

DEPARTMENT OF COMMERCE

CRITERIA 1

Syllabus related To 'Gender', 'Human Values & Rights', and 'Environmental Sustainability'.

1. Gender: We all know that, India is a male dominated country and the Government is taking due care in the area of 'Gender Equality' as female is not at all inferior to Male. It can be done by 'Providing equal rights and opportunities to both the sexes- male as well as female can be explained as gender Equality'.

It has been universally accepted that Gender Equality is an important factor that affects the Socio-Economic Development of any country. As of 2017, Gender Equality is the fifth of Seventeen Sustainable Development Goals (SDG- 5) of The United Nations. In fact, Indian Government has introduced various schemes for the development of women.

As a reputed College for Women, Bhilai Mahila Mahavidyalaya is also performing its best role in Gender Equalisation.

We used to uplift the personality of the girl students by inculcating socio- economic independence among them. We consistently guide our students regarding their, duties responsibilities as well as rights and powers as a responsible Citizen.

In fact, our University curriculum has also been designed with this perspective.

Some of the topics of our Syllabus are as under:

B.Com. Part-1;

Subject: Business Communication:

Unit-1: Basic Forms of Communication, Self-Development & Communication. Development of positive personal Attitudes.

Unit-2: Barriers of Communication

B.Com. part-1

Subject: Business Environment:

Unit-2- Problems of Growth- Social Injustice.

Unit-4- Economic Planning in India – women Empowerment is one of the developmental goals of our five year plans.

B.Com. part-2

Subject: Fundamentals of Entrepreneurship

Unit-3: Entrepreneur Behaviour & Psycho theories and Social Responsibilities.

Unit-5: Role of Entrepreneurs

(Explained about Women Entrepreneurs)

B.Com. Final

Subject: Income Tax

Unit-4: Computation of Tax Liability.

Unit-5: Tax management, Tax Planning.

2.Human Values & Rights:

Human rights are the basic rights and freedom that belong to every person in the world, from birth until death.

The main objectives are:

- a. to develop interaction between society and educational institutions;
- b. to sensitize the citizens so that the norms and values of human rights and duties are realized;
- c. To create awareness, conviction & commitment to values for improving the quality of life through education, and for advancing social and human well being.

Subject: Business regulatory frame Work

B.Com. part-1: Unit-5: Consumer protection Act 1986/2019:

Subject: Business Environment:

Unit-3: Liberalisation, Privatisation and Globalisation.

(Human Values and Rights are the priority in framing LPG.).

Unit-4: Economic Planning in India

(Planning Commission makes 5 year plans not only for the development of economy but also for safeguarding human values).

B.Com. part-2:

Subject: Principles of Management

Unit- 4: Motivation & leading

B.Com. part-2 :

Subject: Company Law

Unit-1: Corporate personalities.

B.Com. Final

Subject-Auditing:

Unit-1 : Auditing and its Importance . Types of Audit: Energy Audit & Green Audit.

Subject- Principles of Marketing

Unit-2:- Consumer Behaviour and Market Segmentation

M.Com. I Sem-

Subject- Management Concept

Unit 4:- Motivation process, Theories of Motivation, Hierarchy theory, Vroom Expectancy Theory.

Unit 5:-Group Dynamics and Team Development.

Subject-Business laws

Unit 2: MRTP Act -1969

UNIT 3: Consumer Protection Act-1986

UNIT 4: FEMA -1999

UNIT 5: WTO, TRIPS, TRIMS

M.com.III sem.

Subject:-Business Environment

Socio-Cultural Environment, Social value, Social Groups, Social Responsibility

M.com. III Sem.

Subject- Business Economics

Unit 4 : Theory of Consumer Behaviour

Professional Ethics:

Professional ethics are principles that govern the behaviour of a person or group in a business environment. Like values, professional ethics provide rules on how a person should act towards other people and institutions in such an environment.

Our University has taken due care about Professional Ethics while designing its Syllabus.

B.Com. Final

Sub: Principles of Marketing;

Unit-2: Consumer behaviour & Market Segmentation.

Subject: Organizational Behaviour

M.com. I sem.

Unit-1: Organizational Behaviour Emergence and Ethical Perspective, Attitudes, Perception, Learning, Personality, Transactional Analysis

Unit-2: Leadership Styles and Theories

M.com. III sem.

