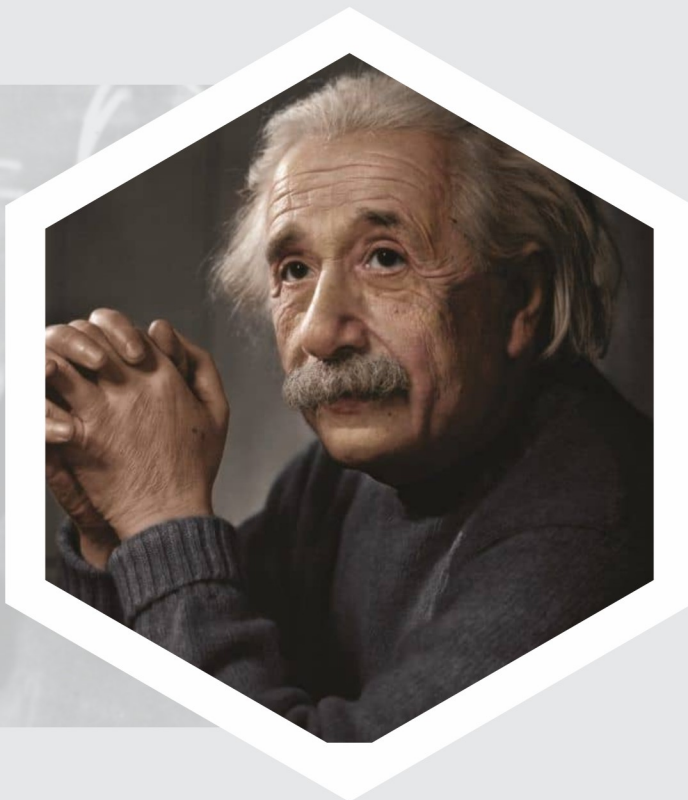# Guideline For
RESEARCH PROGRAMME
DOCTOR OF PHILOSOPHY (Ph.D)

Imagination is the Highest
form of Research

- Albert Eistein

DR. C.V. RAMAN UNIVERSITY

CVRU
DR. C.V.RAMAN UNIVERSITY

// **Chhattisgarh, Bilaspur** AN AISECT GROUP UNIVERSITY

Approved by : **AICTE** | **NCTE** | **BCI** | **AIU** | Joint Committee : (UGC | DEB | AICTE) | Recognized by : UGC | A NAAC Accredited University

Accredited with B+ Grade by NAAC

www.cvru.ac.in

Guideline for
RESEARCH PROGRAMME
DOCTOR OF PHILOSOPHY (Ph.D)
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Web : www.cvru.ac.in

DR. C.V. RAMAN UNIVERSITY

(Established by Government of Chhattisgarh Act No. 13 of 2005 and approved vide UGC Act 2(f) 1956)

Accredited with B+ Grade by NAAC.

Kargi Road Kota Distt. – Bilaspur (Chhattisgarh) India - 495113

Ph: +91-7753-253801, 09617779322 Fax : 07753-253728

About the University

Dr. C.V. Raman University is located in state of Chhattisgarh on the Bilaspur Amarkantak highway about 25 kms from Bilaspur. The campus is spread over nearly 50 acres of well-developed land in a serene environment providing on excellent surrounding for teaching and learning, well equipped with all the facilities, faculties and department.

Dr. C.V. Raman University is one of the pioneer University in the State of Chhattisgarh. It has been Setup on 3rd November 2006 and inaugurated on 14th October 2007 in a tribal scheduled area of the Chhattisgarh state with a view to take up education, research,training and extension activities in this under developed region of the state.

At present, the university runs eight (8) faculties with 32 Teaching Departments in which 61 UG,PG & Diploma programmes are being conducted. The University works as per the norms of the regulatory bodies & is recognized by UGC and approved by AICTE, NCTE, BCI & DEB for its various courses running successfully. Being the member of AIU & ISO:2008 certified, accredited with B+ grade by NAAC, & ranked under top 200 universities by NIRF, the University has already paved the way of its huge experiences in its chapter of 11 years through its spectacular achievements in the field of education, sports, music, science, language, industries and administration. By organizing various activities such as workshops, seminars, conferences & other personality development career oriented progammes, the University has proved its accountability & rapid growth & is gradually moving towards the golden path to reach the height of excellence. Recently UGC & MHRD allotted Pt. Deendayal Upadhyay Kaushal Kendra(DDUKK) to University for running B.Voc. and M.Voc. programmes , as the University had already been working with NSDC through CVRU-NSDC Academy by running skill oriented programmes to fulfill the mission of skill India. Besides this the University provides research programmes (M.Phil./Ph.D.) in different Departments of the University.

Besides all these educational developments, CVRU made a major development by launching its community radio station, "90.4FM Radio Raman" that broadcasts educational and entertainment based content, along with recorded lectures to far flung areas.

The university has gained a lot of goodwill and prestigious awards like the Chhattisgarh Achievers Awards 2013 for 'Best University of the Year' , Rajiv Gandhi Achievers Awards for 'Education', The Best University Award by 'Sadhna News', World Education Summit Awards 2014 for 'Innovation in Open and Distance Learning' and an accreditation by NILET in 2014. It is known for its plethora of opportunities beyond the classroom education wherein sports and extra-curricular activities effectively inculcate a sense of team spirit along with developing leadership qualities among all students and make them go 'Beyond learning'.

Vision & Mission

To be transformed into a University of global standards imparting world class education through skilled manpower which can make a significant contribution to the nation building and cater to the needs of the society by creating an intellectual domain that initiates, nourishes and perpetuates values of humanity conscious, co-existence & achievement of excellence.

Dr. C.V. Raman University is the University whose whole mission is to provide access and opportunity to students from all sectors of the country's diverse population as well as from other countries by providing quality education thereby improving the socio-economic status of the society. The Prime mission of CVRU is also to promote excellence in value based education and skill based teaching-learning.

Objectives

- To make provisions for research, advancement and dissemination of knowledge.
- To create &nurture higher levels of intellectual abilities
- To provide quality education that enables students to achieve bright professional careers.
- To establish state of the art facilities for the students
- To maintain the standards of degree, diploma, certificate & other academic distinctions in accordance with the norms laid down by concerned regulatory bodies.

Facilities available at CVRU

1. Central library

- Well qualified and experienced staff to take care of the smooth library working.
- A collection of around 40,000 text and reference books on varied subjects to cater to the needs of variety of users.
- Subscription to 217 journals and periodicals giving an insight to the latest developments.
- Around 600 CDs and floppies containing learning material, software and CBTs.
- Well-furnished Reading Halls.
- Coverage by Intercom System and Dialup services.
- Aesthetic Interiors
- Adequate seating arrangement.
- Separate CD and Floppy (E-Documents) Section.

2. Infrastructure Facilities

- Sufficient classroom with smart class facility.
- Air- conditioned conference hall of 300 seating capacity with Audio-Video Projection & Video conference facility.
- Air-conditioned hall in new administrative building with the capacity of 100 and also 1 board room for conducting meetings.
- Moot court of 50 seating capacity.

3. Sports facilities -

- Playgrounds: A playground each for cricket & football Games and Basketball, Volleyball & Badminton Courts separately.
- One Gymnasium is available in boy's hostel.

4. Hostel Facilities:

For Boys

Number of boy's hostels available in campus are 2 with each block of capacity of 250 inmates and each block contains 1, 3 &4 seater rooms. Facilities available in hostels are Wi-Fi, Infirmary, Mess & Dining Hall, Common Room, indoor game facility.

For Girls

Number of girls hostels available in campus is 1 with a of capacity of 80 inmates and contains 1, 3 &4 seater rooms. Facilities available in hostels are Wi-Fi, Dining Hall, Common Room.

5. Canteen:

We have one canteen and one NESCAFE available in camps.

6. Medical Facility :

The university has its own health center and dispensary comprising of two full time medical superintendents, i.e., one chief medical officer Dr. AvijitRoyzada (M.D.) and one medical supervisor to cater to the needs of the medical services. The CVRU health center and the dispensary of the university within its premises offers full time medical facilities for the students, faculties, non-teaching staff, administrative staff and other employees of the university. The dispensary provides service in the hostels also extends its emergency services too throughout the campus. All the students, staff, faculty and other employees of the university are provided medicines at free of cost. One medical officer and one assistant medical officer along with a medical compounder are appointed to take care of CVRU health center and helps to avail the medical facility for each and every one in the university premises. The health center of the university consists of the complete first aid facility, primary medical treatment facility as well as some of the diagnostic equipment and sufficient pharmaceutical medical store.

