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B.Com II year

Group - III PAPER - II

FUNDAMENTALS OF ENTREPRENEURSHIP

Proposed Syllabus

OBJECTIVE

It Provides exposure to the students to the entrepreneurial culture and industrial growth so as to preparing them to set up and manage their own small units.

**UNIT-I** Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio-economic environment; Characteristics.

**UNIT-II** Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.

**UNIT-III** Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories. Social responsibility.

**UNIT-IV** Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.

**UNIT-V** Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.



## B.Com Part- I

### Compulsory

#### Group - III

#### Paper - I - BUSINESS ENVIRONMENT

#### Proposed Syllabus

**OBJECTIVE** - To acquainting the students with the emerging issues in business at the national and international level in the light of the policies of liberalization and globalization.

#### UNIT - I

Business Environment : Concept, Components and Importance Economic Trends (overview) : Income : Saving and investment ; Trade and balance of payment, Money and Finance .

#### UNIT - II

Problems of Growth : Unemployment ; Poverty ; Regional imbalances ; Social Injustice ; Inflation ; Parallel economy ; Industrial sickness.

#### UNIT - III

Role of Government ; Monetary and fiscal policy ; Industrial policy ; Industrial licensing. Privatization , Liberalisation, Globalisation Devaluation; Demonitisation; Export-Import policy.

#### UNIT - IV

Economic Planning in India : Need, objectives, Strategy; Review of Previous Plans, Planning Commission.

Foreign Exchange Management Act 2000 : Basic Concept and Main Provisions.

#### UNIT - V

International Environment ; Trends in World trade and the problems of developing countries; Foreign trade and economic growth; International economic groupings - GATT, WTO, UNCTAD, World Bank, IMF; FDI

### Suggested Readings:

1. Agarwal A. N. : Indian Economy, Vikas Publishing House Delhi. (English medium)
2. Khan Farooq A : Business and Society; S. Chand , Delhi. (English medium)
3. Dutt R. and Sundharam K. P.N. : Indian Economy; S. Chand , Delhi. (English medium)
4. Misra S.K. and Puri V.K. : Indian Economy; Himalaya Publishing House, New Delhi. (English medium)
5. Dr. V.C. Sinha; Business Environment; SBPD Publishing House, Agra. (Both Hindi and English medium)
6. Dr. J. K. Jain; Business Environment; Madhya Pradesh hindi Granth Academy; Bhopal. (Hindi medium)
7. Gupta & Pathak; Business Environment; Ram Prasad & Sons, Raipur. (Hindi medium)
8. S.K. Singh; Business Environment; SBPD Publishing House, Agra . (Both Hindi and English medium)



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**Hemchand Yadav Vishwavidyala, Durg (C.G.)**

**Zoology**

**B.Sc. Part – II (2019-20)**

**Paper – I**

**(Anatomy and Physiology)**

Comparative Anatomy of various organ systems of vertebrates:

**Unit: I**

- Integument and its derivatives: structure of scales, hair and feathers
- Alimentary canal and digestive glands in vertebrates
- Respiratory organs : Gills and lung , air-sac in birds

**Unit: II**

- Endoskeleton: (a) Axial Skeleton- Skull and Vertebrae, (b) Appendicular Skeleton Limbs and girdles
- Circulatory System: Evolution of heart and aortic arches
- Urinogenital System: Kidney and excretory ducts

**Unit: III**

- Nervous System: General plan of brain and spinal cord
- Ear and Eye: structure and function
- Gonads and genital ducts

**Unit: IV**

- Digestion and absorption of dietary components
- Physiology of heart, cardiac cycle and ECG
- Blood Coagulation
- Respiration: mechanism and control of breathing

**Unit: V**

- Excretion: Physiology of excretion, osmoregulation
- Physiology of muscle contraction
- Physiology of nerve impulse, Synaptic transmission

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**Zoology**  
**B.Sc. Part – II (2019-20)**

Paper-II

**VERTEBRATE ENDOCRINOLOGY, REPRODUCTIVE BIOLOGY  
BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY**

**Unit: I**

- Structure and function of Endocrine glands
- Hormone receptor
- Biosynthesis and secretion of thyroid, adrenal, ovarian and testicular hormones
- Endocrine disorder of pituitary, thyroid, adrenal and pancreas

**Unit:II**

- Reproductive cycle in vertebrates
- Menstruation, lactation and pregnancy
- Mechanism of parturition
- Hormonal regulation of gametogenesis

**Unit: III**

- Evidences of organic evolution.
- Theories of organic evolution.
- Variation, Mutation, Isolation and Natural selection.
- Evolution of Horse