Subject:- General Insurance

Unit 5:- Miscellaneous Insurance

Unit-3: Organizational level and types of conflict

Unit-4: transactional analysis in communication

Unit-5: Orgaizational development

M.Com.I sem-

Subject- Management Concept

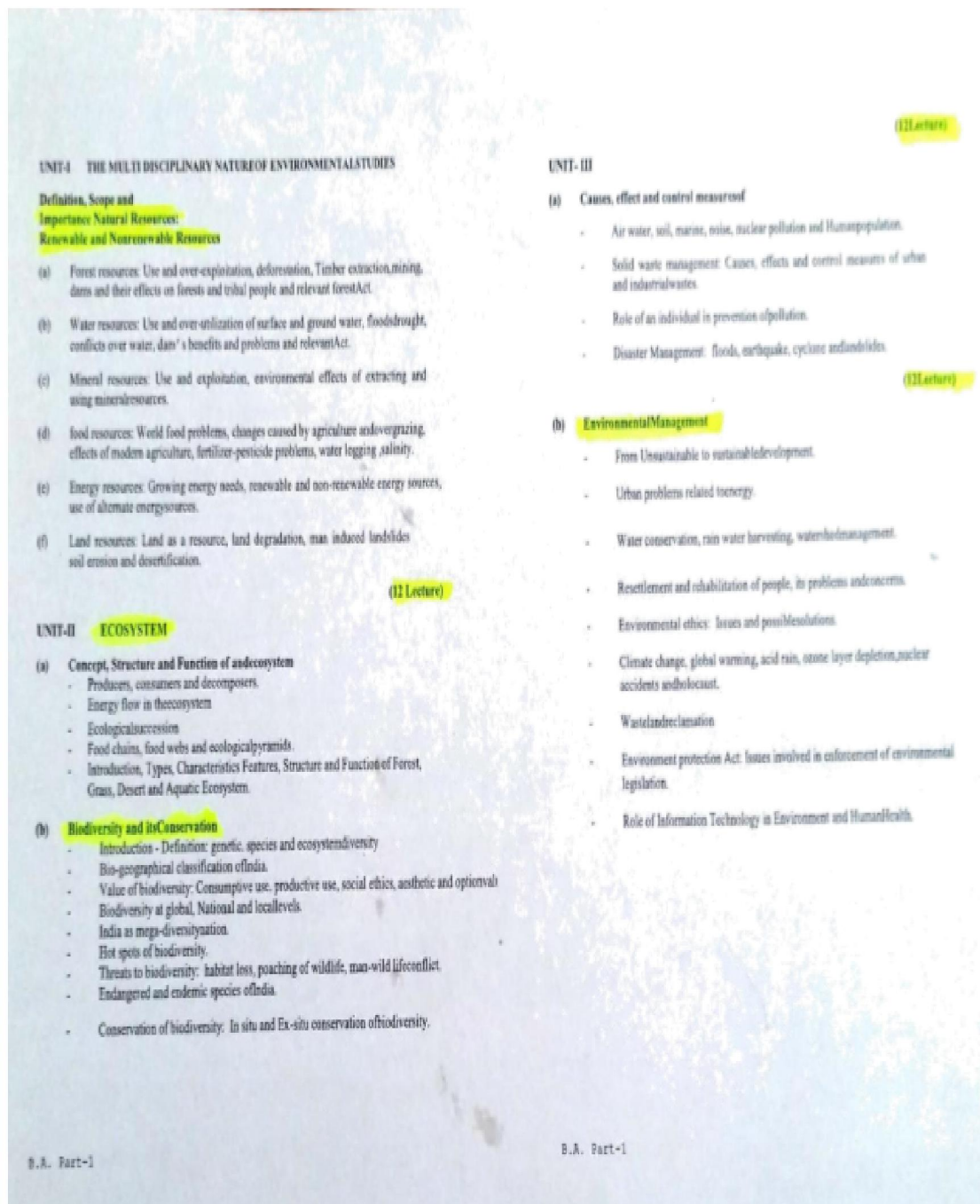
Unit 4:- Motivation process, theories of Motivation, Hierarchy Theory, Vroom's Expectancy Theory.

Unit 5:-Group Dynamics and Team Development

Subject:-Advertiesment and Sales Management

1.3.1 Institution integrated cross- cutting issue relevant to Environment and Sustainability into Curriculum.

Environmental Studies (B.Sc., B.Com, BA, BCA, BBA)



B.Sc. II Industrial Microbiology

PAPER - I ENVIRONMENTAL MICROBIOLOGY AND BIostatISTICS (Paper Code - 0876)

M.M.50

- UNIT-1** Our environment : Soil, water and air. Concept of environment in relation to microbes. Environment included physiological adaptations in microorganisms. Nature of microbial population in soil, water and air. Biogeochemical cycling - Carbon, Nitrogen, Sulphur and Phosphorus.
- UNIT-2** Population interactions : Neutralism, Commensalism, Synergism, Mutualism, Antagonistic relationships. Mycorrhizal associations. VAM and its importance.
- UNIT-3** Nitrogen fixation by symbiotic and non-symbiotic microorganisms. Use of microorganisms as biofertilizers. Mass cultivation of Rhizobium and Azotobacter. Use of blue-green algae as biofertilizers.
- UNIT-4** Liquid waste disposal. Nature of domestic and municipal waste and sewage. Sewage treatment. Solid waste disposal. Methods of disposal of Agricultural waste.
- UNIT-5** Basic idea of probability, normal, binomial and poisson distribution. Mean, Mode and Median. Chi-Square test. Exponential and Logarithmic Functions.

PRACTICALS

1. Isolation of Microorganisms from Air.
2. Isolation of Microorganisms from Water.
3. Isolation of Microorganisms from soil.
4. Determination of MPN of faecal contaminants in water.
5. Measurement & confirmation of E. coli in water sample.
6. Biochemical tests for identification of enteric bacteria.
7. Study of Rhizobium from root nodules.
8. Study of symbiotic and non-symbiotic blue-green algae.
9. Problems based on the determination of Mean, Median and Mode.
10. Problems on Chi-Square Test.
11. Experiments to demonstrate Symbiotic, Antagonistic activities and relations amongst microbes and their interactions with plants.