The following facilities are available in the medical dispensary:
- Sphygmomanometer
- ECG machine
- Stethoscope
- Stretcher and wheel chair
- Patient table
- Well managed medical almirah for proper medicine storage
- Blood pressure instrument
- Blood sugar testing instrument (Glucometer)
- Electronic BP-Measuring machine
- Weight-machine
- Biochemical lab for Hb-test & blood group test.
- Nursing table
- Clinical laboratory facility
- Pulse-oxymeter machine
- Sterilizer machine
- Electric water heater

Besides this, we are also having an MOU with the Sai Baba Nursing Home, at Ring Road, Bilaspur in which for the special cases emergency and serious treatment, the students of our university are recommended and referred for the further treatment free of cost to the nursing home.

7. Banking Facility

A branch of "**Bank of India**" with an **ATM facility is inside the University Campus** and the other 2 ATM Punjab National Bank, & State Bank of India are at the University Entrance Gate and also one stationary shop is available inside the campus for the benefit and academic requirements of the students.

8. Transport Facilities

The university runs a fleet of 14 busses to help students and staff members' employee to and fro from regions around the city. The bus service is available over a 35km radius around the institute. A nominal fee is collected for the transportation at a yearly basis. Details of the routes and their respective timings are also available. This service is offered to provide hassle-free and safe transportation. Parents are urged to convince their wards to travel in the college busses only in view of safety issues on the highway. We also provide special pre-arranged transportation services for field trips and sporting events within the state.

Research Programme (Ph.D.)

Dr. C.V. Raman University offers Ph.D. Programme through various disciplines. Award of Ph.D. degree will be made on the basis of academic achievements in research work and published work as well as the papers presented in seminars, conferences etc. in various disciplines.

The University also encourages interdisciplinary areas through a system of co-supervision and provides excellent opportunities for such programmes. The research work shall be an original work characterized either by the discovery of facts, or by a fresh approach towards the interpretation and application of facts. It shall demonstrate the candidates capacity for critical examination and sound judgment and shall represent original contribution to the existing knowledge.

The degree of Doctor of Philosophy (Ph.D.) is awarded for research work in areas recognized by the academic departments of the University. The degree of Doctor of Philosophy (Ph.D.) will be awarded in the discipline of the department in which the candidate is registered.

⇨ **Faculties & Subjects offering Ph.D. Programme are:**

Faculties	Subjects
Science	*Physics, Chemistry, Mathematics, Botany, Rural Technology*
Commerce & Management	*Management*
Education	*Education, Physical Education*
Arts	*Geography, Political Science, Economics, History, Sanskrit, Hindi, , Library& Information Science*
Information Technology	*Information Technology, Computer Science*
Law	*Law*

⇨ **Eligibility:**

For Ph.D. Programme:

A candidate for the degree of Doctor of Philosophy must, at the time of application, hold Master's degree with at least 55% marks [50% marks in case of SC/ST/PH/VH/category candidates(non creamy layer)]or an equivalent grade of Deemed University or any other University incorporated by any law for the time being in force and recognized by the University.

⇨ **Admission Procedure:**

Application form for Ph.D program must be submitted in the prescribed format the office of the University on or before the due date declared by the University. The short

listed candidate will be intimated for interview and there after take admission as per rules .the short listed candidate must submitted transfer certificate/ character certificate, migration before the examination of course work. If candidate has minimum gape a year between the programs it is compulsory to submit gap certificate before the examination of course work.

⇨ **Fees Structure:**

The fee structure of Ph.D. Programme will be as per fee fixation committee of Govt. of Chhattisgarh or as decided by Board of Management (BoM) of the University.

⇨ **Structure Of Entrance Examination**:

The entrance exam for admission to Ph.D. programme consists of one theory paper of 100 marks having two sections. The duration of examination will be of 2 hours.
Section I- Contains 40 questions (multiple choices) to assess the candidate's general awareness, verbal ability, quantitative ability, data interpretation, analysis, synthesis, reasoning, basics of computing and research aptitude (40 marks)

Section II consisting of 30 questions (multiple choices) to assess the candidates capability of defining certain concepts & knowledge from the relevant discipline in which he/she seeks registration as indicated in application form(60 marks).

⇨ **The syllabus for Entrance exam:**
The syllabuses for entrance exam are as follows:

(1)Faculty of Science

Subjects Name

(i)   Physics

(ii)   Chemistry

(iii)   Mathematics

(iv)   Botany

(v)   Rural Technology

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Physics

Mathematical Physics: Dimensional analysis, Vector algebra and vector calculus, Linear algebra, Matrices, Linear differential equations, Elementary probability theory, Binomial, Poisson and normal distributions, Fourier series, Fourier and Laplace transforms, Elements of complex analysis.

Classical Mechanics: Newton's law, central forces, Kepler's law and planetary, motion, Lagrange and Hamilton's formalisms, Special theory of relativity – Lorentz transformations, time dilation, Length contraction, Relativistic kinematics, Variation of mass with velocity, Mass – Energy equivalence, Relation between energy and momentum.

Electromagnetic Theory & Acoustic wave: Gauss's Law and its applications, Laplace and Poisson equations, Magnetostatics : Bio-Savart's law, Ampere's theorem, Electromagnetic induction, Faraday's law, Maxwell's equations, Scalar and vector potentials, Electromagnetic waves and their reflection , Refraction, Interference, diffraction,polarization,Poynting vector, Energy and momentum ;electromagnetic waves, acoustics, acoustical holography, acoustic radiation, acoustic transmission.

Quantum Mechanics: Physical basis of quantum mechanics, Wave – Particle duality, De-Broglie hypothesis, Wave packet and group velocity, , Heisenberg's uncertainty principle, Schrodinger equation (time dependent and time independent), Eigen value problems such as particle- in- a- box, Harmonic oscillator etc.

Thermodynamics and Statistical Physics: Law of thermodynamics and their consequences, Macro state and microstates, Phase space, Probability ensembles, Partition function, Free energy, Calculation of thermodynamic quantities, Classical and quantum statistics, Degenerate Fermi gas, Black body radiation and Planck's distribution law, Bose- Einstein condensation, First and second order phase transitions.

Atomic and Molecular Physics: Quantum states of an electron in an atom, Electron spin, Spectra of one- and many-electron atoms, Relativistic corrections for energy levels of hydrogen, Hyperfine structure and isotopic shift, Width of spectral lines, LS & JJ coupling, Zeeman, Paschen Back and Stark effect, X-ray spectroscopy, Electron spin resonance, Nuclear magnetic resonance, lasers.

Solid State Physics: Atomic structure and bonding in materials. Crystal structure of materials, unit cell and space lattices, , Miller indices of planes and directions, Concept of amorphous, Single and polycrystalline structures and their effect on properties of materials, Crystal growth techniques, Free electron theory, Band theory of solids; metals, semiconductors and insulators, Hall effect,superconductivity,Fermi level, energy gap.

Nuclear and Particle Physics: Basic nuclear properties, Size, Shape, Charge distribution, Spin and Parity, Mass defect, Binding energy, semi-empirical mass formula, Liquid drop model, Nature of nuclear force, Nuclear shell model, Alpha decay, Beta decay, Gama decay, Laws of radioactivity, Nuclear reactions, Compound nuclei and direct reactions, Controlled and uncontrolled chain reaction, critical mass, fission and fusion, Nuclear reactor , Elementary particles.

Electronics: Semiconductor devices & physics P-N-Jn.depletion region, barrier potential, Transistors, Bipolar junction Transistors, Field effect transistors, UJT,SCR, Rectifier circuits, , Logic gates and symbols, Boolean algebra & Karnaugh map, DeMorgan's theorem, Basic digital logic circuits, Optoelectronic devices including solar cells; photonic devices; Photo detectors and LEDs, Digital techniques and applications (Registers Counters, Comparators and similar circuits); ICs; modulation & demodulation,AM,PM,FM;A/D and D/A convertors; Sensors.

