

S. G. V. C. Vidya Prasarak Trust's, Matoshri Gangamma Veerappa Chiniwar Arts, Commerce & Science College,

©: 08356220329 FAX: 08356220329

MUDDEBIHAL-586212. Dist. Vijayapur (Karnataka) (Accredited with CGPA of 2.58 on seven point scale at 'B+' Grade)

* email : princmgvc@gmail.com * www.mgvcmbl.in *

Ref. No	. :		Date :

Certificate

This is to certify that following are the programme/ Curriculum/ Syllabus of the courses related to syllabus based project works of last five years.



PRINCIPAL,

M. G. V. C. Arts, Com. & Science College
MUDDEBIHAL - 586212.





RAN GRANAMANIVERSITY BELAGANI

THE COURSE STRUCTURE & SYLLABUS OF UNDER GRADUATE

BACHELOR OF SCIENCE

CHEMISTRY

1ST TO 6TH Semesters

w.e.f.

Academic Year 2020-21 and Onwards
Under

CHOICE BASED CREDIT SYSTEM (CBCS)

M. C. V. C. Arts, Com. & Science College
MUDDEBIHAL - 586212.

3. CHEMISTRY (OPTIONAL)

SIXTH SEMESTER B.Sc. COURSE

Chemistry Paper-I Code: 14BSCCHET61 **Teaching Hours: 50 Hours**

Inorganic Chemistry:

UNIT-I

Coordination compounds -II

09 hours

Crystal field theory(CFT) with reference to octahedral, distorted octahedral(Jahn-Tellar distortion), tetrahedral and square planar complexes, calculation of crystal field stabilization energy, factors affecting 10Dq, consequences of crystal field splitting on ionic radii of M⁺² ions, enthalpy of hydration of M⁺² ions, explanation of colour and magnetic properties of magnetic complexes, limitations of crystal field theory, calculation of magnetic moment using Gouy's method,

UNIT-II

Metal-ligand Equilibria:

05 hours

Stability constant, stepwise and overall formation constants, trends in step wise constants, factors affecting the stability of the metal complexes with reference to the nature of metal ion and ligand.

Chelates - definition, characteristics, factors influencing the stability of metal chelates and importance of chelates.

UNIT-III

Organometallic Chemistry

Introduction, classification of organotransition metal complexes, 18 electron rule with respect to [Fe(CO)5], [Ni(CO)5], [Mn(CO)5]+, ferrocene, structure and bonding in metal olefins (Zeise's Salt).

Organic Chemistry:

UNIT-I

05 hours

Carbohydrates Haworth and conformational formulae of glucose and fructose, mutarotation and its mechanism, osazone formation, Killani's synthesis, Ruff's degradation, epimers and epimerisation with respect to monosaccharides, interconversions of glucose and fructose.



- 04. Determination and saponification value of groundnut/coconut oil.
- 05. Determination of Iodine value of groundnut/coconut oil.
- 06. Estimation of glucose by Benedict's reagent.

B. Physical Chemistry Experiments

- 01. Determination of concentration of given acids mixture (HCl+CH₃COOH) conductometrically using standard NaOH.
- 02. Verification of Beer-Lambert's Law by colorimetric method and calculation of molar extension coefficient of FeCl₃.
- 03. Verification of Beer-Lamberts Law by colorimetric method and calculation of molar extension coefficient of copper sulphate.
- 04. Determination of concentration of strong acid HCl by potentiometric titration against strong solution of NaOH.
- 05. Potentiometric titration of FeSO₄ against K₂Cr₂O₇.
- 06. Determination of the solubility and solubility product of sparingly soluble salts (Silver halides) by potentiometrically.
- 07. Determination of heat of neutralization of strong acid by strong base by water equivalent calorimetric method.
- 08. Determination of dissociation constant of weak acid (acetic acid) Potentiometrically.

Note: For examination:

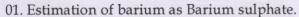
50% students will perform organic estimation and 50% students will perform Physical.

CHEMISTRY PRACTICALS

SIXTH SEMESTER B.Sc. COURSE Chemistry Practical Paper-II Code: 14BSCCHEP62

Total number of hours per week: 04 Internal Assessment=10 Marks Total No. of hours per Semester: 52 Practicals: 40 Marks

A. Gravimetric experiments: Internal assessment-10 Marks and Experiment-30 Marks



- 02. Estimation of aluminium as aluminium oxide.
- 03. Estimation of Iron as ferric oxide.
- 04. Estimation of led as led sulphate.

B. Dissertation/Tour report: 10 marks

The Dissertation/Tour report should be submitted at the time of Chemistry Practical-VIb.

Student shall be assigned either dissertation or Tour report. The topics for dissertation shall be selected either from the V and VI semester theory syllabi or general topics related to chemistry. For Tour report, student shall visit an Industry or Academic/Research institutions like BARC, IISC etc.

Note: For examination:

Gravimetric experiments and Dissertation/Tour report are Compulsory.

4. ELECTRONICS (OPTIONAL)

B. Sc. SEMESTER - VI

Electronics (Optional) PAPER – I

Total Teaching hours: 50, Teaching hours per week: 4 hours

ELE- 6.1: DIGITAL COMMUNICATION, SATELLITE COMMUNICATION & TELEVISION

UNIT - I: PULSE AND DIGITAL COMMUNICATION:

Introduction – sampling theorem, types- PAM, PWM, PPM, PCM – quantization. Digital communication systems – introduction, Digital modulations (FSK, PSK, and ASK). Advantage and disadvantages of digital transmission, Applications. Characteristics of data transmission circuits – Shannon limit for information capacity, Bandwidth requirements, Data transmission speed, Noise, Cross talk, Echo Suppressors, Distortion and Equalizer.