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B.Sc. III Microbiology

Syllabus Modified / Amended	
Paper- II: Environmental, industrial and Agricultural Microbiology	➤
UNIT-1: AIR MICROBIOLOGY Basics of Aerobiology, Microbes in atmosphere, source of microorganism in air, droplet nuclei, infectious dust, and bio-aerosol. Factors affecting microbial survival in the air. Sampling, collection and culture of microbes from air.	➤
UNIT-2: WATER MICROBIOLOGY Basic concept, water zonation, eutrophication, microbial community in natural water. Determining the quality of water- bacteriological evidence for fecal pollution, indicator of fecal pollution. Water purification methods. Disinfection of potable water supply.	➤
UNIT-3: SOIL MICROBIOLOGY. Soil as an environmental culture medium, microbes of soil, brief account of microbial infection-symbiosis, mutualism, commensalism, competition, predation, parasitism. Microbiological examination of soil. Rhizosphere- concept and role of microbes, rhizosphere and non rhizosphere micro-flora. Mycorrhiza.	➤
UNIT-4: INDUSTRIAL MICROBIOLOGY. Introduction and brief history and scope, important microbes in various industries. Fermentation- definition, types-Aerobic and anaerobic, Batch and SSF. Important products bread, cheese, vinegar, fermented dairy products and oriented fermented food involving microbes. Microbial cells as food. SCP -mushroom cultivation, production of alcohol and fermented beverages, beer and Wine	
UNIT-5: AGRICULTURAL MICROBIOLOGY History of Agricultural Microbiology; Microbes and their importance in maintenance of soil, Biogeochemical cycles, role of microbes in maintaining the fertility of soil. Bio fertilizers –Bacterial, azotobacter and vermiform compost. Soil microorganism -association with vascular plants- phyllosphere, Rhizobium, Rhizoplane associative nitrogen fixation. Bio-fertilizers - Cyanobacterial and Azolla	

M. Sc. Microbiology

THIRD SEMESTER

PAPER III: ENVIRONMENTAL MICROBIOLOGY

Max. Mark 80

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise).

UNIT - I

Distribution and ecology of microorganism: airspora- concepts and components, indoor and outdoor air spora, aeroallergens, Ecosystem- concept, components, food chains, food webs, and trophic levels. Energy transfer efficiencies between trophic levels. Environmental factors influencing the growth and survival of microorganism. Physical factors- temperature, light, osmotic pressure and hydrostatic pressure. Chemical factors- pH, O₂ and CO₂. Microorganisms of extreme environments: Psychrophiles, Mesophiles, thermophiles, acidophiles, alkalophiles, halophiles and specific habitats.

UNIT - II

Microbiology of water: aquatic ecosystems-types- fresh water (ponds, lakes, streams) - marine (estuaries, mangroves, deep sea, hydrothermal vent, saltpans, coral reefs). Zonation of water ecosystems- upwelling- eutrophication- food chain. Drinking and potable water, ecology of polluted water, microbiological treatment processes. Waste water disposal and reclamation. Brief account of major water borne diseases and their control measures.

UNIT - III

Soil microbiology: Micro flora of various soil types (bacteria and nematodes): rhizosphere- phyllosphere – brief account of microbial interactions symbiosis, mutualism, commensalism, competition, amensalism, synergism, parasitism, predation, biological N₂ fixing organisms, symbiotic fungi, Phosphate solubilizing organisms, Ecology of litter decomposition; extracellular enzymes (hydrolases), heterotrophic potential

UNIT -IV

Biodegradation of Cellulose , Lignins and hydrocarbons (superbug). Composting, treatment of solid wastes. Bioaccumulation of metals. Biodeterioration: classification of Biodeterioration of materials (monuments, paints, rubbers, plastics, fuels, lubricants, metals, stone, cosmetics, toiletries). GMO and

Lab Course:

1. BOD & COD estimation in water sample
2. Study of microbial contaminants from water and wastewater.
3. Study of air borne microorganisms using various methods.
4. Assay of anti-fungal and antibacterial properties of agro-chemicals and fungicides.
5. Assessment of quality of oils using saponification value, iodine number, and free fatty acid composition.
6. Study of thermophilic microorganisms.
7. Bacteriological examination of water by multiple-tube fermentation test.
8. Determination of coliforms to determine water purity using membrane filter method.
9. Lipase production test.
10. Isolation of Rhizobium from root nodule.
11. Measurement of spore size using micrometry
12. Isolation of microorganisms from rhizosphere and phylloplane.

Dr. K.K. Patel

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29/05/2021

Dr. K.K. Patel
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Books Recommended:

- Michael, T. Madigan; John. M. Mmmartinko and Jack Parker. Brock. Biology of Microorganisms.
- Microbiology of Extreme Environments edited by Clive Edwards
- Olguin J. Eugenia, Sanchez Gloria & Hernandez Elizabeth. Environmental Biotechnology and Cleaner Bioprocesses. Taylor & Francis

Biotechnology
Semester III
Paper 12: Environmental Biotechnology

M.M. 80

Unit I

1. Environment: Basic concepts and issues.
2. Environmental Pollution: Types of pollution, Methods for the measurement of pollution, Methodology of environmental management — the problem solving approach, limitations.
3. Air pollution and its control through Biotechnology

Unit II

1. Water pollution and its control: Water as a scarce natural resource, sources of water pollution, Need for water management, Measurement of water pollution, waste water collection, waste water treatment — physical, chemical and biological treatment processes
2. Microbiology of waste water treatments, aerobic process: Activated sludge, oxidation ditches, trickling filter, towers, rotating discs, rotating drums, oxidation ponds.
3. Anaerobic process: Anaerobic digestion, anaerobic filters, Up flow anaerobic sludge blanket reactors.