Text & Reference Books:

[1]   Mathematical Physics: Mary L B
[2]   Statistical Physics: TMH-1988; F.Reif
[3]   Introduction to Modern Physics:H.S.Mani & G.K.Mehta
[4]   Solid State Electronic evices:B.G.Streetmann
[5]   Introduction to Solid State Physics: C.Kittel
[6]   Electronics Fundamental & Applications:J.D.Ryder

Dr. C.V. Raman University, Bilaspur (C.G.)
Subject: Chemistry

INORGANIC CHEMISTRY

Main Group Elements : S-N compounds Sulphur-phosphorus compounds: Molecular sulphides such as P_4S_3, P_4S_7, P_4S_9 and P_4S_{10}. Phosphours-nitrogen compounds: Phosphazines. Other P-N compounds. Boron-nitrogen compounds:

Metal Complexe: Valence bond theory and its limitations. Ligand field theory: Splitting of d orbitals in different ligand fields Jahn-Teller effect MO diagrams of complexes with and without π bonds. Spectral&Magnatic properties of complexes.

Nuclear Chemistry: . Nuclear reactions: . Types of nuclear reactions. Spontaneous and reduced fission. Principles of working of the reactors of nuclear power plants. Breeder reactor. Nuclear fusion reaction.

Analytical Principles: Volumetric methods:Theories of indicators:Acid-base, redox, metallochromic, indicators. Complexation Precipitation Redox titrations. Gravimetric methods: Mechanism of precipitate formation.Aging of precipitates. Precipitation from homogeneous solutions. Coprecipitation and postprecipitation. Contamination of precipitates.Washing, drying and ignition of precipitates.

Water treatment: Hardness, Alkalinity, Domestic water treatment Chemical analysis of water, D.O., B.O.D, C.O.D., T.D.S.

PHYSICAL CHEMISTRY

Quantum Mechanics: Introduction to Classical Mechanics: The blackbody radiation, photoelectric effect, Compton Effect and atomic spectra. Failure of classical mechanics to explain these phenomena. Quantum mechanical explanations.

Chemical Kinetics: Theories of reaction rate: Influence of temperature on reaction rate. Arrhenius equation and its limitations, activation energy. Collision theory and absolute reaction rate theory. Free energy of activation and volume of activation. Thermodynamic formulation of reaction rate. Effects of pressure and voulume on the velocity of gas reaction.

Surface Chemistry: The colloidal state: Multimolecular, macromolecular and associated colloids. Stability of collids. The zeta potential. Kinetic, optical and electrical properties of colloids: Electrophoresis, electroosmosis, sedimentation potential and streaming potential Catalysis: Mechanism and theories of homogeneous and heterogeneous catalysis. Acid-base and enzyme catalysis.

Thermodynamics: Intensive and extensive properties. Exact differentials. Intrinsic energy, enthalpy, entropy, free energy and their relations and significances. . Maxwell relations. Thermodynamic equations of state. Joule-Thomson effect. Joule-Thomson coefficient for van der Waals' gas. The third law of thermodynamics. .

Spectroscopy: Energy levels in molecules, rotational, vibrational, electronic NMR and ESR spectroscopy.

ORGANIC CHEMISTRY

Principles of organic chemistry: Inductive, mesomeric, electromeric effect. Carbocations, carbanions, carbens. Addition, Elimination, Substitution reactions

Chemistry of Polymers: Types and mechanism of polymerization reactions. Step-growth, free radical, addition, ionic polymerizations. Copolymers. Characterization of polymers. Manufacture and applications of polyolefins, thermoplastics, polyamides, polyesters, polyurethanes, epoxies and industrial polymers.

Chemistry of natural products- Biosynthesis of terpenes and alkoloids. Carbohydrate protein and nucleic acid.

Organic Photochemistry: Photochemical processes. Energy transfer, sensitization and quenching. Singlet and triplet states and their reactivity. Photoreactions of carbonyl compounds, enes, dienes, and arenes. Norrish reactions of acyclic ketones. Applications of photoreactions in laboratory and industrial synthesis.

Separation Techniques: Chromatographic methods: Classification of chromatographic separations. Theory of chromatography. Applications of chromatographic mehtods: Adsorption and partition chromatography. Paper, thinlayer and column chromatographic methods.

Text & Reference Books:

[1]   F.A.Cotton and G.Wilkinson, "Advanced Inorganic Chemistry", John Wiley & Sons
[2]   J.March, "Advanced Organic Chemistry", Wiley
[3]   Gurdeep Raj , "Advanced Physical Chemistry
[4]   I.L.Finar, "Organic Chemistry" Vol 2, Longman

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Mathematics

Linear Algebra : Finite dimensional vector spaces; Linear transformations and their matrix representations, rank; systems of linear equations, eigen values and eigen vectors, minimal polynomial, Cayley-Hamilton Theroem, diagonalisation, Hermitian, Skew-Hermitian and unitary matrices; Finite dimensional inner product spaces, Gram-Schmidt orthonormalization process, self-adjoint operators.

Complex Analysis : Analytic functions, conformal mappings, bilinear transformations; complex integration; Cauchy's integral theorem and formula; Liouville's theorem, maximum modulus principle; Taylor and Laurent's series; residue theorem and applications for evaluating real integrals.

Real Analysis : Sequences and series of functions, uniform convergence, power series, Fourier series, functions of several variables, maxima, minima; Riemann integration, multiple integrals, line, surface and volume integrals, theorems of Green, Stokes and Gauss; matric spaces, completeness, Weierstrass approximation theorem, compactness;
Lebesgue integral, Fatou's lemma, dominated convergence theorem.

Ordinary Differential Equations : First order ordinary differential equations, existence and uniqueness theorems, systems of linear first order ordinary differential equations, linear ordinary differential equations of higher order with constant coefficients; linear second order ordinary differential equations with variable coefficients; method of Laplace transforms for solving ordinary differential equations, series solutions; Legendra and Bessel functions and their orthogonality.

Algebra : Normal subgroups and homomorphism theorems, automorphisms; Group actions, Sylow's theorems and their applications; Euclidean domains, Principle ideal domains and unique factorization domains. Prime ideals and maximal ideals in commutative rings; Fields, finite fields.

Functional Analysis : Banach spaces, Hahn-Banach extension theorem, open mapping and closed graph theorems, principle of uniform boundedness; Hilbert spaces, orthonormal bases, Riesz representation theorem, bounded linear operators.

Probability and Statistics : Probability space, conditional probability, Bayes theorem, independence, Random variables, joint and conditional distributions, standard probability distributions and their properties, expectation, conditional expectation, moments; weak and strong law of large numbers, central limit theorem; Sampling distributions; Testing of hypothesis, standard parametric tests based on normal, Chi-Square, t, F – distributions; Linear regression; Interval estimation.

Text & Reference Books:

[1]. Mathematical Analysis by Rudin,M
[2]. Discrete Mathematics by Truss, Pearson Education
[3]. Linear Algebra by Ramachandra, McGraw Hill Pub.
[4]. Mathematical Statistics by M.Ray, S-Chand Pub.
[5]. Abstract Algebra by S.David, Wiley Pub.
[6]. Ordinary Differential Equation by Garrett, Wiley Pub.

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Botany

1. Microbiology - Viruses and Bacteria Structure, classification and reproduction. General Account of infection, immunity and serology: Microbes in industry and agriculture.

2. Pathology - Knowledge of important plant disease in India caused by fungi. Modes of infection and methods of control.

3. Plant Groups - Structure, reproduction, life- history, classification, evolution, ecology and economic importance of algae , fungi, bryophytes, pteridophytes and gymnospems.

4. Morphology, anatomy and embryology of Angiosperms - Tissues and tissue systems. Morphology and anatomy of stem, root and leaf (including development aspects and anomalous growth), Morphology of flower. Structure of anther and ovule, fertilization and Development of seed.

5. Taxonomy - Principles of nomenclature and classification of angiosperms. Modern   trends in Taxonomy. A general knowledge of the more important families of angiosperms.

6. Cell Biology - Cell as unit of structure and functions. Ultra structure function and interrelationships of plasma membranes endoplasmic reticulum, mitochondria, ribosomes chlorplasts and nucleus, Chromosomes-chemical and physical nature behaviour during mitosis and meosis.

7. Genetics and Evolution - Mendelian concept of genetics. Development of the gene concept Nucleic acids their structure and role in reproduction and protein synthesis. Genetic code and regulation. Mechanism of microbial recombination. Organic evolution evidences, mechanism and theories.

8. Physiology : Photosynthesis history, factors, mechanism and importance. Absorption and conduction of water and salts. Transpiration, Major and minor essential elements and their role in nutrition, Nitrogen fixation and nitrate reduction Enzymes, Respiration and fermentation. General account of growth.Plant harmones and their functions. Photo-periodism.Seed dormancy and germination.