**Unit:IV**

- Introduction to Ethology: Branches and concept of ethology.
- Patterns of Behaviour, Taxes, Reflexes, Drives and Stereotyped behaviour.
- Reproductive behavioural patterns.
- Drugs and behavior, Hormones and behaviour

**Unit:V**

- Prawn Culture
- Sericulture
- Apiculture
- Pisciculture
- Poultry keeping
- Elements of Pest Control: Chemical & Biological Control

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**Zoology**  
**B.Sc. Part II (2019-20)**  
**Practical**

The practical work in general shall be based on the syllabus prescribed and the students will be required to show the knowledge of the following:

- Study of the representative examples of the different chordates (Classified characters).
- Dissection of various systems of scoliodon-Afferent and Efferent branchial cranial nerves, internal ear.

**Alternative methods: By Clay/Thermacol/ Drawing/ Model etc.)**

- Simple microscopic technique through unstained or stained permanent mount.
- Study of prepared slides histological, as per theory papers.
- Study of limb girdles and vertebrae of Frog, Varanus, Fowl and Rabbit.
- Identification of species and individual of honey bee.
- Life cycle of honey bee and silkworm.
- Exercise based on Evolution and Animal behavior.

**Scheme of Practical Exam**

**Time: 3:30hrs**

• Major dissection (Cranial nerves/efferent branchial vessel)	10
• Exercise based on evolution	05
• Exercise based on applied zoology	05
• Exercise based on animal behavior	04
• Spotting-8 (slides-4,bones-2,specimen-2)	16
• Viva	05
• Sessional marks.	05

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# Hemchand Yadav Vishwavidyala, Durg (C.G.)

## Zoology

### B.Sc. Part I (2019-20)

#### Paper I

#### (Cell Biology and Non-chordata)

##### Unit:I

1. The cell (Prokaryotic and Eukaryotic)
2. Organization of Cell: Extra-nuclear and nuclear  
Plasma membrane, Mitochondria, Endoplasmic reticulum, Golgi body, Ribosome and Lysosome).
3. Nucleus, Chromosomes, DNA and RNA

##### Unit:II

1. Cell division (Mitosis and Meiosis).
2. An elementary idea of Cancer cells And Cell transformation.
3. An elementary idea of Immunity: Innate & Acquired Immunity, Lymphoid organs, Cells of Immune System, Antigen, antibody and their interactions

##### Unit:III

- General characters and classification of Phylum Protozoa, Porifera, and Coelenterata up to order.
- 2. Protozoa: Type study - Paramecium,
- 2. Porifera: Type study - Sycon.
- 3. Coelenterata: Type study - Obelia

##### Unit: IV

- General characters and classification of Phylum Platyhelminthes, Nematelminthes, Annelida and Arthropoda up to order.
- 2. Platyhelminthes and Nematelminthes: Type Study – Fasciola, Ascaris
- 3. Annelida: Type Study - Pheretima.
- 4. Arthropoda: Type Study - Palaemone.

##### Unit:V

- General characters and classification of Phylum Mollusca and Echinodermata up to order.
- 2. Mollusca: Type Study - Pila.
- 3. Echinodermata- Type Study- Asterias (Starfish).

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**Zoology**  
**B.Sc. Part I (2019-20)**  
**Paper II**  
**(Chordata and Embryology)**

**Unit:I**

1. Classification of Hemichordata
2. Hemichordata- Type study-Balanoglossus
3. Classification of Chordates upto orders..
4. Protochordata-Type study - Amphioxus.
5. A comparative account of Petromyzon and Myxine.

**Unit-II**

1. Fishes-Skin & Scales, migration in fishes, Parental care in fish.
2. Amphibia-Parental care and Neoteny.
3. Reptilia- Poisonous & Non-poisonous Snakes, Poison apparatus, snake venom and Extinct Reptiles

**Unit-:III**

1. Birds- Flight Adaptation, Migration, and Perching mechanism, Discuss-Birds are glorified reptiles.
2. Mammals-Comparative account of Prototheria, Metatheria, Eutheria and Affinities.
3. Aquatic Mammals and their adaptations.

**Unit:IV**

1. **Fertilization**
2. Gametogenesis, Structure of gamete and Types of eggs
3. Cleavage
4. Development of Frog up to formation of three germ layers.
5. Parthenogenesis

**Unit:V**

1. Embryonic induction, Differentiation and Regeneration.
2. Development of Chick (a) up to formation of three germ layers, (2) Extra-embryonic membranes.
3. **Placenta in mammals.**

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**Zoology**  
**B.Sc. Part I (2019-20)**  
**Practical**

The practical work will, in general be based on the syllabus prescribed in theory and the candidates will be required to show knowledge of the following:-

- Dissection of Earthworm, Cockroach, Palaemon and Pila
- Minor dissection—appendages of Prawn & hastate plate, mouth parts of insects, radulla of Pila.