Unit III

1. Treatment schemes for waste waters of dairy, distillery, tannery, sugar, antibiotic industries. Bioremediation
2. Xenobiotics in Environment — Ecological considerations, oil pollution, surfactant pesticides.
3. Biodegradation of Cellulose, lignin and Hydrocarbon (Superbug).
4. GMO and their Impact.

Unit IV

1. Biopesticides in integrated pest management.
2. Solid wastes: Sources and management (composting, wormiculture and methar production).
3. Global Environmental Problems: Ozone depletion, UV — B, green house — effect and acid rain, their impact and biotechnological approaches for management.
4. Role of National organization in Biotechnology
5. IPR- Patent, Trademark copyright, GI, Breeder's Right, Trade secrets .

NOTE: Each theory paper will have five questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit-wise.

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B.ED. SYLLABUS (SEMESTER I)

CORE STUDY PAPER - II: LEARNER AND LEARNING PROCESS

TOTAL MARKS: 80

COURSE OBJECTIVES

: To enable teacher trainees to-

- (i) acquire knowledge and understanding of stages of human development and developmental tasks with special reference to adolescent learners;
- (ii) develop understanding of process of child learning in the context of various theories of learning;
- (iii) understand intelligence, motivation and various types of exceptional children; and
- (iv) develop skills for effective teaching-learning process and use of psychometric assessment.

Course Outline

Unit - I: Nature of Psychology and Learners - Psychology: Its meaning, nature, methods and scope; functions of educational psychology. - Stages of Human Development: Stage specific characteristics and developmental tasks. - Adolescence in Indian Context: Characteristics and problems of adolescents, their needs and aspirations. - Guidance and counselling for adolescents.

Unit - II: Learning - Nature of Learning: Learning theories with specific reference to Piaget's Cognitive Theory and Vigotsky's Social Learning. - Factors influencing learning and teaching process: Learner related, teacher related, process related, and content related.

Unit - III: Intelligence - Nature and characteristics of intelligence and its development. - Theories of intelligence: Two factor theory - Multifactor Theory (PMA) and SI Model. - Measuring intelligence: Verbal, Non-Verbal and Performance tests (one representative of group test and individual test of each), - Creativity: definition & measurement

Unit - IV: Exceptional Children - Concept of exceptional children: Types and characteristics of each type including Children with learning disabilities. - Individual differences: Nature; accommodating Individual differences in the classroom. Learner centered techniques for teaching exceptional children. - Personality: Definition, meaning and nature; development of personality; type and trait theories of personality. - Group Dynamics, Psycho-analysis.

Unit - V: Socialization, Culture and Education in Indian context - History of Indian psychology with specific reference to religions and epics. - Durganand Sinha's Cognitive Development. - Understanding diversity in Indian culture. -----**

B.ED. SYLLABUS (SEMESTER II) CORE STUDY PAPER - V: CURRICULUM AND KNOWLEDG

Unit - III:

Moral Values - Nature of value and morality: Values are what make people consider life worthwhile. Values and morality involve choices which are arrived at by balancing diverse and often contradictory values. Even so, the choice made by one person may be very different from that made by another. Most educators agree that students need to engage seriously with the task of taking moral decisions, they also agree that preaching a set of values is tantamount to indoctrination at best or promoting hypocrisy at worst. - Morality in a multi-cultural, multi-religious and democratic society: Different cultures/religions have different value systems and preferences. Can any one of them become the basis of moral education in schools? Can there be democratic norms of dialogue between different value systems? - Objectives of moral education: Is it to impart information about what is valuable or to train the student how to take moral decisions or is it to instill in the student a desire to be a moral person? Should investigation into why it is difficult to be moral be a part of curriculum

B.ED. SYLLABUS (SEMESTER III) PAPER - VIII: PEDAGOGICAL STUDIES (PART II)

PEDAGOGY OF SOCIAL SCIENCE (PART II)

Unit - X: Inter-Disciplinarity through Projects and Field Visits Projects in Social Sciences should be selected keeping in view the interconnections between the various disciplines that constitute Social Sciences. The interrelationship among various aspects of Social Sciences may be visualised as follows: - Geography and Economics: Transport and communication in a region- assessing current position with reference to development needs. - History and Political Science: Socio-political systems; Women's rights in society. - Economics and History: Agrarian change in India; Industrialisation in India. - History and Geography: Migration of people in a particular region- nature of migration, past and present trends. - Political Science and Geography: Sharing resources between regions/states and nations (e.g. water). - Economics and Political Science: Family budget and impact of change in prices of essential commodities. These projects are just a few examples. Similar projects may be designed by student-teachers for better understanding of various issues.

