत्रता पर विचार प्रतिनिध्यात्मक सबंधी विचार हींगल द्वंदात्मक भैतिकवाद, राजनैतिक विचार टी.एच.ग्रीन स्वतंत्रता की अवधारणा, अधिकार सम्प्रभुता राज्य का आधार–षक्ति नहीं इच्छा। • काल मार्क्स द्वंदात्मक भैतिकवाद इतिहास की आर्थिक व्याख्या वर्ग–संघर्ष सिद्धांत अतिरिक्त मूल्य का सिद्धांत लास्की राज्य संबंधी विचार सम्प्रभुता

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		विचार, बहुलवादी सिद्धांत।

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एम.ए. प्रथम सेमेस्टर प्रष्न पत्र – द्वितीय	तुल्नातमक राजनीति	• तुल्नातमक राजनीति – उद्भव अर्ध, प्रकृति क्षेत्र, राजनीतिक व्यवस्थाओं के अध्ययन की तुलनात्मक पद्धती, दृष्टिकोण – राजनैतिक समाज शास्त्र, राजनैतिक अर्धषास्त्र • राजनैतिक व्यवस्था – उपागम एवं विष्लेषण संरचनात्मक प्रकार्यात्मक उपागम्य व विष्लेषण, राजनीतिमक संस्कृति एवं राजनीतिक समाजीकरण • राजनैतिक विकास – उपागम एवं विष्लेषण, राजनीतिक संस्थाएं, राजनैतिक संचार • संविधानवाद – राजनैतिक सम्प्रन्तजन, राजनीतिक दल, राजनीतिक आधुनिकीकरण। • दबाव समूह तथा सामाजिक आंदोलन – राजनैतिक नेतृत्व, राजनीतिक सहभागिता।

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एम.ए. प्रथम सेमेस्टर प्रष्न पत्र – तृतीय	लोक प्रषासन	• लोक प्रषासन – परिभाषा, अर्थ, प्रकृति, क्षेत्र के उपागम निजी प्रषासन व लोक प्रषासन में समानता एवं अंतर नीवन लोक प्रषासन की अवधारणा। • संगठन के सिद्वांत – पदसोपान, नियंत्रण का क्षेत्र, आदेष की एकता, समन्वय, प्रत्यायोजन, केन्दीयकरण विकेन्दीककरण। • मुख्य कार्यपालिका – सूत्र एवं स्टॉक अभिकरण, नेतृत्व, निर्णय, निर्माण, जवाबदेही, शासन पर नियंत्रण – संसदीय व न्यायिक • कार्मिक प्रषासन – भर्ती, प्रषिक्षण, पदोन्नति, नौकरषाही – अर्ध, परिभाषा, विषेषताएं गुण–दोष, प्रकार, नौकरषाही का आधुनिकीकरण लोक सेवा आयोग। • वित्तीय प्रषासन – बजट सिद्धांत, निर्माण, प्रक्रिया, नियंत्रक एवं महालेखा परीक्षक, लेखंकन अंकेक्षण लाक सेवा में तटरथताए अदत्त विधायन सूचना का अधिकार।

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एम.ए. प्रथम सेमेस्टर प्रष्न पत्र – चतुर्थ	अंतर्राष्ट्रीय राजनीति	अंतर्राष्ट्रीय राजनीति – विकास, प्रकृति, क्षेत्र, अंतर्राष्ट्रीय राजनीति के अध्ययन के सिद्धांत यथार्थवादी, मार्क्सवादी, खेल और व्यवस्था सिद्धांत शक्ति के अवधारणा – इसके तत्व व सीमाएं शक्ति प्रबंधन, शक्ति सन्तुलन, सामूहिक सुरक्षा शक्ति की बदलती प्रकृति। असंलग्नता की अवधारणा – अर्थ, परिभाषा, विशेषताएं, उपलब्धियां, असफलता एवं प्रासंगिकता, निःषस्त्रीकरण अर्थ, आवष्यकता पक्ष–विपक्ष, मार्ग में आने वाली बाधाएं। राजनय – परिभाषा, प्रकार, कार्य, राजनयिक विषेषाधिकार, क्षेत्रीय संगठन – सार्क और आसियान, यूरोपियन – यूनियन आतंकवाद – परिभाषा, प्रोत्साहन देने वाले तत्व, दक्षिण एषिया में आतंकवाद, सीमा पार आतंकवाद, परमाणु आतंकवाद, वैष्विक अतंकवाद।