8Hrs.+2Hrs.Problems =10hrs







RAN GAMMAUNIVERSITY BELLEAU

THE COURSE STRUCTURE & SYLLABUS OF UNDER GRADUATE

BACHELOR OF SCIENCE

BOTANY

1ST TO 6TH Semesters

w.e.f.

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CHOICE BASED CREDIT SYSTEM [CBCS] B.Sc. Program with Optional Subject: BOTANY

MUDDEBIHAL - 586212.

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First Semester B.Sc. (Botany)

Paper Code: BOTDSCT1.1 Paper Title: Biodiversity (Microbes, Algae, Fungi and Archegoniate)

Teaching Hours: 4 Hrs / Week Marks: Th-80+IA-20

Total hours: 60 Credits: 3

Unit1:

• Viruses: Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance;

- **Bacteria:** Discovery, General characteristics and cell structure; Reproduction vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.
- Viral Plant Diseases: TMV. Vein clearing, Dwarfing, Yellowing and BBTV disease.
- Bacterial Plant Disease: Citrus canker, Bacterial blight and Crown gall disease.

15 hours

Unit2:

- Algae: General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Classification of algae by smith; Morphology and life-cycles of the following: Nostoc, Oedogonium, Vaucheria, Volvox, Ectocarpus & Batrachospermum. Economic importance of algae.
- Fungi: Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition, nutrition, reproduction and classification; True Fungi-General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota), *Penicillium* (Ascomycota), *cercospora* (Deutoromycota), Puccinia, Agaricus (Basidiomycota);
- Fungal Diseases: Late blight of potato, White rust of *Albugo candida*., Black rust of *Puccinia*, Powdery mildew and Early Blight of Tomato.
 - Symbiotic Associations-Lichens: General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance 15 hours.

Unit 3:

- Introduction to Archegoniate: Unifying features of archegoniates, Transition to land habit, Alternation of generations.
- Bryophytes: General characteristics, adaptations to land habit, Classification, Range of thallus organization. Classification (up to family), morphology, anatomy and reproduction of *Riccia*, *Marchantia*, *Anthoceros* and *Funaria* (Developmental details not to be included). Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

15 hours

Unit 4:

- Pteridophytes: General characteristics, classification, Early land plants (*lepidodendron*, *Lepidocarpon*, *Calamites*). Classification (up family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris*. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance of Pteridophytes.
- **Gymnosperms:** General characteristics, classification. Classification (up to family), morphology, anatomy and reproduction of *Cycas, Gnetum* and *Pinus*. (Developmental details not to be included). Ecological and economical importance.

 15 hours



Second Semester B.Sc. (Botany)

Paper Code: BOTDSCT2.1 Teaching Hours: 4 Hrs / Week Paper Title: Plant Ecology and Diversity of angiosperms

Marks: Th-80+IA-20

Credits: 3

Teaching hours: 60

Unit1:

• Atmosphere: Atmosphere gaseous composition and Atmospheric layers.

• Ecological factors: Soil, weathering, composition, pedogenesis and soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes.

15 hours

Unit 2:

- Plant Succession: Characters; Ecotone and edge effect; Succession; Hydrosere and Xerosere.
- Ecosystem: Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycles; carbon, nitrogen and Phosphorous cycles.
- Phytogeography: Principle, biogeographical zones; Endemism.

15 hours

Unit3

• Morphology of Angiosperms: Root, Stem, leaf and its modifications: inflorescence, flower and fruit.

15 hours

Unit4:

- Plant Taxonomy: Introduction, Identication Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multiaccess
- Classification

Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (upto series), Engler and Prantl (upto series).

• Taxonomic hierarchy

Ranks, categories and taxonomic groups, Taxonomic evidences from palynology, cytology, phytochemistry and molecular data.

Botanical nomenclature

Principles and rules (ICN); ranks and names; binominal system, typification, author citation, valid publication, rejection of names, principle of priority and its limitations.



Third Semester B.Sc. (Botany)

Paper Code: BOTDSCT3.1 Teaching Hours: 4 Hrs / Week

Teaching Hours: 4 Hrs / Week Teaching hours: 60 Paper Title: Plant Anatomy and Embryology

Marks: Th-80+IA-20

Credits: 3

Unit1:

Tissues: Tunica carpous theory and apical theory, meristems and its types; Simple and complex tissues.

• The tissue system: Epidermal tissue system, Ground and fundamental tissue system and Vascular or conducting tissue system.

• Organ: Structure of dicot and monocot root stem and leaf.

15 hours

Unit 2:

- Secondary Growth: Stelar and Extrastelar Secondary growth in root and stem, Wood (heartwood and sapwood). Abnormal secondary growth in Bignonia, Dracaena and Beet root.
- Leaf fall and healing of wounds.
- · Special tissues: Secretary.
- Mechanical tissues in plants

15 hours

Unit3:

- Structural organization of flower: Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultra structure of mature embryo sac.
- Pollination and fertilization: Pollination mechanisms and adaptations; Types of
 pollination: Anemophily, Entemophily, hydrophily. Double fertilization;
 Endosperm types, structure and functions.

15 hours

Unit 4:

- Embryo and endosperm: Dicot and Monocot seed-structure, appendages and dispersal mechanisms. Structure and development of Dicot and Monocot embryo; Embryo- endosperm relationship.
- Apomixis and polyembryony: Definition, Classification and practical applications.



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Teaching hours: 60

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Marks: Th-80+IA-20

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Fourth Semester B.Sc. (Botany)

Paper Code: BOTDSCT4.1 Teaching Hours: 4 Hrs / Week

Teaching Hours: 4 Hrs / Weel

Paper Title: Plant Physiology and Biochemistry

Marks: Th-80+IA-20

Credits: 3

Unit 1:

- Plant-water relations: Solutions, Suspensions, colloids, True solutions, Molarity, Molar, Buffer, Molal, pH, Emulsion and Gel. Permeability, Diffusion, Osmosis, Imbibition, membranes, Endoosmosis, Exoosmosis, osmotic pressure, Turger pressure, Wall pressure, Relation between O.P, D.P.D and T.P. Importance of water, water potential and its components;
- **Transpiration**: Transpiration types, Structure of stomata, Types of stomata, stomatal Movment, Starch sugure Interconversion theory and K⁺ ion pump theory. significance of transpiration; Factors affecting transpiration; guttation,
- Pathways of water movment: Apoplast and symplast.
- Mineral nutrition: Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.