**(Alternative methods: By Clay/Thermacol/drawing/Model etc.)**

- Adaptive characters of Aquatic, terrestrial, aerial and desert animals.
- Museum specimen invertebrate
- Slides- Invertebrates, frog embryology, Chick embryology and cytology.

**Scheme of Practical Exam**

**Time: 3hrs**

1. Major Dissection	10 Marks
2. Minor Dissection	05 Marks
3. Comments on Exercise based on Adaptation	04 Marks
4. Cytological Preparation	05 Marks
5. Spots-8 (Slides-4, Specimens-4)	16 Marks
6. Sessional	10 Marks

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B.Sc. III

## ZOOLOGY

### Paper-I (Paper Code-0917)

Ecology, Environmental-biology ; Toxicology ; Microbiology and Medical Zology.

2. Attempting one question from each unit will be compulsory. 100% chice be given.

#### UNIT-I (ECOLOGY)

1. Aims and scopes of Ecology.
2. Major ecosystems of the world-Brief intruduction
3. Population- Characteristics and regualtion of densities.
4. Communities and Ecosystems.
5. Biogeochemical cycles
6. Air and water pollution
7. Ecological succession

#### UNIT-II (ENVIRONMENTAL BIOLOGY)

1. Laws of limiting factors
2. Food chain in a freshwater ecosystem.
3. Energy flow in ecosystem-Trophic levels
4. Conservation of Natural resources
5. Environmental impact Assessment

#### UNIT-III (TOXICOLOGY)

1. Definition of Toxicity
2. Classification of toxicants
3. Principle of systematic toxicology
4. Toxic agents and their action- Metallic and inorganic agents
5. Animal poisons - Snake-venom, Scorpion and bee poisoning
6. Food pisoning

#### UNIT-IV (MICROBIOLOGY)

1. General and Applied microbiology.
2. Microbiology of Domestic water and sewage.
3. Microbiology of milk and milk products.
4. Industrial microbiology.

#### UNIT-V (MEDICAL MICROBIOLOGY)

1. Brief introduction to pathogenic micro-organisurs, Rickettsia, Spirochaetes and Bacteria.
2. Brief account of life-history and pathogenicity of the following pathogens with reference to man ; Prophylaxis and treatment -
  - (a) Pathogenic Protozoans - Entamoeba, Trypanosoma, and Giardia
  - (b) Pathogenic helminths - Schistosoma
  - (c) Nematode Pathogenic parasites of man
3. Vector insects

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## PAPER-II

(Paper Code-0918)

### (GENETIC'S, CELL PHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES)

Note : Attempting one question from each unit will be compulsory, 100% choice be given.

#### UNIT-I (GENETIC'S)

1. Linkage and Linkage maps
2. Varieties of gene expression - Multiple alleles ; lithogenesis ; Pleiotropic genes; gene interaction ; epistasis.
3. Sexchromosome systems, and sex-linkage.
4. Mutation and chromosomal alterations ; meiotic consequences.
5. Human genetics - chromosomal and single gene disorders (somatic cell genetics)

#### UNIT-II(CELL PHYSIOLOGY)

1. General idea about pH and Buffer.
2. Transport across membrane - cell membrane; Mitochondria and Endoplasmic reticulum.
3. Active transport and its mechanism; Active transport in Mitochondria and Endoplasmic reticulum.
4. Hydrolytic enzymes - Their chemical nature, Activation and specificity.

#### UNIT-III (BIOCHEMISTRY)

1. Amino acids and Peptides - Basic structure and biological function.
2. Carbohydrate and its metabolism - Glycogenesis; Gluconeogenesis; glycolysis, Glycogenolysis; Cosi-cycle.
3. Lipid metabolism - Oxidation of glycerol; oxidation of fatty acid.
4. Protein metabolism - Deamination, Transamination, Transmethylation; Biosynthesis of Protein;

#### UNIT-IV (BIOTECHNOLOGY)

1. Biotechnology - Scope and importance.
2. Recombinant DNA and Gene cloning.
3. Cloned genes and other tools of biotechnology.
4. Applications of biotechnology in (i) Pharmaceutical industry, and (ii) Food processing industry.

#### UNIT-V(BIOTECHNIQUE)

Principles and techniques about the following

1. pH meter
2. Colorimeter
3. Microscopy-Light microscopes, Phase contrast and Electron microscopes.
4. Centrifugation
5. Separation of biomolecules by chromatography, and Electrophoresis
6. Histrochemical methods for determination of Protein, Lipids, and carbohydrate

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## PRACTICAL WORK

The Practical work in general shall be based on syllabus prescribed in theory.