9. Ecology - Scope of ecology , structure . function and dynamics of ecosystems, Plant communities and succession. Ecological factors. Applied aspects of ecology including conservation and control of pollution.

10. Economic Botany - General account of important sources of food, fiber , wood and drugs.

Text & Reference Books:

[1]   Basra, A.S. & Basra, R.K. 1997. Mechanisms of environmental stress resistance in plants, Harwood Academic Publishers, The Netherlands.

[2] Chopra, V.L. &   Pagoda, R.S. 1988. Approaches for incorporating drought and salinity resistance in crop   plants, Oxford & IBH Publishing Co. Pvt. Ltd., ND

[3] Gupta, U.S. 1985. Physiological aspects of dry land farming, Oxford & IBH

[4] Journal of Bioscience, Special issue: Cellular Stress Response, 1998.23(4):Oct., The Indian Academy of Sciences, Bangalore

[5] Kramer, P.J. 1983. Water relations of plants, Academic Press Inc., NY

[6] Levitt, 1972, 1980.

[7] Nilsen, L. & Orcutt, 1998. Physiology of plants under stress :Abiotic factors Orcutt.

[8] Paleg, L.G. & Aspinall, D. 1981. Physiology and biochemistry of drought resistance in plants, Academic Press, NY.

[9] Singh, Randhir & Sawhney, S.K. 1988. Advances in frontier areas of plant biochemistry, Prentice-Hall of India Pvt. Ltd., New Delhi

[10] Smallwood, M.F., Calbert, C.M. and Bowles, D.J. 1999. Plant responses to environmental stress, BIOS Scientific Publishers Ltd., USA

Dr. C.V. Raman University Bilaspur(C.G.)

Subject: Rural Technology

UNIT – I

Rural technology for sustainable development: - Definition, concept and scope of rural technology in present scenario, Appropiate technology, characteristics of technology, characteristics of innovation, concept and factor releted to the technology transfer. Definition, concept & Importance of ITKs, Scouting and Documenting ITKs.

UNIT – II

Rural Development: concepts, strategies and experience, Rural Society and Panchayat Raj, Characteristics of Rural life, Rural Social structure.. **Rural development program for rural area upliftment**- Poverty Alleviation Programmes, Programmes for self & Wage Employment and Social Security Current Strategy, Rural Basic Services and Infrastructure, Natural Resources Management and Environment, Other programs, IRDP, TRYSEM, CAPART, MGNERGA, WDP, SGSY, PMKVY, NRLM, NRHM, UBA etc **.**

UNIT – III

Agriculture Development- Basics of Sustainable Agriculture- Definition, Positive and negative Aspects of Modern and Sustainable Agriculture. Principles and Elements of Sustainable Agriculture

UNIT – IV

Sustainable rural technology for livelihood improvement- Lac Production Technique- Insect morphology, History of lac production, Important host for lac production, Lac cultivation practices **Mushroom Production**- Introduction, Medicinal and Poisonous mushroom, Production technology of Oyster mushroom, Paddy Straw mushroom and Button mushroom. **Apiculture**- honey bees and their types, bee colony organization, area of distribution, bee equipments, management of pests and disease, honey formation and characterization. By-Products of honey bees. **Mulberry and non-mulberry Sericulture**- Species of silk worms, Production of mulberry and non-mulberry silk in India, Rearing of tasar and mulberry silk worm, pest predators of tasar and mulberry silk worm, tasar and mulberry industries in Chhattisgarh, problem of tasar and mulberry culture.

UNIT – V

Fundamentals of Research in Rural Technology -Objectives, Why do we conduct research?, How do we KNOW?, What is Science?, What are the assumptions of Science?, What is the aim of Social Science including Rural Education?, How important is research methodology?, How does research proceed?, What are the types of research?, Let us sum up.

Text & Reference Books:

[1] Hand Book of Agriculture – ICAR publication.
[2] Grain Management:To Ensure Food Security, Dr. Anupam Tiwari, Marks Books, New Delhi
[3] Fundamental Of Agriculture- Arun Katyayan
[4] Rural Development, G. R. Madan
[5] Rural Sociology, A. R. Desai
[6] Pancahyati Raj Institution, G. S. Bal
[7] An introduction of Sericulture, G & J Sulochana
[8] Mushroom Culture in India – Neeta Bhal
[9] Lac cultivation – C.R. Negi
[10] Lac production technique – ILRI Publication Ranchi
[11] Research in Education, James V Kahn & John w Best
[12] Guide to the successful thesis and dissertation Vth Edition

(2)<u>Faculty of Commerce &Management</u>

Subject Name

(i)   Management

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Management

Management Process & Organizational Behavior-Overview : Functions and Principles of management; Management Thought and Concepts; Management Decision Making Processes and Types. Overview of Organizational Behaviour; Understanding and managing Individual Behavior-personality, Perception, Values, Attitudes, Learning and Motivation; Group Dynamics and Team Work. Leadership; Overview of Organizational Development: Organizational structure; Organizational design; OD Interventions &Change Management.

Managerial Economics-Overview of Micro-Economics : Basic Concepts of Demand and Supply; Demand Analysis; Production Function; Cost-Output Relations; market Structures; Pricing theories; Overview of macro-Economics; National Income Concepts; Budgeting.

Quantitative Techniques Overview of Probability: Types of Probability distributions (e.g. Binomial, Poisson, Normal and Exponential). Co-relation & Regression Analysis; Overview of Sampling: Sampling distributions; Tests of Hypothesis; Large and small samples. Univariate and Bivariate Data Analysis: t-test, z-test, Chi-square tests; ANOVA.

Strategic Management- Overview of Strategic Management: Concept of Corporate Strategy; BCG Model; GE-9 Cell Model ; Value Chain Analysis;SWOT & TOWS Analysis; Porter's Generic Strategies; Competitor Analysis. Overview of Strategy Formulation and Implementation at Corporate and Business level. Strategic Control.

Ethics in Business Overview of Ethical issues in Business: Value Based Organizations; Ethical Issues on Individual in Organizations; Gender Issues; Ecological Consciousness; Environmental Ethics; Social Responsibilities of Business; Corporate Governance and Ethics; Benefits of Corporate Social Responsibility.

Human Resource management Overview of HRM: Concepts and Perspectives in HRM; HRM in Changing Environment, Overview of HR Planning: Objectives Process and Techniques; Job Analysis ;Recruitment and Selection, Induction;Training and Development; Performance & Potential Appraisal, Overview of Industrial Relations: Wage Policy and Determination; Trade Unions; Dispute Resolution and Grievance Management; Labour Welfare .Overview of e- HRM.

Finance-Overview of Financial Accounting; Analysis of Balance Sheet Statement, Overview of Cost Accounting: Costing Methods and Techniques, Overview of Financial Management: Fund Flow Analysis; Management of Working Capital, Overview of Capital Budgeting: Capital Budgeting Decisions; Capital Structure and Cost of Capital. Overview of Dividend Policy: Determinants; Long-term and Short-term Financing Instruments; Mergers and Acquisitions.

Marketing Management: Overview of Marketing: Marketing Mix, Market Segmentation, Targeting and Positioning; Overview of Product Management; Product Mix Decisions; Product Life Cycle, New Product Development, Branding; Pricing Methods and Strategies. Overview of Promotional Management: Promotion Mix; Advertising; Personal selling; Supply Chain Management; Viral & Niche Marketing; Customer Relation management. Overview of e-Marketing: Uses of Internet as Marketing Medium; Issues in Branding, Market Development, advertising and Retailing on Internet.

Production Management: Overview of Production management: Demand Forecasting for Operations; Production Scheduling; Work Measurement; time and Motion Study;Statistical Quality Control; Facility Location; Layout Planning. Overview of Operations Research: Linear programming; Transportation model; Inventory control; Queuing theory; Decision theory; PERT/CPM.

Information System-Overview of MIS: Application of Information Systems in management; MIS and Decision Making; System Analysis and Design.Overview of Database Management System;Overview of E-Commerce:

Text & Reference Books:

[1] Stoner and Freeman, Management, Prentice Hall, N. Delhi.

[2] Adam, E E & Ebert, RJ. Production & Operation Management, New Delhi , PHI.

[3] Amrine Harold T. etc. Manufacturing Organization and management. Englewood Cliffs, New Jersey, PHI Inc.

[4] Baker, Michael J., Marketing : An Introductory Text, McMillan Press Ltd., 1996.

[5] Czinkota, Michael R., Massaki, Kotabe and David Mercer B., Marketing Management :Text and Cases,Blackwell Publishers,   Massachusetts, 1997.