15 hours

Unit 2:

- Ascent of sap, translocation of solutes: Theories on Ascent of sap: Root pressure theory and transpiration pull theory. Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading.
- Photosynthesis: Photosynthetic Pigments (Chl a, b, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Electron transport and mechanism of ATP synthesis; C₃, C₄ and CAM pathways of carbon fixation; Photorespiration, Blackmen's law of Limiting factor and factors affecting photosynthesis.

15 hours

Unit3:

- Respiration: Aerobic cellular respiration: Glycolysis, TCA cycle, Oxidative
 phosphorylation & Pentose Phosphate Pathway. Anaerobic respiration: Alcoholic lactic
 acid and acetic acid fermentation amphibolic pathway. Respiratory quotient of
 carbohydrate, protein and organic acid.
- Enzymes: Structure and properties, Classification, Mechanism of enzyme catalysis Lock and key model and induced fit model, enzyme inhibition and factors affecting enzyme activity.
- Nitrogen metabolism: Nitrogen cycle, Biological nitrogen fixation; Nitrate and ammonia assimilation.

15 hours

Unit 4:

- Plant growth regulators: Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylene. Application of Phytoharmones.
- Plant Movements: Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.
- Structure and classification of Proteins, carbohydrates and Lipids.



Fifth Semester B.Sc. (Botany)

Paper Code: BOTDSET5.1 Teaching Hours: 4Hrs / Week Teaching Hours: 60 Paper Title :Economic Botany and Biotechnology
Marks: Th-80+IA-20
Credits:3

Unit1:

- Origin of Cultivated Plants: Concept of centers of origin, their importance with reference to Vavilov's work.
- Cereals: Origin, morphology and uses of Wheat, Jowar and Rice
- Legumes: General account with special reference to Gram and Soybean
- Pulses: Origin, morphology and uses of Chick pea, Cow pea and Lentil.

15 hours

Unit2:

- Spices: General account with special reference to clove and black pepper (Botanical name, family, part used, morphology and uses)
- Beverages: Tea (morphology, processing, uses)
- Oils and Fats: General description with special reference to groundnut.
- Rubber: General description with special reference to Hevea sp.
- Fiber Yielding Plants: General description with special reference to Cotton (Botanical name, family, part used morphology and uses).

15 hours

Unit 3:

- Microbial genetic manipulation: Bacterial transformation, selection of recombinant and trasformants, genetic improvement of industrial microbes, nitrogen fixers and fermentation technology.
- Immunology: Hybridoma and monoclonal antibodies, ELISA and Immunodetection. Molecular diagnosis of human disease, Human gene Therapy.
- Plant tissue culture: Micropropagation; haploid production through androgenesis and gynogenesis; brief account of embryo & endosperm culture with their applications

15 hours

Unit4:

- Recombinant DNA Techniques: Biotechnology scope, tools of genetic
 engineering, gene cloning techniques, gel electrophoreses, Bioreactor, transgenic
 plants. Agro bacterium and retroviruses as natural genetic engineer. Intellectual
 property rights and possible ethical risks.
- Blotting techniques: Northern, Southern and Western Blotting, DNA
 Fingerprinting; Molecular DNA markers i.e. RAPD, RFLP, SNPs; DNA
 sequencing, PCR and Reverse Transcriptase-PCR.



Fifth Semester B.Sc. (Botany) Elective I

Paper Code: BOTDSET5.2A Teaching Hours: 4Hrs / Week

Teaching Hours:60

Paper Title: Cell and Molecular Biology

Marks: Th-80+IA-20

Credits:3

Unit 1:

· Techniques in Biology

Principles of microscopy; Light Microscopy; Phase contrast microscopy; Fluorescence microscopy; Confocal microscopy; Sample Preparation for light microscopy; Electron microscopy (EM)-Scanning EM and Scanning Transmission EM (STEM); Sample Preparation for electron microscopy; X-ray diffraction analysis.

Cell as a unit of Life

The Cell Theory; Prokaryotic and eukaryotic cells; Cell size and shape; Eukaryotic Cell components.

· Cell Membrane and Cell Wall

The functions of membranes; Models of membrane structure; The fluidity of membranes; Membrane proteins and their functions; Carbohydrates in the membrane; Faces of the membranes; Selective permeability of the membranes; Cell wall.

15 Hours

Unit 2:

- Mitochondria: Structure, marker enzymes, composition; Semiautonomous nature; Symbiont hypothesis; Proteins synthesized within mitochondria; mitochondrial DNA.
- Chloroplast: Structure, marker enzymes, composition; semi autonomous nature, chloroplast DNA.
- ER, Golgi body & Lysosomes: Structures and roles.
- Peroxisomes and Glyoxisomes: Structures, composition, functions in animals and plants and biogenesis.
- Nucleus: Nuclear Envelope- structure of nuclear pore complex; chromatin; molecular organization, DNA packaging in eukaryotes, euchromatin and heterochromatin, nucleolus and ribosome structure (brief).

15 Hours

Unit 3:

Cell Cycle

Overview of Cell cycle, Mitosis and Meiosis; Molecular controls.

• Genetic material

Gene concept: DNA: Miescher to Watson and Crick- historic perspective, Griffith's and Avery's transformation experiments, Hershey-Chase bacteriophage experiment, DNA structure, types of DNA, types of genetic material.