The candidates will be required to show knowledge of the following :

1. Estimation of population density, Percentage frequency, Relative density.
2. Analysis of Producers and consumers in grassland.
3. Detection of gram-negative and gram-positive bacteria.
4. Blood group detection (A,B, AB & O).
6. R.B.C., W.B.C. count.
6. Blood coagulation time.
7. Preparation of Hematin crystals from blood of rat.
8. Observation of Drosophila, wild and mutant.
9. Chromatography-Paper or gel.
10. Colorimetric estimation of hemoglobin.
11. Mitosis in onion root tip.
12. Biochemical detection of Carbohydrate, Protein and Lipid.
13. Study of Permanent slides of Parasites, based on theory paper.
14. Working Principles of pH meter, Colorimeter, centrifuge and microscopes.

### SCHEDULE FOR PRACTICALEXAMINATION

Duration : 4 Hrs.

	Max Marks : 50	
1. Haematological Experiment : (R.B.Cs./W.B.Cs. Counting/Blood group detection)	08	marks
2. Ecological Experiment : (Estimation of Population Density/Frequency/relative Density)	06	marks
3. Staining of Gram +ve and Gram -ve Bacteria/cytological experiment : Mitosis in onion root tip	05	marks
4. Biochemical Experiment : (biochemical detection of carbohydrate/protein lipid)	06	marks
5. Chromatography	05	marks
6. Spotting : Study of permanent slides of Parasites : 3	10	marks
Comments on working Principles of pH meter / Calorimeter / centrifuge and Microscope :	05	marks
7. Viva Voce	05	marks
8. Sessional :		

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**PAPER-I (Paper Code-0923)**

**MOLECULAR BIOLOGY AND GENETIC ENGINEERING M.M.50**

**UNIT-I** History of molecular biology, model systems, concepts of molecular biology, Early history of genetic engineering, genetic engineering concepts, ethical issue.

**UNIT-II** Mutation; spontaneous and induced, base pair change, frame shift, deletion, inversion, random duplication, insertion, useful phenotypes (auxotrophs, conditional lethal, resistance). Reversion vs suppression, Ames's test.

**UNIT-III** Function of macromolecules; early observation on the mechanism of heredity, DNA as genetic material; basic mechanism of replication, enzymes involved in replication, Enzymes involved in transcription translation, genetic code, regulation of gene expression-transcription, translation and control of gene expression in microbes.

**UNIT-IV** DNA repair and restriction, types of repair systems, restriction modification systems, types of restriction enzymes, properties and uses, methylation. Biology of plasmids. Bacteriophages, lytic vs lysogenic phages, single standard DNA phages, M 13, restriction modification systems, restriction enzymes.

**UNIT-V** Plasmid and phage vectors, restriction and ligation of vector and passenger DNA, transformation of host cells, selection vs. screening of recombinant colonies, analysis of recombinant clones, DNA sequencing, protein separation and identification methods.

**TEXT BOOKS :**

1. Essentials of Molecular Biology by GM Malacinski.
2. Genes IX by Benjamin Lewin
3. Molecular Biology by TA Brown.

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**UNIT-I** Aerobiology; definition, droplet nuclei, aerosol assessment of air quality, some important air borne diseases caused by bacteria (Diphtheria, Pneumonia, Meningitis), virus (Influenza, Chicken pox, Measels) and fungi (mycosis); their symptoms and preventive measures.

**UNIT-II** Soil microbiology : Physical and chemical characteristics and micro flora of various soil types, rhizosphere, phyllosphere. Brief account of microbial interactions: symbiosis, mutualism, commensalism, competition, amensalism, synergism, parasitism, and predation.

Biofertilizers - biological nitrogen fixation, nitrogenase enzyme, nif genes, symbiotic nitrogen fixation, and non-symbiotic nitrogen fixation (Azotobacter, Azospirillum), VAM-ecto-endo-ectendomycorrhizae.

**UNIT-III** Aquatic microbiology; ecosystem, fresh water (ponds, lakes, stream) and marine, Water zonation : upwelling, eutrophication.

Potability of water - microbial assessment of water quality.

Brief account of water borne diseases (Typhoid, Dysentery, Cholera, Hepatitis) and preventive measures.

**UNIT-IV** Food spoilage and food borne infections.

A brief mention about biodegradation, xenobiotics, bioaccumulation, biopesticides and deterioration.

General concept of industrial microbiology and their applications.