[6] Hampton , john . Financial Decision Making. Englewood Cliffs, New Jersey, Prentice Hall Inc.

[7] Van Baumol, W.J. Economic Theory and Operations Analysis, New Delhi, Prentice Hall Inc.

[8] Richard I.Levin and David S.Rubin, Statistics for Management (Seventh Edition), Prentice Hallof India, New Delhi.

[9] Gupta, S. P. and Gupta, M.P, Business Statistics, Sultan Chand and Sons, New Delhi, 1997.

[10] A A Thompson Jr., A J Strickland III, J E Gamble, Crafting & Executing Strategy – The Quest for Competitive Advantage, Tata McGraw Hill, 4th ed., 2005.

[11] Ranjan Das, Crafting the Strategy: Concepts and Cases in Strategic Management, Tata McGraw Hill, 2004.

[12]Laura P. Hartman & Joe DesJardins, Business Ethics: Business Ethics and values, Francis Cherunilum

(3) <u>Faculty of Education</u>

Subject Name

(i) Education

(ii) Physical Education

Dr. C.V. Raman University, Bilaspur (C.G.)
Subject: Education

1. **Philosophical & sociological foundation of Education.**

   - Relationship of education & philosophy.
   - Western schools of philosophy- Idealism, Naturalism, Pragmatism.
   - Contributions of John Dewey,Vivekananda, Tagore & M.K.Gandhi to educational fields.
   - Relationship of education & Sociology.
   - Sociology of Education & Educational sociology.
   - Meaning and Factors influencing Social Change.

2. **Psychological Foundation of Education.**

   - Educational psychology- concept, nature & scope.
   - Meaning & Factors influencing Growth & Development.
   - Theories of Learning- Pavlov's classical, Skinner's operant conditioning, Learning by Insight, Lewin's Field Theory.
   - Learning & Motivation.
   - Intelligence- it's meaning, theories & measurement.
   - Personality- Type & trait theories, Measurement of personality.

3. **Methodology of Educational Research.**

   - Meaning, needs & scope of educational research.
   - Fundamental, Applied & Action Research.
   - Criteria & Sources for identifying the Research problem.
   - Hypothesis- Meaning & types.
   - Sampling- concept of population & sample, Various methods of sampling.
   - Tools & Techniques- Observation, Interview, Questionnaire.
   - Inferential Statistics – Mean,Median, Mode, SD, 't' test, one way ANOVA, Chi-square.

Text & Reference Books:

[1]   Swroop & saxena - Educational philosophy.

[2]   Ramshakal Pandey - Educational philosophy

[3]   .S.S.Chauhan   - Advance Educational Psychology.

[4]   . S.P.Gupta   - Educational Psychology.

[5]   .Lokesh Koul - Research Methodology.

[6]   .C.R.Kothari - Research Methodology.

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Physical Education

1. Introduction to and definition, aim and objectives of Physical Education, Historical development of Ancient and Modern Olympic Games, Physical Education in India.
2. Physiology of Muscular activity, respiration & blood circulation, Bioenergetics, Athletic injuries and their management, Doping in Sports.
3. Joints and their movements-planes and axes, Kinetics, Kinematics-linear and angular, levers, Newton's Laws of Linear and Angular motion, Principles of equilibrium and force, spin and elasticity, Mechanical analysis of various sports activities, Mechanical analysis of running, jumping, throwing.
4. Learning process—theories and laws of learning, Motivation, theories and dynamics of motivation in sports, Personality, its dimensions, theories, personality and performance, Psychological factors affecting sports performance—stress, anxiety and aggression, Group dynamics, team cohesion and leadership in sports.
5. Professional courses in Sports and Physical Education in India, Qualities and Qualifications of Physical Educational Personnel.
6. Sports Nutrition and dietary manipulations and Athlete diet, Health-related fitness, obesity and its management, Communicable diseases—their preventive and therapeutic aspect.
7. Aims Objectives, Characteristics and principles of sports training, Training load and periodization, Training methods and specific training programme for development of various motor qualities, Short-term and long-term training plans.
8. Nature, scope and type of research, Formulation and selection of research problem, Sampling—process and techniques, Methods of research, Data collection—tools and techniques, Statistical techniques of data analysis—measures of central tendency and variability, correlation, normal probability curve, t-test, F-tests, Hypothesis formulation, types and testing, Preparation of Synopsis for research Project.
9. Concept of test, measurement and evaluation, Principles of measurement and evaluation Concepts and assessment of physical fitness, motor fitness and motor ability, Skill test for Badminton, Basket ball. Hockey, and Volley ball. Testing psychological variables—competitive anxiety, motivation, and self-concept.
10. Organization and functions of sports bodies, Intramurals and Extramural, Methods and Techniques of teaching, Principles of planning Physical Education lessons, Concept of techniques of supervision.

Text & Reference Books:

[1]   Research Process in Physical Education and Sports.
[2]   Statistics in Physical Education and Sports.
[3]   Sports Training.
[4]   Exercise Physiology.
[5]   Sports Biomechanics.
[6]   Sports Medicine.
[7]   Test, Measurement and Evaluation in Physical Education and Sports.
[8]   Sports Psychology

(4) <u>Faculty of Arts</u>

Subjects Name

(i)   Hindi

(ii)   Sanskrit

(iii)   Geography

(iv)   Economics

(v)   Political Science

(vi)   History

(vii)   Library & Information Science

DR. C.V. RAMAN UNIVERSITY, KOTA, BILASPUR (C.G.)

SUBJECT - हिन्दी

1. **हिन्दी भाषा और उसका विकास** – अपभ्रंश और पुरानी हिन्दी का संबंध, काव्यभाषा के रूप में अवधी का उदय और विकास काव्यभाषा के रूप में ब्रजभाषा का उदय और विकास, साहित्यिक हिन्दी के रूप में खड़ी बोली का उदय और विकास, मानक हिन्दी का भाषा वैज्ञानिक विवरण, हिन्दी की बोलियॉ–वर्गीकरण तथा क्षेत्र, नागरी लिपि का विकास और उसका मानकीकरण।
हिन्दी भाषा प्रयोग के विविध रूप– बोली, मानकभाषा, संपर्क भाषा, राजभाषा और राष्ट्रभाषा, संचार माध्यम और हिन्दी।

2. **हिन्दी साहित्य का इतिहास** – हिन्दी साहित्य का इतिहास, दर्शन, हिन्दी साहित्य के इतिहास लेखन की पद्धतियॉ।
आदिकाल, मध्यकाल, हिन्दी संत काव्य, हिन्दी कृष्ण काव्य, हिन्दी राम काव्य, रीति काल, आधुनिक काल, द्विवेदीयुग, छायावाद, प्रगतिवाद, प्रयोगवाद।

3. **हिन्दी साहित्य की गद्य विधायें** – हिन्दी उपन्यासः प्रेमचन्द पूर्व उपन्यास, प्रेमचन्द और उनका युग, प्रेमचन्द के परवर्ती प्रमुख उपन्यसकारः–हजारीप्रसाद द्विवेदी, फणीश्वरनाथ रेणु, श्रीलाल शुक्ल, रांगेय राघव।
हिन्दी कहानीः बीसवीं सदी की हिन्दी कहानी और प्रमुख कहानी आंदोलन।
हिन्दी नाटकः हिन्दी नाटक और रंगमंच, विकास के चरण और प्रमुख नाट्यकृतियॉः अंधेर नगरी, चंद्रगुप्त, अंधायुग, आधे–अधूरे, आठवॉ सर्ग, हिन्दी एकांकी।
हिन्दी निबंधः हिन्दी निबंध के प्रकार और प्रमुख निबंधकार– रामचंद्र शुक्ल, हजारीप्रसाद द्विवेदी, कुबेरनाथ राय, विद्यानिवास मिश्र, हरिशंकर परसाई।
हिन्दी की अन्य गद्य विधायें : रेखाचित्र, संस्मरण, यात्रा–साहित्य, आत्मकथा, जीवनी और रिपोर्ताज।

4. **काव्यशास्त्र और आलोचना** – भरत मुनि का रस और उसके प्रमुख व्याख्याकार।
रस के अवयव। साधारणीकरण। शब्दशक्तियॉ और ध्वनि का स्वरूप।
अलंकार – यमक, श्लेष, वक्रोक्ति, उपमा, रूपक, उत्प्रेक्षा, संदेह, भ्रांतिमान, अतिशयोक्ति, अन्योक्ति, समासोक्ति, अत्युक्ति, विशेषोक्ति, दृष्टांत, उदाहरण, प्रतिवस्तूपमा, निदर्शना, अर्थान्तरन्यास, विभावना, असंगति तथा विरोधाभास।