• DNA replication (Prokaryotes and eukaryotes): bidirectional replication, semi-conservative, semi discontinuous RNA priming, Ø (theta) mode of replication, replication of linear, ds-DNA, replicating the 5 end of linear chromosome including replication enzymes.

15 Hours

Unit4:

Transcription (Prokaryotes and Eukaryotes)

Types of structures of RNA (mRNA, tRNA, rRNA), RNA polymerase- various types; Protein synthesis in Prokaryotes and eukaryotes, genetic code.

Regulation of gene expression

Gene concept and protein synthesis, Prokaryotes: Lac operon and Tryptophan operon; and in Eukaryotes.

15 Hours



Sixth Semester B.Sc. (Botany)

Paper Code: BOTDSE6.1 Teaching Hours: 4Hrs / Week Paper Title: Analytical Techniques in Plants
Marks: Th-80+IA-20

Credits :3

Unit1:

· Imaging and related techniques

Principles of microscopy; Light microscopy; Fluorescence microscopy; Confocal microscopy; Use of fluorochromes: (a) Flow cytometry (FACS); (b) Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting; Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freez eetching.

15 Hours

Unit 2:

• Cell fractionation

Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, CsCl₂ gradient, analytical centrifugation, ultracentrifugation, marker enzymes.

Radioisotopes

Use in biological research, auto-radiography, pulse chase experiment.

Spectrophotometry

Principle and its application in biological research.

15 Hours

Unit3:

Chromatography

Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.

· Characterization of proteins and nucleic acids

Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

15 Hours

Unit4:

Biostatistics

Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.

15 Hours



Sixth Semester B.Sc. (Botany)

Paper Code: BOTDSE6.1 Teaching Hours: 4Hrs / Week Paper Title: Analytical Techniques in Plants
Marks: Th-80+IA-20

Credits:3

Unit1:

· Imaging and related techniques

Principles of microscopy; Light microscopy; Fluorescence microscopy; Confocal microscopy; Use of fluorochromes: (a) Flow cytometry (FACS); (b) Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting; Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freez eetching.

15 Hours

Unit 2:

· Cell fractionation

Centrifugation: Differential and density gradient centrifugation, sucrose density gradient, CsCl₂ gradient, analytical centrifugation, ultracentrifugation, marker enzymes.

Radioisotopes

Use in biological research, auto-radiography, pulse chase experiment.

Spectrophotometry

Principle and its application in biological research.

15 Hours

Unit3:

Chromatography

Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.

Characterization of proteins and nucleic acids

Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE

15 Hours

Unit4:

Biostatistics

Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.

15 Hours



Sixth Semester B.Sc. (Botany) Elective III

Paper Code: BOTDSET6.2A

Teaching Hours: 4Hrs / Week Credits:3

Paper Title: Research Methodology Marks: Th-80+IA-20

Unit1:

· Basic concepts of research

Research-definition and types of research (Descriptive vs analytical; applied vs fundamental; quantitative vs qualitative; conceptual vs empirical). Research methods vs methodology. Literature-review and its consolidation; Library research; field research; laboratory research.

15 hours

Unit2:

General laboratory practices

Common calculations in botany laboratories. Understanding the details on the label of reagent bottles. Molarity and normality of common acids and bases. Preparation of solutions. Dilutions. Percentage solutions. Molar, molal and normal solutions. Technique of handling micropipettes; Knowledge about common toxic chemicals and safety measures in their handling.

· Data collection and documentation of observations

Maintaining a laboratory record; Tabulation and generation of graphs. Imaging of tissue specimens and application of scale bars. The art of field photography.

15 hours

Unit3:

Overview of Biological Problems

History; Key biology research areas, Model organisms in biology (A Brief overview): Genetics, Physiology, Biochemistry, Molecular Biology, Cell Biology, Genomics, Proteomics-Transcriptional regulatory network.

Methods to study plant cell/tissue structure

Whole mounts, peel mounts, squash preparations, clearing, maceration and sectioning; Tissue preparation: living vs fixed, physical vs chemical fixation, coagulating fixatives, non- coagulant fixatives; tissue dehydration using graded solvent series; Paraffin and plastic infiltration; Preparation of thin and ultrathin sections.

15 hours

Unit 4:

Plant microtechniques

Staining procedures, classification and chemistry of stains. Staining equipment. Reactive dyes and fluorochromes (including genetically engineered protein labeling with GFP and other tags). Cytogenetic techniques with squashed plant materials.

· The art of scientific writing and its presentation

Numbers, units, abbreviations and nomenclature used in scientific writing. Writingre ferences. Powerpoint presentation. Poster presentation. Scientific writing and ethics, Introduction to copyright-academic misconduct/plagiarism.





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First Semester B.Sc. (Zoology)

Paper Code: ZOODSCT 1.1 Teaching Hours: 4 H / Week

Total hours:60

Paper Title: Animal Diversity

Marks: Th-80+IA-20 Credits:3

UNIT – 1 15 Hours

Kingdom Protista: General characters and classification up to classes with one example for each class, locomotion in Protozoa

Phylum Porifera: General characters and classification up to classes with one example for each class. Canal System in *Sycon*

Phylum Cnidaria: General characters and classification up to classes with one example for each class. Polymorphism

Phylum Platyhelminthes: General characters and classification up to classes with one example for each class. Parasitic adaptations

Phylum Nemathelminthes: General characters and classification up to classes with one example for each class. Life history of *Ascaris*. Parasitic adaptations in roundworms

UNIT – 2 15 Hours

Phylum Annelida: General characters and classification up to classes with one example for each class. Metamerism in Annelida

Phylum Arthropoda: General characters and classification up to classes with one example for each class. Metamorphosis in Insects

Phylum Mollusca: General characters and classification up to classes with one example for each class. Torsion in gastropods

Phylum Echinodermata: General characters and classification up to classes with one example for each class. Water-vascular system in Asteroidea