**UNIT-V** Waste Treatment : types of wastes, characterization of solid and liquid waste, waste treatment solid saccharification, gasification, composting.

Liquid waste treatment - aerobic, anaerobic primary, secondary and tertiary methods.

Useful byproducts, mushroom, fuel, fertilizer, Biodegradation of industrial waste.

**REFERENCES :**

1. Food Microbiology by WC Frazier and D Westhoff.
2. Agricultural Microbiology by Bhagyaraj and Rangaswamy.
3. Bioremediation by KH Baker and DS Herson.
4. Scott's Diagnostic Microbiology by EJ Baron.



## PRACTICAL FOR B.SC. PART III

### (MICROBIOLOGY)

- Characterization of genetic markers of known bacterial strain Isolation of DNA from bacteria  
Isolation of plasmid DNA  
Simple cloning using plasmid DNA as vector and transformation of competent E. coli Electrophoresis of protein / DNA.  
Isolation of microorganisms from air, soil and water.  
Isolation of pathogenic microorganisms.  
Study of rhizospheric and phyllospheric microbes from economically important plants.  
Biodegradation of some organic molecules.  
Microbial assessment of potable water.  
Analysis of sewage waste, solid waste (garbage).  
Isolation of aquatic fungi (zoosporic) by baiting technique.  
Isolation of keratinophilic fungi soil by baiting technique  
Demonstration of bacterial antagonism.  
Microscopic observation of root colonization by VAM fungi.

### SCHEME FOR PRACTICAL EXAMINATION

Time : 4 hours

M.M. : 50

- |   |            |
|---|------------|
| 1. Characterization and identification of microorganism from given source/<br>Isolation of plasmid DNA/Genomic DNA    | 15         |
| 2. Biochemical identification of some biodegraded organic molecules/<br>Microbial assessment of potable water/BOD/COD | 10         |
| 3. Spotting (1-5)   | 10         |
| 4. Viva-Voce  | 05         |
| 5. Sessional  | 10         |
| <b>Total</b>  | <b>150</b> |

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## B.Sc.-II (BOTANY) PAPER-I

### (PLANT TAXONOMY, ECONOMIC BOTANY, PLANT ANATOMY AND EMBRYOLOGY)

#### UNIT-I

Bentham and Hooker system of classification. Binomial Nomenclature, International Code of Nomenclature for Algae, Fungi, and plants (IUCN), Typification, numerical Taxonomy and chemotaxonomy. Preservation of Plant material and Herbarium techniques. Important botanical gardens and herbaria of India, Kew Botanical garden, England.

#### UNIT-II

Systematic position, distinguishing characters and economic importance of the following families, Ranunculaceae, Magnoliaceae, Brassicaceae, Rosaceae, Papaveraceae, Caryophyllaceae, Rutaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Malvaceae, Convolvulaceae, Orchidaceae, Acanthaceae, verbenaceae, Lamiaceae, Asteraceae, Fabaceae, Euphorbiaceae, Poaceae and Liliaceae.

#### UNIT-III

Economic Botany: Botanical name, family, part used and uses of the following economically important plants, fiber yielding plants; Cotton, jute, sun, hemp, coir. Timber yielding plants: Sal, Teak, Shisham and Pine. Medicinal plants: Kalmegh, Ashwagandha, Ghritkumari, Giloy, Brahmi, sargandha, ---of medicinal plants of C.G. Food plants: Pearl millet, Buck of wheat, Sorghum, Soyabean, gram, Ground nut, Sugarcane and Potato. Fruit plants: Pear, Peach, Litchi. Spices: Cinnamon, Turmeric, Ginger, Asafoetida and Cumin. Beverages : Tea, Coffee Rubber Cultivation of important flowers: Chrysanthemum, Dahelia, Biodiesel plants Jatropha, Pongamia Ethnobotany in context of Chhattisgarh.

#### UNIT-IV

Plant Anatomy: Root and shoot apical meristems theories of root and shoot apex organization, permanent tissues, anatomy of root, stem and leaf of dicot and monocot, secondary growth in root and stem, Anatomical anomalies in the primary structure of stems (Nyctanthes, Boerhaavia, Casuarina), Anamolous secondary growth in Dracaena, Bignonia, Laptadenia.

#### UNIT-V

Embryology: Flower as a reproductive organ, anther, microsporogenesis, types of ovules, megasporogenesis, development of male and female gametophyte, pollination, mechanisms, self incompatibility, fertilization, endosperm, embryo, polyembryonoy, apomixes and parthenocarpy.

#### Books Recommended:

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## PRACTICAL SCHEME

TIME: 4 Hrs.