5. **भाषा विज्ञान** :–भाषा परिवर्तन के कारण, ध्वनि परिवर्तन के कारण व दिशाएं, अर्थ परिवर्तन के कारण व दिशाएं, हिन्दी भाषा का विकास। देवनागरी लिपि की विशेषताऐं, हिन्दी शब्द समूह ।

संदर्भ ग्रंथः–

1. हिन्दी साहित्य का इतिहास   –   डॉ. नरेन्द्र
2. संत काव्य   –   परशुराम चतुर्वेदी
3. हिन्दी साहित्य का काव्यकाल   –   डॉ. हजारी प्रसाद द्विवेदी
4. हिन्दी साहित्य की भूमिका   –   डॉ. हजारी प्रसाद द्विवेदी

Dr. C.V. Raman University, Kota, Bilaspur (C.G.)
Subject: संस्कृत

1. वैदिकसाहित्य — देवताओं का परिचय–इन्द्र,अग्नि,विष्णु,रूद्र,उषस्,सवितृ,वरूण,वृहस्पति।
   विषय वस्तु– ऋग्वेद, यजुर्वेद, सामवेद, अथर्ववेद, ब्रह्मण, आरण्यक, उपनिषद्,
   वेदाङ्गों का सामान्य परिचय, निरूक्त, (प्रथम एवं द्वितीय अध्याय) वैदिक एवं लौकिक संस्कृत में अन्तर

2. व्याकरण एवं भाषाविज्ञान — सन्धि,समास,शब्दरूप,धातुरूप,कृदन्त,तद्धित,कारक–सिद्धान्त कौमुदी के अनुसार, भाषा की परिभाषा एवं प्रकार (परिवार मूलक एवं आकृति मूलक) भाषाओं का वर्गीकरण,ध्वनि संबंधी नियम।

3. दर्शन — ईश्वर कृष्ण की सांख्यकारिका–पुरूष–स्वरूप,प्रकृति–स्वरूप,सृष्टिक्रम,
   सदानन्द का वेदान्तसार–अज्ञान, पञ्चीकरण, अध्यारोप, जीवन मुक्ति,
   केशवमिश्र की तर्क भाषा प्रमाण–प्रत्यक्ष, अनुमानः उपमान,शब्द।

4. संस्कृत साहित्य — निम्नलिखित ग्रन्थों का सामान्य अध्ययन–
   पद्य — नैषधीय चरित, शिशुपाल वध, रघुवंश, मेघदूत।
   गद्य — कादम्बरी, दशकुमारचरित, हर्षचरित,।
   नाटक — अभिज्ञान शाकुन्तल, उत्तर रामचरित, वेणी संहारः, मृच्छकटिक।

5. नाट्यशास्त्र — भरत–नाट्यशास्त्र–प्रथमतथा द्वितीय अध्याय
   दशरूपक —प्रथमप्रकाश

6. काव्यशास्त्र — काव्य प्रकाश–काव्य प्रयोजन, काव्यहेतुकाव्य लक्षण, काव्य भेद,
   काव्यशक्ति, अभिहितान्वयवाद,अलंकार–अनुप्रास,उपमा, रूपक, उत्प्रेक्षा, वक्रोक्ति,विभावना,श्लेष,
   ध्वन्यालोक–प्रथमउद्योत

संदर्भ ग्रन्थ सूची
1. वैदिक साहित्य का इतिहास — आचार्य बलदेव उपाध्याय
2. निरूक्त — आचार्य विश्वेश्वर
3. लघु सिद्धान्त कौमुदी — गिरजादत्त त्रिपाठी
4. भाषाविज्ञान — डॉ. भोलानाथ तिवारी
5. काव्य प्रकाश — आचार्य विश्वेश्वर
6. ध्वन्यालोक — आचार्य विश्वेश्वर
7. संस्कृत साहित्य का इतिहास — आचार्य बलदेव उपाध्याय

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Geography

Geomorphology: Origin of the Earth – Theories regarding origin of the earth. Fundamental concepts, Endogenetic and Exogenetic forces; Denudation and weathering, Geosynclines, Continental Drift and plate tectonics, Concept of geomorphic cycle, Landforms associated with fluvial , glacial arid, costal and karts cycles.

1. **Economic Geography:** Sectors of economy, Primary , secondary, tertiary and quaternary, Natural resources : renewable and non- renewable.

2. **Regional Planning & Development :** Regional concept in geography, Concept of planning regions, Types of region, Methods of regional delineation, Regional planning in India,

3. **History of Geographical Thoughts :** General character of Geographic knowledge during the ancient period and medieval period , Foundations of Modern Geography

4. **Climatology & Oceanography:** Composition and structure of the atmosphere, Heat budget of the earth, Distribution of temperature, Atmospheric pressure and general circulation of winds. Ocean deposits, Coral reefs, Temperature and salinity of the oceans, Density of sea water, Tides and ocean currents.

5. **Population & Settlement Geography:** Patterns of world distribution, Growth a density of population , patterns and processes of migration.
   Site , Situation , types, sizes, Spacing, and internal morphology of rural and urban settlements, City-region, primate city, Rank- size rule.

6. **Geography of India:** Physiographic divisions, climate : its regional variations, vegetation types and vegetation regions; Major soil types, Irrigation and agriculture; Population distribution and growth; Settlement patterns; Mineral and power resources, major industries and industrial regions.

Text & Reference Books:

[1]	Climatology & Oceanography	:	Lal and Lal
[2]	Geomorphology	:	Sabindar Singh
[3]	Agriculture Geography	:	Marjit Husen
[4]	Human Geography	:	Chanda

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Economics

1. **Economic Systems** - Capitalism, Socialism and mixed economy.
2. **National Income** -Concept and measurement
3. **Consumer behaviour** - Law of demand , Elasticity of demand, utility analysis and indifference - curve techniques
4. **Producer's behaviour** - Production Function, Laws of Returns, Returns, of Scale cost curves
5. **Price Theory -** Price determination under different maker condition, pricing of factors of production Keynesian and   Modern theory of employment Banking objective and instruments of Central Banking credit policies in a planned developing economy
6. **Types and principles of taxation**. Principles of Public expenditure, objective and instruments of budgetary and fiscal policy in a planned developing economy
7. **International trade**-Theory and policy of international trade , determination of exchange rates ,balance of payment
8. **International Monetary institutions** - I. B.R.D. and I.M.F. Characteristics of under developed economy, human and natural resources, primary,secondary and tertiary sectors in India, mixed economy in India
9. **Agricultural development**- Agricultural Policy. land reforms Green Revolution and its aftermath
10. **Industrial development** - Industrial Policy, Public. and private sectors, Regional distribution of Industries in   India. Pricing policies for agricultural and industrial outputs. Fiscal and momentary policy in India - Objectives, recent budgetary trends, bank nationalization in India. Reserve Bank and monetary policy in India. Recent trends in Inida's foreign trade and balance of payments
11. **Indian Planning** - Objectives and strategies, planned growth and distributive justice eradication of poverty, problems of Indian planning .

Text & Reference Books:

[1] Stigler G. (1996) Theory of Price, 4th Edition, Prentice Hall of India, New Delhi.
[2] Sen A. (1999) Microeconomics: Theory and Application, Oxford University Press, New Delhi.
[3] Kreps David M. (1990), A Course in Microeconomic Theory, Princeton University Press, Princeton.
[4] Samuelson, P.A. and W.O. Nordhaus (1998), Economics, 16th Edition, Tata McGraw Hill, New Delhi.
[5] Verian H. (2000) Microeconomic Analysis, W.W Norton New Yark.
[6] Michale Perkin (1996) Economics, 3rd Edition, Addison Westey Publishing company, Inc. U.S.A.
[7] Koutsoyiannis, A. (1979), Modern Microeconomics, 2nd edition Macmillan Press, London.
[8] Layard, P.R.G. and A.W. Walters (1978) Microeconomic Theory, McGraw Hill, New Yark.
[9] Ahuja H.L. (2003) Advanced Economic theory : Microeconomic Analysis, 13th Edition, S.Chand and Co. Ltd. New Delhi.
[10] Richard A. Musgrave (1989), Public Finance in Theory and Practice McGraw Hill Book Company, New York.
[11] Buchaman J.M. (1970), The Public Finances, Richard D.Irwin, Homewood.
[12] Jha H. (1998), Modern Public Economics, Routledge, London.
[13] Singh S.K. (1986) Public Finance in Developed and Developing Countries, S.Chand and Company Ltd, New Delhi.
[14] Chelliah R.J. (1971), Fiscal Policy in Underdeveloped Countries.
[15] Hemlata Rao (2006) Fiscal Federalism –Issues and Policies, New Countury Publications, New Delhi.
[16] Atkinson A.B. and J.E. Siglitz (1980). Lectures on Public Economics, Tata MacGraw Hill, New Delhi.
[17] Comes R. and T.Sandler (1986) The theory of Externalities, Public Goods and Club Goods, Cambridge University Press, Cambridge.
[18] Duff L. (1997), Government and Market, Orient Longman, New Delhi.
[19] Friedman A. 91986), Welfare Economics and Social Choice Theory, Martins Nighoff, Boston. Topic: 2 & 3
[20] Bird R. And O.Aidman (1967) Reading on Taxation in Developing Countries, The John Hopkins University.