UNIT – 3 15 hours

Phylyum Chordata: Characters of chordates. Differences between chordates and non-chordates. General features of Protochordata (Brief note on Hemichordata, Urochordata, Cephalochordata)

Agnatha and Gnathostomata: General features of Agnatha and Gnathostomata. Classification of cyclostomes up to classes

Pisces: General features and classification up to living orders. Scales in fihses Migration in Fishes

Amphibia: General features and classification up to living orders. Parental care amphibians

Reptiles: General features and Classification up to living orders. Differences between poisonous and non-poisonous snakes. Snake bite and treatment

UNIT – 4 15 Hours

Aves: General features. Salient features of Passeriformes, Pisciformes, Columbiformes, Mammals: General characters. Salient features of Monotremes, Marsupialia, Insectivora, Rodentia, Perissodactyla, Chirpotera, Edentata, Cetaceae and Primates with one example for each. Ear ossicles in mammals.

Suggested Readings:

- 1. Agarwal V. P. and Dalela R. C. (1975): Textbook of Vertebrate Zoology. Jai Prakashnath Co.
- 2. Barnes, R.D. (1982): Invertebrate Zoology. Fifth edition
- 3. Barnes, R.D. (1982): Vertebrate Zoology. Fifth edition
- 4. Barnes, R.S.K., Calow, P., Olive, P.J.W Golding, D.W. and Spicer, J.I. (2002): The Invertebrates: A
- 5. New Synthesis, III Edition, Blackwell Science
- 6. Barrington E. J. W. (1981): Invertebrate structure and Function. ELBS. Dhami P.S. and Dhami J. K.
- 7. (2000): Chordate Zoology. S. Chand & Co. Dhami P.S. and Dhami J. K. (2000): Invertebrate Zoology. S. Chand & Co.
- 8. Ekambaranatha Iyer M. and Anantakrishnan T. N. (1990): A manual of Zoology. Vol. I. Invertebrata (Part 1 & 2). S. Vishwanathan Pvt. Ltd.
- 9. Ekambaranatha Iyer M. and Anantakrishnan T. N. (1990): A manual of Zoology. Vol. II. Chordata S. Vishwanathan Pvt. Ltd.
- 10. Jordan E. L. and Verma P.S. (1976): Chordate Zoology. S. Chand & Co. Jordan E. L. and Verma
- 11. P.S. (1976): Invertebrate Zoology. S. Chand & Co.
- 12. Kotpal R. L. (1993): Protozoa- Echinodermata (all volumes). Rastogi Publ. Pough H (2004): Vertebrate life, VIII Edition, Pearson International.
- 13. Ruppert and Barnes, R.D. (2006): Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.

Fifth Semester B.Sc. (Zoology)

Paper Code: ZOODSET 5.1

Paper Title: Applied Zoology & Ethology Marks: Th-80+IA-20 Teaching Hours: 4 H / Week

Credits:3

15 Hours UNIT-1

Vermitechnology: Species of Earthworms used in vermitechnology, Vermiculture technique and importance of vermiculture Brief account of Vermicompost, vermiwash and vermicast Aquaculture: Prawn fisheries: Species of prawns, culture of freshwater and marine prawns,

preservation and processing of prawns

Total hours:60

Pearl culture: Pearl producing molluscans, pearl formation, pearl producing sites in India.

Quality and composition of pearl industry: Artificial insertion of nucleus

Pisciculture: Brief technique of fish culture, Composite fish culture, Preservation of fishes and their by-products

15 Hours UNIT-2

Animal husbandry: Poultry: Breeds of fowl, diseases of poultry, maintenance of poultry farm, Backyard and Cage system of rearing Composition of egg and nutritive value of egg Dairy technology: Cattle and Buffalo breeds (both exotic and indigenous), Diseases of cattle and buffaloes. Products and byproducts. Composition of milk and nutritive value of cow milk Parasites: Life history of Entamoeba, Plasmodium, Trypanosoma, Ascaris, Wuchereria Insects of economic importance: Economic importance of Honey bees & silkworms

15 Hours UNIT-3

Introduction to Host-parasite Relationship: Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism

Epidemiology of Diseases: Transmission, Prevention and control of diseases: Tuberculosis, typhoid

Lac culture: Classification and life history of Lac insect (Techardia lacca). Host plants, cultivation of Lac, composition, properties and economic importance

15 Hours UNIT-4

Ethology: Introduction, scope, contributions of Lorenz, Tinbergen and Karl Von Frisch Types of animal behaviour: (1) Innate Behaviour: Taxes, Reflexes, Instincts and Motivation. (2) Learned Behaviour: Habituation, Imprinting, Conditioned, Reflexes and Insight learning (3) Social behaviour: Types of animal society and colony in Honey Bees and Monkey troops (4) Territoriality & Courtship Behaviour in Scorpion, Stickle Back Fish and Peacock (5) Study of nesting behavior and mimicry in animal (6) Biological clock, Circadian rhythm and Chronobiology

Animal communication: Chemical, Visual and Audio. Functions of Signals odors, sounds and light

Parental care: Concepts, Parental care in Fishes, Amphibians and Birds

Sixth Semester B.Sc. (Zoology)

Paper Code: ZOODSET 6.1 Teaching Hours: 4 H / Week

Total hours:60

Paper Title: Reproductive Biolog

Marks: Th-80+IA-20

Credits:3

Unit 1:

15 Hours

Reproductive Endocrinology: Gonadal hormones and mechanism of hormone action, steroids, glycoprotein hormones, and prostaglandins, hypothalamo – hypophyseal – gonadal axis, regulation of gonadotrophins, secretion in male and female; Reproductive System: Development and differentiation of gonads, genital ducts, external genitalia

Unit 2:

Functional anatomy of male reproduction: Outline and histological of male reproductive system in rat and human; Testis: Cellular functions, germ cell, system cell renewal; Spermatogenesis: kinetics and hormonal regulation; Androgen synthesis and metabolism; Epididymal function and sperm maturation; Accessory glands functions; Sperm transportation in male tract

Unit 3:

Functional anatomy of female reproduction: Outline and histological of female reproductive system in rat and human; Ovary: folliculogenesis, ovulation, corpus luteum formation and regression; Steroidogenesis and secretion of ovarian hormones; Reproductive cycles (rat and human) and their regulation, changes in the female tract; Ovum transport in the fallopian tubes; Sperm transport in the female tract, fertilization; Hormonal control of implantation; Hormonal regulation of gestation, pregnancy diagnosis, foeto – maternal relationship; Mechanism of parturition and its hormonal regulation; Lactation and its regulation

Unit 4:

Reproductive Health: Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies; Demographic terminology used in family planning

Sixth Semester B.Sc. (Zoology)

Paper Code: ZOODSET 6.2A

Paper Title: Ecology, Zoogeograph

and Wildlife Conservation

Marks: Th-80+IA-20

Credits:3

Teaching Hours: 4 H / Week

Total hours:60

UNIT-I

15Hours

Ecology: (Part - A)

Earth as living planet, sub divisions of ecology, scope of ecology, biosphere

Abiotic factors: Lightand Temperature (effect on animals and plants)

Biotic Factor: Mutualism, commensalism, amensialism, parasitism, predation, competition

and parasitism

Biogeochemical cycles: Principles and concepts of water, nitrogen, carbon,

oxygen cycles

Community ecology: Community structure, ecological niches, edge effect,

stratification, ecotone

UNIT-II

15 Hours

Ecology: (Part - B)

Habitats: Freshwater habitat Lotic and Lentic systems. Zonation of Sea, Marine Biota, Esturine ecology, Mangrooves. Terrestrial habitat: A brief account of Biomes. Ecological Adaptations of Freshwater, Marine and Terrestrial fauna. Ecological Adaptations of Freshwater, Marine and Terrestrial animals

Population ecology: Density, natality, mortality, age distribution, population growth, types and curves

UNIT-III 15 hours

Zoogeography: Zoogeographical realms of world, a brief account of Wallace's line, means of dispersal, factors affecting the dispersal of animals, continental drift theory, types of distribution of animals, island life, insular fauna, new world marsupials

UNIT-IV 15 hours

Wildlife and its Conservation: Wildlife conservation methods, Wildlife in India, Causes for the depletion of wildlife, Wildlife conservation techniques, methods and measures. Brief account of: IUCN, WWF, Bombay Natural History Society, Indian Board for Wild Life, Red Data Book. Wild Life Act 1972 and its amendments in India, CITES. Project Tiger and Biosphere Reserve. Management of protect areas, Conservation of wetlands, Wildlife ecotourism

Sixth Semester B.Sc. (Zoology)

Paper Code: ZOODSET 6.2A

Paper Title: Ecology, Zoogeograph

and Wildlife Conservation

Teaching Hours: 4 H / Week

Total hours:60

Marks: Th-80+IA-20

Credits:3

UNIT-I

15Hours

Ecology: (Part – A)

Earth as living planet, sub divisions of ecology, scope of ecology, biosphere

Abiotic factors: Lightand Temperature (effect on animals and plants)

Biotic Factor: Mutualism, commensalism, amensialism, parasitism, predation, competition

and parasitism

Biogeochemical cycles: Principles and concepts of water, nitrogen, carbon,

oxygen cycles

Community ecology: Community structure, ecological niches, edge effect,

stratification, ecotone

UNIT-II 15 Hours

Ecology: (Part - B)

Habitats: Freshwater habitat Lotic and Lentic systems. Zonation of Sea, Marine Biota, Esturine ecology, Mangrooves. Terrestrial habitat: A brief account of Biomes. Ecological Adaptations of Freshwater, Marine and Terrestrial fauna. Ecological Adaptations of Freshwater, Marine and Terrestrial animals

Population ecology: Density, natality, mortality, age distribution, population growth, types and curves

UNIT-III 15 hours

Zoogeography: Zoogeographical realms of world, a brief account of Wallace's line, means of dispersal, factors affecting the dispersal of animals, continental drift theory, types of distribution of animals, island life, insular fauna, new world marsupials

UNIT-IV 15 hours

Wildlife and its Conservation: Wildlife conservation methods, Wildlife in India, Causes for the depletion of wildlife, Wildlife conservation techniques, methods and measures. Brief account of: IUCN, WWF, Bombay Natural History Society, Indian Board for Wild Life, Red Data Book. Wild Life Act 1972 and its amendments in India, CITES. Project Tiger and Biosphere Reserve. Management of protect areas, Conservation of wetlands, Wildlife ecotourism





RINI CHUNIMAUNIVERSITY BELARANI

THE COURSE STRUCTURE & SYLLABUS OF UNDER GRADUATE

BACHELOR OF ARTS

GEOGRAPHY

1ST TO 6TH Semesters

w.e.f.

Academic Year 2020-21 and Onwards
Under

CHOICE BASED CREDIT SYSTEM (CBCS)

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G. V. C. Arts, Com. & Science College

MUDDEBIHAL - 586212.







UNIVERSITY, BELAGAVI

'Vidhyasangam'

B. A. /B. Sc. SYLLABUS IN GEOGRAPHY VIth SEMESTER – OPT. THEORY (Compulsory) PAPER- 6.1 - REGIONAL GEOGRAPHY OF INDIA

Objectives: To understand the India in terms of various physical divisions, their important characteristics and intra-regional and inter regional linkages and to analyze natural and human resource endowments and their conservation and management. The study also synthesis the students with development issues and policies and programmes design for regional development.

Course Structure: One Theory and One Practical

Teaching Theory: 04 hours per week

Practical: 03 hours per week.