B.ED. SYLLABUS (SEMESTER IV)
CONTEMPORARY STUDIES PAPER - X:
GENDER, SCHOOL AND SOCIETY TOTAL

MARKS: 80

COURSE OBJECTIVES:

- (i) Understanding the role of culture (apart from biology) as determinants of gender distinction in social living;
 - (ii) Awareness of factors that shape gendered roles in Indian society;
 - (iii) Understand the problems of girl child education in our society;
- (iv) Developing a critical perspective on gender-based discrimination and its effects;
- (v) To provide an introduction to and the development of an understanding of feminist approaches to the social and cultural construction of gender;
- (vi) To develop a critical understanding of intersectionality, including an awareness of gender and its complex intersections with other social and cultural categories, including but not limited to caste, tribe, class, sexuality and ability; and
- (vii) To equip the teacher with the ability to create more meaningful and gender just experiences for her students. Course Outline Unit - I: Gender: Key Concepts- Social Construction of Gender - Examining one's own growing up as a boy or a girl. - Gender, sex, sexuality, patriarchy, masculinity and feminism. - Gender bias, gender roles and stereotyping, and its consequences. - Gender and other forms of inequality in relation with (caste, class, ethnicity, disability etc). - Female sex ratio and child sex ratio.
Unit - II: Gender and Schooling - Schooling of girls (literacy rate, dropout rate, completion rate, etc.) and reasons why girls are not able to complete schooling. - Why do girls feel uncomfortable in schools? - Can schools be different so that more girls can be educated? - Gender bias in curriculum, textbooks, analysis of hidden curriculum. - Critical examination of school and classroom processes- challenging gender biases and stereotypes. - Understanding relationships within the school- child-child, teacher-child and teacher-peer group relationships from the perspective of gender. - Feminization of teaching profession.

Unit - III: Gender and Sexuality - Understanding sexuality (sexual orientation and sexual identity- third gender) and the relationship between power and sexuality. - Violence against women- empirical examples of the graded violence against women, the impact of conflict and violence on the lives of women, efforts to deal with the issue of violence against women. - Legal (sexual and reproductive) rights of women.

Unit - IV: Psychological and Sociological Perspectives - Radical Feminist; - Socialist-Feminist; - Psychoanalytical and other perspectives; - Recent debates.

Unit - V: Strategies for Change - Policy and management. - In the school. - Women's action groups. - Mass media. Suggested themes for transaction of the content (Group discussions and review of case studies etc.) (i) Telling our own 'gendered' stories. (ii) En-culturing 'gendered' roles in upbringing within different kinds of families- case studies. (iii) Gender issues in school education- case studies. (iv) Gender issues manifest in contemporary public spaces- case studies. (v) Responding to various forms of gender discrimination.

B.ED. SYLLABUS (SEMESTER IV) PAPER - XI: LANGUAGE PROFICIENCY (ENGLISH LANGUAGE) TOTAL MARKS: 50 Course Outline Unit - I: Nature of Language (Weightage - 2 questions 5 marks each) - What is Language? - Nature of English Language. - Need and Importance of English language.

B.ED. SYLLABUS (SEMESTER IV)

PAPER - XII: ELECTIVE GROUP –

II XII (F) TEACHING OF VALUES TOTAL

MARKS: 80

COURSE OBJECTIVES: (i) To understand the nature and sources of values, and disvalues. (ii) To understand the classification of values under different types. (iii) To appreciate educational values like democratic, secular, and socialist. Course Outline Unit - I - Nature and sources of values, biological, psychological, social and ecological determinants of values- their bearing on education in varying degrees. Unit - II - Classification of values into various types: Material, social, moral and spiritual values; status of values; how can these be realized through education. Unit - III - Corresponding to values there are evils or dis-values: Material, social, economic, moral and religious evils leading to faithlessness and irreverence; how can education overcome these negative values. Unit - IV - Levels of values realization, how to resolve the conflicts among values; how to work for the integration of values that are embedded in education. - Development of values as a personal and life-long process-teaching of values as an integral part of education. Unit - V - Evaluating that teachers and other school personnel are value laden, students and parents are value laden, curriculum is value laden evaluate. - Value of self-sacrifice vs value of self-centredness. - Values of excellence vs values of ego-centralism. - Values of work vs values of selfishness. - Every teacher or all teachers need to teach values.

PAPER - XI

CHILDHOOD PSYCHOPATHOLOGY

Max. Marks: 80

- UNIT-I** 1. Normality – Meaning, Concept and criteria's of normality
Cultural differences in normal adaptation
Features of normal adaptation
Normal adjustment changes with age
Meaning and criteria's of abnormality.
- UNIT-II** 2. Stress and adaptation to stress
Nature of stress
Types of stress
Sources of stress
Effect of stress in psychological functioning
Effect of stress on physical health Responding to stress
Measurement of stress
Theories of stress
Factors of moderating the impact of the stress
Mental health- Definition, concept, and contents. Importance of mental hygiene.
- UNIT- III** 5. Introduction to psychopathology
History and different models
Etiology of mental disorders - Psycho-social models
Psychopathology of neurotic, stress related and somato form disorders.
Anxiety disorders Dissociative disorders
- UNIT-IV** 6. Obsessive and compulsive disorder
Phobic anxiety disorders
Adjustment disorders and behavioral syndromes associated with psychophysiology disturbances.
- UNIT-V** 9. Psychopathology of psychotic disorders.
Schizophrenia ,Paranoia.
Mood disorders
Psychopathology of personality and behavioral disorders
Specific —personality disorders.
Habit and impulse disorders
Mental and behavioral disorders

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**INTRODUCTION TO RESOURCE MANAGEMENT;
ECOLOGY & ENVIRONMENT (Paper Code-0554)**

Marks : 50

FOCUS :

This course deals with the management of resources in the family with particular reference to mobilising all the resources for achieving the family goals. It also deals with the factors motivating management and management applied to specific resources. The course intends to create awareness, appreciation and understanding of environment. The major environmental issues and problems are to be critically analysed for inculcating environmental consciousness among the learners and to help them take individual/household/community level decision for making the physical environment conducive for family living. The course content has to be taught at an elementary level.