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: Political Science

Political Theory & Thought Indian & Western: Comparative Politics and Political Analysis, Evolution of Comparative Politics as a discipline, nature and scope. Approaches to the study of comparative politics : Traditional, Structural Functional, System and Marxist. Constitutionalism: Concepts, Problems and limitation. Forms Government: Unitary Federal, Parliamentary- Presidential. Organs of Government: Executive, Legislature, judiciary- their Interrelationship in comparative perspective. Party System and Pressure Groups; Electoral System. Bureaucracy – types and roles.

Indian Government and politics. National Movement, Constitutional Development and the Making of Indian Constitution. Ideological Bases of the Indian Constitution , Preamble, Fundamental Rights and Duties and Directive Principles. Constitution as Instrument of Socio- Economic Change, Constitutional Amendments and Review. Structure and Process – I : President, Prime Minister, Council of Minister, Working of the Parliamentary System. Structure and Process – II : Governor, Chef Minister , Council of Ministers, State Legislature. Panchayati Raj Institution: Rural and Urban, their working. Federalism: Theory and Practice in India, Demands of Autonomy and Separatist Movements : emerging trends in center state relation. Judiciary : Supreme Corte, high Courts, Judicial review, Judicial Activism Including Public Interest litigation cases, Judicial Relation.

International Relational; Contending Theories and Approaches to the Study of international Relation ; Idealist Realist, System, Game, Communication and Decision Making. Power, Interest and Ideology in International Relation; Elements of Power ; Acquit ion, Use and Limitation of Power, Perception, formulation and Promotion of National Interest, making, Role and Relevance of Ideology in International relation. Arms and Warms: Nature Causes and types of Warms/conflicts including ethnic disputes, conventional, Nuclear bio- chemical warms, deterrence, Arms control and Disarmament.
Peaceful settlement of disputes, conflict resolution, Diplomacy, World Order and Peace Studies. Cold War, Alliances, Nan Alignment, End of Cold War, Globalization. Rights and duties of International Law, Intervention, Treaty Law, Prevention and abolition of War. Political Economic of International relation; new International Economic Order, North- South Dialogue, South-South Cooperation, WTO, Neo- Colonialism and Dependency. Regional and Sub-regional organizations especially SAARC, ASEAN, OPEC, OAS, United Nation ; Aims, Objectives, Structure and Evaluation of the working of UN, Peace of Development Perspective, Charter Revision, Power Struggle and Diplomacy within UN, Financing and Peace Keeping operation. India's Role in International affairs : India's Relation with its neighbors, Wars, security concerns and pacts, mediatory Role, distinguishing features of Indian Foreign policy and Diplomacy

Text & Reference Books:

[1]   Politics and administration in changing societies-R.K.ARORA
[2]   Comparative public administration- R.K.ARORA
[3]   Bureaucracy Development and change – A.D.PANT AND S.K.GUPTA
[4]   Sociology Thinkers – RavindraNath Mukharji
[5]   political behaviors– H.H.HYMAN
[6]   Theories of international relation – S.BURCHILL
[7]   Political through the ages – Appadorai delhi, Khanna publisher

Dr. C.V. Raman University, Bilaspur (C.G.)

Subject: History

Indian History-

Source - Archaeological Sources, Literary sources, Indus Valley Civilization –origin, date, Extent, characteristics, decline, survival and significance, Vedic period-dating the Vedic social and political institutions, Economic condition, Emergence of Jainism and Buddhism, Foundation of the Maryann Empire-Chandragupta, Asoka and his dhamma, mauryan administration, Economic, art and Architecture, disintegration of the Maryann Empire, Imperial Guptas and Regional State of India.

Medieval Indian History

Source -Archaeological Sources, Literary sources, Administration, The Sultanate– The Gourids, The khaljis, The Tughlaqs and the Lodi's Foundation of the Mughal Empire Babar, Humayu, Sure Decline of the mugal Empire Etc The Vision Nagar and the Brahmanism- Rise Expansion and Disintegration History of Maratha The Maratha Moment the Foundation of Swaraj By Shivaji Socio Religious Moments-Cultural

Modern Indian History –

Source - Archaeological Sources, Literary sources, Concerns in Modern Indian Historiography- imperialist nationalist Marxist subaltern Rice of British Power –Rice of European power the Establishment and Expansion of British Domination Evolution of Central and Provincial Structure Under The East India Company 1773-1853, Local Self Government – Constitutional Development From 1909-1935,Economic and Social Policies **,**

National Movement and Post Independent- (1947-1964)**,** Rice of Nationalism, Revolt of 1857, Rehabilitation After Partition**,** Integration of Indian State – The Kashmir Question **,**The Making of the Indian Constitution.

World History – History of Asia

Research in History - Scope and value of History, Objectivity and Bias in History,

Area of research – Proposed, Sources - Primary/ Secondary in the proposed area in research , Modern historical Writing in the researcher's area of research

Text & Reference Books:

[1] Sharma, R.S., Aspects of Ancient Indian Political Ideas and Institutions, Manohar, reprint

[2] Jha, D.N., Prachin Bharat (in Hindi)

[3] Chandra, Satish, Medieval India (Society, the jagirdari crisis and the village), Macmillan

[4] India Ltd., Madras, 1992.

[5] Curtin, P., Cross-Cultural Trade in World History, Cambridge, 1984

[6] Indian History – A.k. Mittal –Shahitya Bhavan Pub.

[7] History of 20th century- Sanjeev Jain

[8] Indian National Movement- Virkeshwar Prasad

[9] History of Maratha- Luniya

Dr. C. V. Raman University Bilaspur (C.G.)

Subject : Library And Information Science

UNIT-I

Information, Information Science Information Society. Information Transfer Cycle. Intellectual Property Right – Concept, Copyright, Censorship .Law of Library Science ,Resource Sharing and Networking Library Movement and Library Legislation in India Library Association in India and UK. Library Association at International Level – FID, IFLA, UESCO.

UNIT-II

Sources of Information – Primary, Secondary and Tertiary . Biographical Sources, Reference Sources . E-Documents, E-Journals, E-Books. Databases –Bibliographic and Full Text. Reference and information Services . Indexing and Abstracting Services, CAS, SDI .Online Services. Reprographic Services .

UNIT-III

Library Classification – Canons and Principles . Library Classification Schemes CC and DDC. Library Cataloguing - Canons and Principles.Library Cataloguing Codes CCC and AACR-II .Indexing – Pre-Coordinate and Post-Coordinate

UNIT-IV

.Management – Principles Function School of Thought Planning   Organisation Structure .Collection Development .Human Resources Management .Financial Management .Total Quality Management TQM

UNIT-V

Information Technology- Components Impact of IT on Society . Telecommunication .Networking .ISDN. Library Automation .Library Networks .National and International Information Systems .Types of Libraries .Digital Libraries .Virtual Libraries. Role of UGC in the growth and development of libraries and Information Center.