M.M. : 50

1.	Anatomy	08
2.	Economic Botany	04
3.	Physiology	08
4.	Ecology	10
5.	Spotting	10
6.	Viva-Voce	05
7.	Project Work/ Field Study	10

(Dr. J.N. Verma)

Proff. & Head

Govt. D.B. Girls PG College

Raipur, (C.G.)

(Dr. Rekha Pimpalgaonkar)

Proff. & Head

Govt. N PG Science College

Raipur, (C.G.)

(Dr. Ranjana Shrivastava)

Proff. & Head

Govt. VYTPG Science College

Raipur, (C.G.)

(Mrs. Sanchal Moghe)

Govt. Bilasa Girls College, Bilaspur

(Mr. Shivakant Mishra)

(Mr. Sudheer Tiwari)

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**B.Sc.-II (BOTANY) PAPER-II**  
**(ECOLOGY AND PLANT PHYSIOLOGY)**

**UNIT-I**

Introduction and scope of ecology, environmental and ecological factors, Soil formation and soil profile, Liebig's law of minimum, Shelford's law of tolerance, morphological and anatomical adaptations in hydrophytes, xerophytes and epiphytes.

**UNIT-II**

Population and community characteristics, Raunkiaer's life forms, population interactions (e.g. Symbiosis, Amensalism etc.), succession, ecotone and edge effect, ecological niches, ecotypes, ecads, keystone species

Concept of ecosystem, trophic levels, flow of energy in ecosystem, food chain and food web, concept of ecological pyramids

Biogeochemical cycles: carbon cycle, nitrogen cycle and phosphorus cycle

**UNIT-III**

Plant water relations: Diffusion, permeability, osmosis, imbibitions, plasmolysis, osmotic potential and water potential, Types of soil water, water holding capacity, wilting, Absorption of water, theories of Ascent of sap, Mineral nutrition and absorption, Deficiency symptoms, Transpiration, stomatal movement, significance of transpiration, Factors affecting transpiration, guttation.

**UNIT-IV**

Photosynthesis: Photosynthetic apparatus and pigments, light reaction mechanism of ATP synthesis. C<sub>3</sub>, C<sub>4</sub> CAM pathway of carbon reduction, photorespiration, factors affecting photosynthesis.

Respiration: Aerobic and anaerobic respiration, Glycolysis, Krebs's cycle, factors affecting respiration, R.Q.

**UNIT-V**

Plant growth hormones: Auxin, Gibberellin, Cytokinin, Ethylene and Abscisic acid. Physiology of flowering, Florigen concept, Photoperiodism and Vernalization. Seed dormancy and germination, plant movement.

**Books Recommended:**

Koromondy, E.J. *Concepts of Ecology*, Prentice Hall, USA

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Singh, JS Singh SP and Gupta SR. *Ecology and Environmental Science and Conservation*, S. Chand Publishing, New Delhi

Sharma, PD. *Ecology and Environment*, Rastogi Publications, Meerut

Hopkins, WG and Huner, PA. *Introduction to Plant Physiology*, John Wiley and Sons.

Pandey SN and Sinha BK, *Plant Physiology*, Vikas Publishing, New Delhi

Taiz, L and Zeiger. E. *Plant Physiology*, 5<sup>th</sup> edition, Sinauer Associates Inc. M.A, USA

Srivastava, HS *Plant Physiology and Biotechnology*, Rastogi Publications, Meerut

### B.Sc. II (BOTANY)

#### Practical

1. Taxonomy: Detailed description and identification of locally available plants of the families as prescribed in the theory paper.
2. Economic Botany: Identification and comment on the plants and plant products belonging to different economic use categories
3. Preparation of Herbarium of local wild plants.
4. Quantitative vegetation analysis of a grassland ecosystem.
5. Anatomical characteristics of hydrophytes and xerophytes.
6. Demonstration of root pressure.
7. Demonstration of transpiration.
8. Demonstration of evolution of O<sub>2</sub> in photosynthesis, factors affecting of photosynthesis.
9. Comparison of R.Q. of different respiratory substrates.
10. Demonstration of fermentation.
11. Determination of BOD of a water body.
12. Demonstration of mitosis.