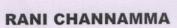
Examination: One Theory paper of 80 Marks and 20 Marks for internal assessment (IA). One Practical of 40 Marks and 10 Marks for internal assessment (IA) (out of 10 IA marks 7 marks for practical record and

journal and 3 marks for attendance).

Units	and 3 marks for attendance). Topic	Teaching Hours	
I	India: Location and Extent, Physiography, Drainage, Climate, Soil and Natural Vegetation and its importance	12	
п	Water Resources and Irrigation: Multipurpose River Projects mainly- Bhakra-Nangal, DVC, Nagarjunasagar, Hirakud projects. Agriculture: Significance and types of Agriculture, Floriculture, Cultivation, distribution and production of Rice, Wheat, Sugarcane, Cotton, Tea and Coffee in India.	12	
III	Mineral Resources: Distribution and Production of Iron ore, Manganese, Coal, Petroleum & Natural Gas. Industries: Industrial regions of India. Distribution and Production of Iron and Steel, Cotton textile, Sugar, Paper, Automobile and IT industry in India.	12	
IV	Transport: Road and Railway, Major Ports: Mumbai, Kolkata, Chennai and Mangalore.		
V	Population: Growth and Distribution of Population, Density of Population and Causes and Consequences of Growth and Distribution. Urbanization in India. Location of the following important elements on the given map of India-hills, rivers, soils, river projects, industries, roads, towns, tourist and urban centers, parks and wild centuries. (Note: Staff in charge should supply the outline map of India and train the students and it has to be treated as compulsory question in semester end examination.)	08	
	Total	52 hours	

Reference:

- 1. Ranjit Thirtha- Geography of India
- 2. Sharma & Coutinho- Economic and Commercial Geography of India
- 3. Tiwari.P.S- Geography of India
- 4. C.B.Mamoria Economic and Commercial Geography of India
- 5. Ranganath Regional and Economic Geography of India (Kannada)
- 6. Mallappa. P- Regional Geography of India (Kannada)





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B. A. /B. Sc. SYLLABUS IN GEOGRAPHY

VIth SEMESTER - THEORY PAPER- (Select any one)
OPT. PAPER 6.2- a: SETTLEMENT GEOGRAPHY

Objectives: The aim is to acquaint the student with spatial and structural characteristics of Human settlement under varied environmental conditions, to enable them to diagnose spatial issues related to urban and rural settlements.

Course structure: One Theory and One Practical

Teaching Theory: 04 hours per week **Practical**: 03 hours per week.

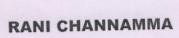
Examination: One Theory paper of 80 Marks and 20 Marks for internal assessment (IA) One Practical of 40 Marks and 10 Marks (7 marks for Journal/Practical records as internal assessment (IA) and 3 marks for attendance.

Units	Topic	Teaching Hours		
I	Definition, Meaning, Nature and Scope of Settlement Geography, Rural as opposed to Urban.			
п	Settlements: types of settlements, Rural Settlement as a service and market center. Central Place theory, Integrated Rural Development Planning (IRDP). Economic characteristics of cities and its functions.	12		
ш	Rural migration and its impact on agriculture and mining. Interaction between Rural-Urban settlements. Urbanization: Meaning, causes and consequences. Trends of Urbanization in India.	12		
IV	Theories of Urban landuse: Concentric zone theory and Sector theory, Multi-nucli theory. Central Business District (CBD) and its Characteristics. Urban amenities and facilities.	12		
v	Urban Fringe, urban continuum, urban sprawl, hinterland, umland and their characteristics. Slums: Meaning, formation of slums and its causes and consequences.			
	Total	52 hours		

References:

- 1. R.B.Mandal- Introduction to Rural settlements.
- 2. H.D.Clout-Rural Geography: An Introductory survey.
- 3. H.Carter- The study of Urban geography
- 4. Jahonson- Intruduction to Urban Geography
- 5. Dickinson R.E. -City and Region
- 6. Mandal R.B. Urban geography.
- 7. Settlement Geography: Siddarth
- 8. Human Geography: Hussain. M.
- 9. R.Y.Singh-Geography of Settlement
- 10. Mallappa. -Human Geography(Kannada)
- 11. Ranganath- Fundamentals of Human Geography (Kannada)
- 12.S.S.Nanjannavar- settlement geography

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B. A. /B. Sc. SYLLABUS IN GEOGRAPHY VIth SEMESTER - THEORY PAPER- (Select any one) OPT. PAPER 6.2 - b : REGIONAL PLANNING AND DEVELOPMENT

Objectives: To understand and evaluate the concept of region in geography and its role and relevance in regional planning, to identify the issues relating to the development of the region through the process of spatial organization of various attributes and their interrelationships. The course also aims to identify the causes of regional disparities and to suggest the measures for the development of the region.

Course structure: One Theory and One Practical

Teaching Theory: 04 hours per week : 03 hours per week. Practical

: One Theory paper of 80 Marks and 20 Marks for internal assessment (IA). Examination

One Practical of 40 Marks and 10 Marks for internal assessment (IA) (out of 10 IA marks 7 marks

for practical record and journal and 3 marks for attendance).

Units	tical record and journal and 3 marks for attendance). Topic			
I	Concept of Region- types and hierarchy of regions - concept of planning- types of planning - approaches to Regional planning. Indicators of development.	10		
II	Basic issues in Regional planning-Gross root level and systems of regional planning, Regional interactions and socio-economic and technological	12		
Ш	Development strategy of planning: Need of planning for natural, social and	10		
IV	Regional Planning Processes – sectoral, temporal, spatial and multi-level planning. Centralized and Decentralized planning; Block and District level planning and Integrated Area Development Planning (IADP).	12		
V	Role of urban centers in regional development. City regions and their problems.Regional Disparities. Planning Regions in Karnataka; Policies and Programmes for backward area development.	16		
	Total			

References:

Itel	of Chicos.	
1.	Ashish Sarakar(2011)	: Regional planning in India.
2	Bhat L. S.	: Aspects of Regional Planning in India.
2.	Chandana. R. C. (2003)	· Regional Planning A Comprehensive Text
3.		: An Introduction to Development and Regional Planning with
4.	Chaudhuri. J. R.(2009)	spatial reference to India
5	Dickinson R.E.(1964)	: City and Region; A Geographical Interpretation.
		Routledge and Keagan Paul.
6.	Galasson John (1974)	: An Introduction to Regional Planning

Misra R.P.Sundaram K.V &V.L.S.Prakasa Rao(1974) : Regional Development Planning In India.