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एम.ए. तृतीय सेमेस्टर प्रष्न पत्र – प्रथम	भारतीय शासन एवं राजनीति	• विधानसभा की पृष्ठभूमि संगठन एवं प्रणाली, भारतीय संविधान की विषेषताएं। वैचारिक आधार – प्रस्तावना, स्त्रोत, संविधान संषोधन प्रक्रिया। • मौलिक अधिकार एवं कर्तव्य, राज्य के नीति निदेषक सिद्धांत, केन्द्र राज्य सम्बन्ध विधायी, वित्तीय, प्रषासकीय। • संघीय कार्यपालिका – राष्ट्रपति, प्रधानमंत्री, मन्त्रिपरिषद्। • संघीय व्यवस्थापिका – लोकसभा, राज्यसभा, भारतीय सर्वोच्च न्यायालय। • भारतीय राजनीति के समक्ष चुनौतियां – जातिवाद, क्षेत्रवाद, भाषावाद, सम्प्रदायवाद, भ्रष्टाचार।

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एम.ए. तृतीय सेमेस्टर प्रष्न पत्र – द्वितीय	भारत की विदेषनीति : सिद्धांत एवं व्यवहार	• विदेष नीति : अर्थ, प्रकृति, और निर्धारण तत्व, भारतीय विदेषनीति के निर्धारक तत्व आंन्तरिक एवं बाह्य, भारतीय विदेष नीति के सिद्धांत एवं उद्देष्य, उदभव एवं विकास। • भारत और अमेरिका और रूस, भारत और चीन • भारत और पाकिस्तान, भारत और बंगलादेष, भारत और श्रीलंका।

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		• भारत और नेपाल, भारत और भूटान, भारत और दक्षेस। • भारत और गुटनिरपेक्ष आंदोलन, भारत और एषियान, भारत और हिन्द महासागर, भारत और आंतकवाद की समस्याएं।

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एम.ए. तृतीय सेमेस्टर प्रष्न पत्र – तृतीय	अंतर्राष्ट्रीय कानून	• अंतर्राष्ट्रीय कानून – परिभाषा, प्रकृति, क्षेत्र, स्त्रोत विकास। • ग्रेषियस का योगदान, संहिताकरण राष्ट्रिय एवं अंतराष्ट्रिय कानून से संबंध। • अंतराष्ट्रिय कानून की सीमाएं व स्म्भावनाएं तटस्थता – परिभाषा, विषेषताएं, प्रकार/तटस्थ राज्यों के अधिकार एवं कर्तव्य जराज्यों के उत्तराधिकार। • संधिया – अर्थ, परिभाषा, वर्गीकरण उद्देष्य, प्रभाव, संधियों का पालन। प्रत्यपर्ण – अर्थ – स्वरूप, विकास, शर्तें, भारत में प्रत्यर्पण। • मान्यता – अर्थ, परिभाषा, सिद्धांत, मान्यता के तरीके मान्यता के परिणाम, आश्रय–प्रकार, शर्तें, राजनयिक आश्रय। अंतराष्ट्रिय कानून का प्रभाव – तृतीय विष्व के सन्दर्भ में।

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एम.ए. तृतीय सेमेस्टर प्रष्न पत्र – चतुर्थ	भारत में संघात्मक प्रणाली	• संघात्मक शासन – अर्थ, परिभाषा, संघात्मक शासन लक्षण। संघात्मक शासन गुण – दोष संघात्मक एवं एकात्मक शासन में अन्तर, भारत में संघीय व्यवस्था का उद्भव एवं इतिहास। • भारत में संघीय व्यवस्था और संविधान निर्माताओं के विचार, भारतीय संघात्मक व्यवस्था की संरचना। • संस्कारिया आयोग प्रतिवेदन भारत में केन्द्र राज्य संबंध–विधायी, प्रषासकीय, वित्तीय। • नियोजित आर्थिक विकास और भारतीय राजनीति संघवाद के विषेष संदर्भ में। भारत में संघवाद पर नियोजन के प्रभाव। • क्षेत्रीय दल एवं संघीय व्यवस्था पर उनका प्रभाव। भारतीय संघीय व्यवस्था उनकी उभरती प्रवृत्तीयां।

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