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# हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

बी.ए. प्रथम वर्ष

इतिहास

प्रश्न पत्र - प्रथम

भारत का इतिहास, प्रारंभ से 1206 ई. तक

इकाई-1

1. भारत की भौगोलिक संरचना
2. भारतीय इतिहास के स्रोतों का सर्वेक्षण
3. पूर्ण पाषाण काल एवं उत्तर पाषाण काल

इकाई-2

4. हड़प्पा सभ्यता- निर्माता, प्रसार, नगर योजना, राजनीतिक, सामाजिक, आर्थिक संरचना

5. ऋग्वैदिक काल - राजनीतिक, सामाजिक, आर्थिक

6. ईसा पूर्व छठवीं शताब्दी का भारत - महाजनपद काल

7. जैन एवं बौद्ध धर्म

8. सिकंदर का आक्रमण और उसका प्रभाव

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9. चंद्रगुप्त मौर्य एवं अशोक

10. मौर्य प्रशासन, कला एवं संस्कृति, अशोक का धम्म

11. मौर्योत्तरकाल - शुंग, कुषाण एवं सातवाहन

12. संगमयुग- साहित्य, संस्कृति, चोल एवं पाण्ड्य

इकाई-4

13. गुप्तयुग- समुद्रगुप्त की विजयें एवं चंद्रगुप्त द्वितीय, प्रशासन, आर्थिक, सामाजिक, सांस्कृतिक दशा

14. राजपूतों की उत्पत्ति एवं प्रशासनिक तथा सामाजिक विशेषताएं

15. पल्लव, चालुक्य, वर्धन, पाल, राष्ट्रकुट

16. भारत का दक्षिण पूर्व एशिया एवं श्रीलंका से संबंध

17. मोहम्मद बिन कासिम, महमूद गजनवी एवं मुहम्मद गोरी का आक्रमण

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18. छत्तीसगढ़ का परिचय- नामकरण एवं भौगोलिक स्थिति

19. छत्तीसगढ़ के प्रमुख क्षेत्रीय राजवंश-पाण्डुवंश, शरभपुरीय,

20. छत्तीसगढ़ के प्रमुख राजवंश- नलवंश, छिन्दक नागवंश,

21. दक्षिण कोसल के कलचुरी वंश, राजनीतिक एवं प्रशासनिक व्यवस्था

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# हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

बी.ए. प्रथम वर्ष

इतिहास

प्रश्न पत्र – द्वितीय

विश्व का इतिहास—1453 ई. से 1890 ई. तक

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1. यूरोप में आधुनिक युग की विशेषतायें, पुनर्जागरण
2. धर्म सुधार एवं प्रति धर्म सुधार आंदोलन
3. राष्ट्रीय राज्यों का उदय स्पेन, फ्रांस
4. राष्ट्रीय राज्यों का उदय इंग्लैण्ड, रूस

इकाई-2

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2. औद्योगिक क्रान्ति
3. इंग्लैण्ड में गृह युद्ध : घटनाएँ, कारण एवं परिणाम
4. गौरव पूर्ण क्रांति (1688)

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1. अमेरिका का स्वतंत्रता संग्राम
2. फ्रांस की क्रान्ति के कारण एवं प्रभाव
3. नेपोलियन युग
4. विएना कांग्रेस

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2. यूरोप में 1830 ई. एवं 1848 ई. की क्रान्ति
3. इंग्लैण्ड में उदारवाद 1832 एवं 1867 ई. का सुधार अधिनियम
4. पूर्वी समस्या— कारण, क्रीमिया युद्ध, बर्लिन सम्मेलन

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2. जर्मनी का एकीकरण
3. बिस्मार्क की गृह नीति
4. बिस्मार्क की विदेश नीति

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# हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

बी.ए. द्वितीय वर्ष

इतिहास

प्रश्न पत्र – प्रथम

प्रश्न पत्र का नाम – भारत का इतिहास 1206 ई. से 1761 ई. तक

इकाई-1

1. सल्तनतकालीन एवं मुगलकालीन इतिहास के स्रोत
2. दास वंश- ऐबक, इल्तुतमिश, बलबन
3. खिलजी वंश- अलाउद्दीन खिलजी-सैनिक उपलब्धियां, राजस्व व्यवस्था एवं बाजार नियंत्रण
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2. शेरशाह सूरी का प्रशासन
3. अकबर की राजपूत नीति
4. मुगल शासकों की धार्मिक नीति – अकबर से औरंगजेब तक

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2. मध्यकालीन सामाजिक एवं आर्थिक दशा
3. भक्ति आंदोलन
4. सूफीवाद

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2. विजयनगर राज्य
3. बहमनी राज्य
4. शिवाजी का प्रशासन

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1. पेशवा- बालाजी विश्वनाथ, बालाजी बाजीराव
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3. मराठों के अधीन छत्तीसगढ़ – बिम्बाजी भोसले
4. छत्तीसगढ़ में मराठा प्रशासन

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# हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