: Regional planning, Concept Publishing company. New Delhi. 8. Misra R.P. (1992) : Regional Planning in India, Allied publishers Ltd., New Delhi M. Chand & V. Puri(1983) : Geography and Planning", Concept Pub. Company, New Delhi 10. Sundaram, K. V. (1985) .---0----



RANI CHANNAMMA



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B. A. /B. Sc. SYLLABUS IN GEOGRAPHY VIth SEMESTER – PRACTICAL- I PAPER – 6.3: INTERPRETATION OF IMD WEATHER REPORTS

PRACTICAL

Units	Topic				
I	Meaning: Elements of Weather and Climate, Brief review of Indian Meteorological Department (IMD) and its functions.	05			
II	Meteorological Instruments: Drawing of meteorological instruments- Thermometer, Barometer, hygrometer, Anemometer, Wind-vane, Rain gauge station & its functions and significance.	05			
Ш	IMD Weather Maps: Drawing of Weather symbols, Season and seasonal variations, Isobars, Isobaric Pattern, Depression, Cyclone, Calm Conditions, Forecasting etc. and its Characteristics (Illustration is necessary)				
IV	Season-wise detail Interpretation of IMD Weather Maps: a. Winter Season (at least two map from each season) b. Summer Season (at least two map from each season) c. Monsoon Season (at least two map from each season) d. Post-Monsoon Season (at least two map from each season)				
	Total	35 hrs.			

Reference:

- 1. R. L. Singh: Elements of Practical Geography.
- 2. Gopal Singh: Practical Geography.
- 3. Dr. Ranganat: Practical Geography (Kannada Version).
- 4. Singh and Kanoj: Practical Geography.
- 5. R. P. Misra and Ramesh: Fundamental of Cartography.
- 6. M. F. Karennavar & S. S. Nanjannavar: Practical Geography.
- 7. M.F. Karennavar & S. S. Nanjannavar: Practical Geography (Kannada Version).
- 8. Pijushkanti Saha & Partha Basu: Advanced Practical Geography

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B. A. /B. Sc. SYLLABUS IN GEOGRAPHY VIth SEMESTER - PRACTICAL- II PAPER - 6.4: FIELD WORK / PROJECT WORK / DISSERTATION

PRACTICAL

Units	Topic	Teaching Hours
I	Preliminary Discussion and selection of the topic. Preparation of Questionnaire.	05
II	Data collection, Tabulation, and	10
III	Methodology.	05
IV	Final report writing.	15
V	Viva-Voce	
	Total	35 hours

Note: In the VI semester, there will be compulsory practical paper i.e. FieldWork/Project/ Dissertation and concerned teacher has to select study Area Village/Block/Taluka/City level) for the preparation of final dissertation report in consultation and approval with the concerned HOD/ Principal of the institution.

The field work/project/ dissertation carries 40 marks, of which 15 marks are allotted to preparation of the dissertation and 25 marks are kept for viva-voce of the candidates.

Method of Examining the Candidate in the Geography Practical Examination

Allotment of Marks For example

	Viva -Voce Marks							
Candi date	Selection of the topic (Maximum 02 Marks)	Aims and Objectives (Maximum 03 Marks)	Data Collection (Maximum 05 Marks)	Method used in Study (Maximum 05 Marks)	Information and Data Presentation (Maximum 05 Marks)	Preparation & Submission of Report (Maximum 15 Marks)	Total (out of 40 marks)	
X	02	02	03	00	04	10	22	
Y	01	01	02	01	02	06	13 fail	
Z	02	03	03	04	03	12	27	

Note: Examiner has to fix marks for the dissertation report max. 15 marks at the time of examination on the bases of quality of the work and 25 marks are allotted to viva-voce of the candidates as above.



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B. A. /B. Sc. SYLLABUS IN GEOGRAPHY VIth SEMESTER - SKILL ENHANCEMENT COURSE (SEC) SEC PAPER - 6.5: GEOGRAPHY OF INDIA

Units	Topic				
I	India: Location and Extent, Physiography, Drainage, Climate, Soil and Natural Vegetation and its characteristics and classification				
II	Agriculture: Significance and types of Agriculture. Major agriculture crops: food crops, pulses, commercial crops, plantation crops, horticultural crops and their method of cultivation with reference to rice, wheat, sugarcane, cotton, tea, coffee and coconut.	08			
ш	Classification of mineral and power resources, distribution of Iron ore, Coal, Petroleum, Hydel Power, Thermal power and solar energy and their uses. Energy crisis in India.	05			
IV	Industries: Industrial regions of India. Distribution of Iron and Steel, Cotton textile, Sugar Industry, automobile industry in India.	06			
v	Population: Growth and Distribution of Population, Density of Population and Causes and Consequences	06			
	Total				

Reference:

1. Ranjit Thirtha- Geography of India

2. Sharma & Coutinho- Economic and Commercial Geography of India

3. Tiwari.P.S- Geography of India

- 4. C.B.Mamoria Economic and Commercial Geography of India
- 5. Ranganath Regional and Economic Geography of India (Kannada)

6. Mallappa. P- Regional Geography of India (Kannada)

7.S.S.Nanjannavar- Geography of India.

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