Reference Books

1. Classification , Krishan Kumar, Ess Publication

2. Descriptive Question NET/SLET ,SM Tripathi, Ess Publication

3. Cataloging , SS Agrawal, Hindi Gtanth Acdmi Bhopal

4. Pralekhan Aum Suchana Vigyan , SP Sood RB Publication Jaipur

5. Library Automation , A R. Nai Ess Publication

6. Library Management, Saxena

7. Suchana aum Sandrabh Seva Ke Nven Ayam , S M Trapathi Ess Publication

(5) **Faculty of Information Technology**

Subject Name

(i) Information Technology

(ii)Computer Science

Dr. C.V. Raman University Bilaspur(C.G.)
Subject:- Information Technology

Unit –I
Programming in C and C++: Elements of C-Tokens, identifiers, data types in C. Control structures in C. Sequence, selection and iteration(s), Structured data types in C-arrays, function, union, structure, and pointers. C++ Programming: Elements of C++-Tokens, identifiers, Variables and constants, Data types, Operators, Control statements, Object Oriented Programming Concepts : Class, Object, Instantiation Inheritance, polymorphism and overloading. Functions parameter passing, Constructors and destructors, Templates, Exception.

Unit-II
Data Structure and Graph Theory: Data. Information, Definition of data structure. Arrays, stacks, queues, linked lists, trees, graphs, priority queues and heaps. File Structures: Fields, records and files, Sequential, direct, index sequential and elactive files. Hashing, inverted lists and multi-lists. B trees and B + trees.
Graph: Definition, walks, paths, trails, connected graphs, regular and bipartite graphs, cycles and circuits.

Unit-III
Relational Database Design and SQL: E-R diagrams and their transformation to relational design, **Normalization**- 1NF, 2NF, 3NF, BCNF, 4NF, Data Definition Language(DDL), Data Manipulation Language(DML), Data Control Language(DCL), Database objects: views, indexes, sequences, data dictionary.

Unit-IV
Operating System : Types of operating system, virtual memory, paging, fragmentation, mutual exclusion, critical region, Scheduling : CPU scheduling, I/O scheduling, Resource scheduling/Dead-lock and scheduling algorithms, Banker's algorithm for dead-lock handling.
Artificial Intelligent: AI approach, Breadth first, depth first, A, A*, AO*, performance comparison of search techniques, expert systems, decision support system.

Unit-V
Computer Network: OSI reference model, TCP/IP model, Transmission media: wired and wireless, switching, ISDN, ATM, switch, hub, router, repeater, gateway, cryptography. Routing algorithms, network security tools, congestion control.
Software Engineering: System Development Life Cycle(SDLC), waterfall model, prototypes, spiral model, bottom up and top down models, software reengineering.

Text & Reference Books:
[1]   Operating System Concept by A. Silberschatz, Peter B. Galvin and GargeGange , Wiley Publication.
[2]   Software Engineering by Roger S. Pressman, McGraw Hill International Edition.
[3]   Data Communications and Networking by Behrouz A. Forouzan, Tata McGraw Hill , 2nd Edition.
[4]   Database System Concpts by A. Silberschatz, H. F. Korthand S. Sudarshan, McGraw Hill International Edition, fifth Edition.
[5]   The Complete Reference, C++ by Herbert Schildt, McGraw Hill International Edition.
[6]   Data Structure by Seymour Llpschutz, Tata McGraw Hill Edition.
[7]   Artificial Intelligence by Elaine Rich, Kevin Knight and S. B. Nair, McGraw Hill Pvt. Ltd., 3rd edition.

Dr. C.V. Raman University Bilaspur(C.G.)

Subject: Computer Science

Unit-I

Object Oriented Programming and Data Structure: Object Oriented Programming Concepts : Class, Object, Overloading, Functions parameter passing, Constructors and destructors. Inheritance, Templates, Exception Handling, Data, Information, Definition of data structure. Arrays, stacks, queues, linked lists, trees, priority queues and heaps. File Structures : Fields, records and files. Sequential, direct, index sequential , Hashing, B trees and B +trees.

Unit -II

Computer Arithmetic: Propositional (Boolean) Logic, Predicate Logic, Well-formed-formulae (WFF), I Satisfiability and Tautology. Logic Families: TTL, RTL and C-MOS gates. Boolean algebra and Minimization of Boolean functions. Flip-flops-types, race condition and comparison. Design of combinational and sequential circuits. Representation of numbers : Octal, Hexa. Decimal, and Binary. 2's complement and l's complement arithmetic. Floating point representation.

Unit -III

Relational Database Management System: E-R diagrams and their transformation to relational design, normalization-INF,2NF,3NF,BCNF and 4NF, Limitations of 4NF and BCNF. SQL : Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language(DCL) commands, Database objects like-Views, indexes, sequences, synonyms, data dictionary.

Software Engineering: System Development Life Cycle (SDLC): Steps, Water fall model. Prototypes, Spiral model. Software Metrics : Software Project Management. Software Design, Coding and Testing.

Unit-IV

Computer Networks : Network fundamentals : Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Inter Networks. Reference Models : The OSI Model, TCP/IP model, Internetworking : Switch/Hub, Bridge, Router, Gateways, Concatenated virtual circuits. Tunneling, Fragmentation Firewalls, Routing: Virtual circuits and datagram. Routing algorithms, Congestion control, Network Security: Cryptography-public key, secret key, Domain Name System (DNS)-Electronic Mail and Worldwide Web (WWW), DNS, Name servers, E-mail architecture and Serves.

Unit-V

Operating Systems: Main functions of operating systems, Multiprogramming, multi processing and multitasking, Memory Management: Virtual memory, paging, fragmentation, Scheduling: CPU scheduling, I/O scheduling, Resource scheduling/Dead lock and scheduling algorithms, Banker's algorithm for dead-lock handling.

Data Warehousing and Mining: Data warehouse, Architecture of a data warehouse methodology, Data modeling strategy, OLAP, OLTP, Architectural component of Data warehousing. Data Mining: Extracting models data mining techniques, classification, regression, clustering, summarization.

Text & Reference Books:

[1] Computer System Architecture by M. Morris Mano, Pearson Education India Publication.
[2] Database System Concept by A. Silberschatz, H. F. Korth and S. Sudarshan, McGraw Hill International Edition.
[3] Operating System Concepts by A. Silberschatz, Peter B. Galvin and Garge Gange, Wiley Publication.
[4] Software Engineering by Roger S. Pressman , McGraw Hill International Edition.
[5] The Complete R, C++ by Herbert Schildt, McGraw Hill International Ediion.
[6] Data Structure by Seymour Lipschutz, Tata McGraw Hill Edition.
[7] Data Mining Concept and Techniques, by J. Han,M. Kamber and J. Pei, Morgan Kaufmann Publication.

(6) <u>Faculty of Law</u>

Subject Name

(i)   Law

Dr. C.V. Raman University Bilaspur [C.G.]
Subject : law

Constitution law of India : preamble, fundamental rights & duties, directive principal of state policy, judiciary, emergency, amendment of the constitution.

Legal theory: Nature and sources of law, positivism, sociological, jurisprudence, theories of punishment, rights & duties, possession & ownership.

Law of crime : General principles: nature & definition of crime, common intention & common object, general exceptions, abetment & conspiracy & abetment, culpable homicide, murder, theft, extortion, mischief.

Law of contracts : General principles: valid contract, definition, offer, acceptance & consideration, capacity to contract - minors contract, mistake, fraud, misrepresentation, coercion, undue influence, contingent contract, frustration of contract, breach of contract.

Law of torts: tortuous liability, vicarious liability, contributory negligence, absolute & strict liability.

Family law : Sources of family law in India, marriage, divorce, maintenance.
Public international law: sources of international law, recognition, settlement of international disputes, human rights.

Text & Reference Books:

[1] Constitution Law of India : Dr. V. N. Shukla
[2] Legal Theory : Dr. AnurudhPrashad
[3] Law of Crimes : S. N. Mishra
[4] Law of Contract :Awtar Singh
[5] Law of Tort :RatanLalDhirajLal
[6] Hindu law :Mulla
[7] MushlimLaw :Fazi
[8] Public International Law : Dr. S. K. Kapur, H. O. Agrawal

Instruction for filling the application form

❖ Application form should be filled carefully by the candidate.

❖ Check all the entries in application form.

❖ Fee of application can be paid through cash/DD in favor of Dr. C. V. Raman University, payable at Bilaspur.

❖ The candidate must write his/her name and full address at the back side of the DD.

❖ The application should be submitted to the

Registrar,

Dr. C.V. Raman University,

Kargi Road Kota, Bilaspur (C.G.) 495113

❖ The applicants must attach the photocopy/Xerox of fee receipt/DD with application form.

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Fee Details of Entrance Exam

    ❖ Ph.D - 1500/-
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डॉ. सी.वी. रामन् विश्वविद्यालय

करगी रोड, कोटा, जिला बिलासपुर 495113 (छत्तीसगढ)