OBJECTIVES :

1. To create an awareness among the students about management in the family as well as the other systems.
2. To recognize the importance of wise use of resources in order to achieve goals.
3. The physical environment and its components and the major issues
4. The impact of human activities on environment
5. The action needed for checking environmental threats

THEORY :

UNIT - I Introduction to Management

Basic concepts of Management

Purpose of Management

Achievement of Goals

Obstacles to the Improvement of Management

Factors affecting management

a. Life style

b. Type of family

c. Family size, stage of family life cycle

UNIT-II Factors Motivating Management

a. Goals, definition, types and utility

b. Values - Importance, sources of values, classification, characteristics, changing values

c. Standards - Definition, classification-quantitative, qualitative, conventional and non-conventional

d. Decision - Role of decision making in management, resource availability

UNIT-III Management Process

a. Meaning and elements of process - planning, controlling the plan and evaluating, decision making

b. Planning - Importance, techniques, types of plan

i. Controlling the plan in action

ii. Phases energizing checking

- Factors in success of the control step

- Suitability

- Promptness
- New decisions
- Flexibility
- iii. Supervisions of delegated plan
 - Types of supervision - direction and guidance
 - Analysis of supervision
- iv. Evaluation - Importance, relationship to goals
 - Types- Informal and formal, overall and detailed
 - Techniques of self-evaluation
 - Evaluation of the whole process of management

Resources in the Family

- a. Types of resources
- b. Factors affecting the use of resources

UNIT-IV

Introduction

- ✓ Meaning and definition of ecology and environment, scope of the subject.

Land

as a resource, energy and mineral resources land pollution - sources, domestic waste major health hazards prevention and control.

Water

Problems and issues : Water pollution and scarcity, pollutants - health hazards and their control

Utility of forests and forest resources, deforestation and its impact, forest conservation.

✓ Air

Composition; air pollutants sources, their health hazards, green house effect

UNIT-V

Energy

Major sources of energy - alternate energy sources and energy conservation measure.

Habitat and Population

Uncontrolled population growth and its impact, control measures.

Environmental Education

Meaning, need and objectives, highlights, role of government, NGOs and educational institutions, national and international agencies.

Environmental Protection

Policies, programmes and legislations

नीतियाँ, कार्यक्रम

PRACTICALS

ANY EIGHT PRACTICALS

1. Visit to Air Quality Monitoring unit of the Municipal Corporation
 2. Visit to water supply station and sewage plant to study the water supply system and the waste water and sewage disposal.
 - ✓ 3. Identify the Food Chain in our daily life.
 - ✓ 4. Study the water cycle and water distribution on earth.
 5. Study the cooling effects of evaporation.
 - ✓ 6. Study the uses of solar energy
- Practicals of Family resource management of B.H.Sc. Part I of Pt. R.S.S. Uni. Raipur.

REFERENCES :

2. Dowdswell, Elizabeth (1997) : Salvaging the Earth : Need for Action. Environmental crisis and humans at risk : priorities for action. P. 20-24 in

BSc final year paper 2

PAPER-II—ECOLOGY AND UTILIZATION OF PLANTS

- UNIT-I** **Plants and environment :** Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota.
Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity), light (photoperiodism, heliophytes and sciophytes) and salinity.
- UNIT-II** **Community ecology :** Community characteristics, frequency, density, cover, life forms, biological spectrum; ecological succession.
Ecosystems : Structure; abiotic and biotic components; food chain, food web, ecological Pyramids, energy flow; biogeochemical cycles of carbon, nitrogen and phosphorus.
- UNIT-III** **Population Ecology :** Growth curves; ecotypes; ecades. Biogeographical regions of India. Vegetation types of India : Forests and Grasslands.

UTILIZATION OF PLANTS

- UNIT-IV** Food plants; Rice, wheat, maize, potato, sugarcane.
Fibres : Cotton and Jute.
Vegetable oils : Groundnut, mustard and coconut.
General account of Sources of firewood, timber and bamboos.
- UNIT-V** **spices :** General account.
Medicinal plants : General account.
Beverages : Tea and coffee.
Rubber.

Suggested Laboratory Exercises - PHYSIOLOGY

1. To study the permeability of plasma membrane using different concentrations of organic solvents.
2. To study of effect of temperature on permeability of plasma membrane.
3. To prepare the standard curve of protein and determine the protein content in unknown samples.
4. To study the enzyme activity of catalase and peroxidase as influenced by pH and temperature.
5. Comparison of the rate of respiration of various plant parts.
6. Separation of chloroplast pigments by solvents method.
7. Determining the osmotic potential of vacuolar sap by plasmolytic method.
8. Determining the water potential of any tuber.
9. Separation of amino acids in a mixture by paper chromatography and their identification by comparison with standards.
10. Bioassay of auxin, cytokinin, GA, ABA and ethylene using appropriate plant material.
11. Demonstration of the technique of micropropagation by using different explants, e.g. axillary buds, shoot meristems.
12. Demonstration of the technique of anther culture.
13. Isolation of protoplasts from different tissues using commercially available enzymes.
14. Demonstration of root and shoot formation from the apical and basal portion of stem segments in liquid medium containing different hormones.

MSc fourth semester paper second

M.Sc. SEMESTER - IV

PAPER - II

POLLUTION AND BIODIVERSITY CONSERVATION

MAX.MARKS-80

UNIT-I

CLIMATE, SOIL AND VEGETATION PATTERNS OF THE WORLD :

Life zones, major biomes, major vegetation types and soil types of the world, barren land.

UNIT-II

POLLUTION, CLIMATE CHANGE AND ECOSYSTEMS :

Air, water and soil pollution:- kinds, sources, quality parameters, effects on plants and ecosystem. Green house gases (Carbon dioxide, methane, nitrous oxide, Chloro fluorocarbons: sources, trends and role), ozone layer, ozone hole, consequences of climate change) Carbon dioxide fertilization, global warming, sea level rise, UV radiation).

UNIT-III

BIOLOGICAL DIVERSITY :- Concepts and levels, status in India, Utilization and concerns, role of biodiversity in ecosystem functions and stability, speciation and extinction, IUCN categories of threat, distribution and global patterns, terrestrial biodiversity hot spots, inventory.

World centers of primary diversity of domesticated plants; The Indo Burmese center, plant introductions and secondary centers.

UNIT-IV

CONSERVATION STRATEGIES

Principles of conservation, extinctions, environmental status of plants based on International union for conservation of Nature.

In situ conservation, International efforts and Indian initiatives, protected areas in India- sanctuaries, national parks, biosphere reserves, Wetlands, Mangroves and coral reefs for conservation of wild biodiversity.

Ex situ conservation : Principles and practices, botanical gardens, field gene bank, seed banks, in vitro repositories, cryo banks, general account of the activities of Botanical survey of India (BSI), National Bureau of plant genetic resources (NBPGR), Indian council of Agriculture research (ICAR), Council of scientific and Industrial research (CSIR), and the department of Biotechnology (DBT) for conservation and non formal conservation efforts.

MSc semester third paper two

M.Sc. SEMESTER - III

PAPER - II PLANT ECOLOGY- I

(ECOSYSTEM AND VEGETATION ECOLOGY)

MAX.MARKS-80

UNIT-I

ECOSYSTEM ORGANISATION:- Structure and functions, primary production (Methods of measurement, global pattern, controlling factors), Energy dynamics (trophic organization, energy flow pathways, ecological efficiencies), Litter fall and decomposition, (mechanism, substrate quality, and climatic factors), global biogeochemical cycles of C, N, P, and S, mineral cycles (pathways, processes and budgets) in terrestrial and aquatic ecosystems.

UNIT-II

ECOSYSTEM STABILITY AND MANAGEMENT

Concept (resistance and resilience), Ecological perturbations (natural and anthropogenic) and their impact on plants and ecosystems, ecology of plant invasion, environment impact assessment, ecosystem restorations. Concept of Sustainable development, sustainability indicators.

UNIT-III

VEGETATION ORGANISATION:-

Concepts of community and continuum, analysis of communities (analytical and synthetic characters), Community coefficients, inter specific associations, ordination, and concept of ecological niche.

UNIT-IV

VEGETATION DEVELOPMENT :-

Temporal changes (cyclic and non cyclic), mechanism of ecological succession (relay floristic and initial floristic composition, facilitation, tolerance and inhibition models), change in ecosystem properties during succession.

REFERENCE BOOKS :

- Smith, R.L. 1996. Ecology and field biology, Harper Collins, New York.
Odum, E.P. 1971. Fundamentals of Ecology, Saunders, Philadelphia.
Odum, E.P. 1983. Basic ecology, Saunders, Philadelphia.
Kormondy, E.J. 1996. Concepts of Ecology, Prentice Hall of India Pvt.Ltd. New Delhi.
Moldan, B. and Billharz, S. 1997 Sustainability indicators, John Wiley and Sons, New York.

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MSc semester third paper one

M.Sc. SEMESTER - III PAPER - I PLANT DEVELOPMENT AND PLANT RESOURCES

MAX.MARKS-80

UNIT-I

Introduction: Unique features of plant development. Metabolism of nucleic acids, proteins and mobilization of food reserves, tropisms; control of cell division, Programmed cell death in the life cycle of plants, Seed germination, Hormonal control of Seedling growth. Seed dormancy, Over coming of seed dormancy, Bud dormancy.

Root development : Organization of root apical meristem (RAM), Cell fates and lineages, Vascular tissue differentiation of root, Lateral roots, Root hairs, Root microbe interaction.

UNIT-II

Shoot development : Organization of shoot apical meristem (SAM), Cytological and molecular analysis of SAM. Control of tissue differentiation; especially Xylem and Phloem, Vascular cambium. Secretory ducts and laticifers, Wood development in relation to environmental factors.

UNIT-III

Leaf development : Development, Phyllotaxy, Control of leaf form, Differentiation of epidermis (with special reference to Stomata and Trichome) and Mesophyll cell. Senescence, Influences of hormones and environmental factors on senescence.

Flower development : Floral characteristics, Flower development, Genetics of floral organ differentiation: Homeotic mutant in *Arabidopsis* and *Antirrhinum*, Sex determination.

UNIT-IV

Plant resources : Origin, Evolution, Cultivation and Uses of (i) Food, Forage and Fodder crops, (ii) Fiber crops, (iii) Medicinal and Aromatic plants, (iv) Vegetable Oil-yielding crops (v) fruits. Important fire-wood, Timber-yielding plants and Non-wood forest products (NFPs) such as bamboos, gums, tannins, dyes and resins.

Department of Chemistry
Bhilai Mahila Mahavidyalaya
M.Sc. IV Semester
Paper- CH-22
Environmental and Applied Chemical Analysis

PAPER NO. CH - 22
ENVIRONMENTAL & APPLIED CHEMICAL ANALYSIS

Max. Marks 80

UNIT-I

AIR POLLUTION MONITORING AND ANALYSIS

Classification of air pollution monitoring levels, air quality, standards and index, monitoring and analysis of selected air borne pollutants: SO₂, NO_x, SPM, Volatile organic compounds, Pb, CO₂, Persistent organic compounds, Hg, carbon and ozone. Air pollution control devices Viz ESP, scrubber technique, baghouse filters etc. Atmospheric chemistry of acid rains, photochemical smog, greenhouse effect, global warming, ozone hole.

UNIT-II

SOIL AND WATER POLLUTION

Soil and water quality standards, monitoring and analysis of selected soil and water contaminants: COD, pesticides, heavy metals, POP's, fluoride, cyanide, nitrate, phosphate, oil & grease, Geobiochemical impact of municipal solid waste, steel plants effluent, domestic sewage. Control devices of water pollutants.

UNIT-III

FOOD ANALYSIS

1. Introduction to general constituents of food- Proximate Constituents and their analysis, Additives- Introduction, types, study of preservatives colors and antioxidants and methods of estimation, adulteration - Introduction, types, test for adulterants.
2. Introduction of standards composition and analysis of following foods: Wheat, Bread, Biscuits, Jam, Jelly, Honey, Milk, Ice Cream, Butter, Cheese, Milk Powder, Oils and Fats, Tea, Coffee, Soft drinks, Alcoholic beverages, Cereal and pulses, Confectionery, Fruits, Vegetables, Egg, Fish, Meat.

UNIT-IV

COSMETICS, CLINICAL AND DRUG ANALYSIS

- A. Introduction of Cosmetics, evaluation of cosmetics materials, raw material and additives, Cosmetics colors, Perfumes in cosmetics, Cosmetics formulating, introduction, standards and methods of analysis- Creams, Face powders, Make-up, Shaving preparations, Bath preparations.
- B. Concepts and principles of analytical methods commonly used in the clinical species: i.e. ammonia, Nitrogen, Ca, Cl, CO₂, Fe, K, Li, Mg, Na, P, urea, glucose.
Method for analysis of proteins (i.e. albumin, bilirubin, creatinine, cholesterol, HDL-cholesterol, triglycerides) and Enzymes (i.e. Alanine Aminotransferase, acid phosphatase, alkaline phosphatase, amylase, aspartate, aminotransferase,

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28.06.21
(Dr. Anila Tripathi)

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28.06.2021
(Dr. C. Bora)

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28.06.2021
(Dr. Rajendra Patel)

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28.06.2021
(Dr. Rajendra Patel)

English Syllabus

1. Curriculum relevant to Professional Ethics.

Part III classes of all faculties English Language Paper II Lesson 'Communication Education and Information Technology'

Part III classes of all faculties English Language Paper II Lesson 'Globalisation and Privatisation'

Part III classes of all faculties English Language Paper II Lesson 'The New Economic Policy'

Part III classes of all faculties English Language Paper II Lesson 'Management of Change'

Part III classes of all faculties English Language Paper II Lesson 'Geo- Economic Profile of Madhya Pradesh'

Part III classes of all faculties English Language Paper II Lesson 'J.C. Bose'

Part III classes of all faculties English Language Paper II Lesson 'Srinivasa Ramanujan'

Part III classes of all faculties English Language Paper II Lesson 'Communication in the Modern Age'

2. Curriculum relevant to Gender Issues.

Part III classes of all Faculties English language Paper II 'Women and Development'

3. Curriculum relevant to Human values and rights

Part I classes of all faculties English Language Paper II Lesson 'The Ramayana and the Mahabharata'

Part I classes of all faculties English Language Paper II Lesson 'Life in Vedic Literature'

Part I classes of all faculties English Language Paper II Lesson 'Where the Mind is Without Fear'

Part III classes of all faculties English Language Paper II Poem 'The Universality of Religion' Lesson 'Fundamental Duties' Lesson 'Aspects of Indian Constitution'

Part III classes of all faculties English Language Paper II Poem 'Democratic Decentralisation Basic Quality of Life'

Part III classes of all faculties English Language Paper II Poem 'Rana Pratap' & 'The Judgement Seat of Vikramaditya'

4. Curriculum relevant to Environment and Sustainability.

Part I classes of all faculties English Language Paper II Poem 'Tree'

Part I classes of all faculties English Language Paper II Lesson 'Where the Mind is Without Fear'

Part I classes of all faculties English Language Paper II Lesson 'The Ideals of Indian Art'

Part I classes of all faculties English Language Paper II Lesson 'The Wonder That was India'

Part I classes of all faculties English Language Paper II Lesson 'The Heritage of Indian Art'

Part I classes of all faculties English Language Paper II Lesson ‘Sonnet – To Science’

Part III classes of all faculties English Language Paper II Poem ‘Three Years She Grew’