बी.ए. द्वितीय वर्ष

इतिहास

प्रश्न पत्र – द्वितीय

विश्व का इतिहास 1890 ई. से 1964 ई. तक

इकाई-1

1. विलियम द्वितीय की विश्व राजनीति
2. अफ्रीका का विभाजन
3. जापान का आधुनिकीकरण- मेईजी पुनर्स्थापना एवं जापान का आधुनिकीकरण

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4. रूस-जापान युद्ध : कारण एवं परिणाम
5. चीन अफीम युद्ध एवं चीन की क्रांति, साम्यवाद
6. पूर्वी समस्या - बर्लिन कांग्रेस, युवा तुर्क आंदोलन
7. बाल्कन युद्ध : कारण एवं परिणाम

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2. वर्साय की संधि
3. रूस की क्रांति 1917 ई.
4. फासीवाद - मुसोलिनी

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2. जापान का सैन्यवाद
3. राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र
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1. संयुक्त राष्ट्र संघ - स्थापना एवं संगठन, उपलब्धियां
2. शीत युद्ध
3. गुट निरपेक्ष आंदोलन एवं पंचशील सिद्धान्त
4. विश्व शांति की चुनौती- कोरिया एवं फिलीस्तीन समस्या
5. एक ध्रुवीय विश्व

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**इतिहास**  
**प्रश्न-पत्र प्रथम**  
**भारत का इतिहास सन् 1761 ई. से 1950 ई. तक**  
**(पेपर कोड-0240)**

**पूर्णांक 75**

**उद्देश्य :** इस पाठ्यक्रम का उद्देश्य आधुनिक काल में भारत के राजनीतिक, सामाजिक आर्थिक एवं सांस्कृतिक इतिहास से विद्यार्थियों को अवगत कराना है।

**इकाई-1**

1. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढीकरण – युद्ध एवं कुटनीति – कनार्टक युद्ध
2. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढीकरण – प्लासी एवं बक्सर
3. सहायक संधि एवं हड़प् नीति (व्यपगत का सिद्धांत)
4. ब्रिटिश प्रशासन एवं सुधार – बेंटिंग, लिटन, रिपन, कर्जन

**इकाई-2**

1. वाणिज्यवाद – उद्योगों का पतन
2. वाणिज्यवाद – व्यापार का पतन
3. कृषि का ह्रास एवं कृषक आन्दोलन
4. भूराजस्व व्यवस्थाएं – स्थाई बन्दोबस्त, रैयतवाड़ी, महालवाड़ी

**इकाई-3**

1. भारतीय पुनर्जागरण – ब्रह्म समाज, आर्य समाज, प्रार्थना समाज,
2. श्रामकृष्ण मिशन, थियोसोफिकल सोसायटी, अलीगढ़ आन्दोलन
3. पाश्चात्य शिक्षा का विकास एवं प्रेस
4. विभिन्न सामाजिक वर्ग – कृषक, मजदूरी, मध्यम वर्ग एवं महिलाएं

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2. सुभाषचन्द्र बोस एवं आजाद हिन्द सेना
3. भारत का संवैधानिक विकास : 1919 ई. – द्रैध शासन 1935 – प्रान्तीय स्वायत्तता
4. भारत की स्वतंत्रता तथा भारतीय संविधान की विशेषताएं।

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3. Agrawal R.C. – Indian Constitutional Development and National Movement in India.
4. राधेशरण – भारत की सामाजिक एवं आर्थिक संरचना और संस्कृति के मूल तत्व (आदिकाल से 1950 ई. तक) (म.प्र. हिन्दी ग्रंथ अकादमी का प्रकाशन)

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20/7/17

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प्रश्न- पत्र द्वितीय  
विश्व इतिहास - सन् 1871 ई. से 1945 ई. तक  
(पेपर कोड - 0241)

पूर्णांक 75

उद्देश्य : इस पाठ्यक्रम का उद्देश्य विश्व इतिहास की प्रमुख घटनाओं से विद्यार्थियों को अवगत कराना है साथ ही अन्तर्राष्ट्रीय परिदृश्य का ज्ञान भी इन्हें देना है ।

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2. बिस्मार्क - सह एवं विदेश नीति
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4. डाफ. सन-यत-सेन

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2. बाल्कन युद्ध : कारण एवं परिणाम
3. प्रथम विश्व युद्ध : कारण एवं परिणाम
4. रूस की कान्ति 1917

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2. फासीवाद - मुसोलिनी
3. नजीवाद - हटलर
4. जपान का सैन्यवाद - तोजो

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3. संयुक्त राष्ट्र संघ - स्थापना एवं संगठन
4. संयुक्त राष्ट्र संघ - उपलब्धियां

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2. Kettelby - History of the Modern Times
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4. Plamor & Parkins - International Politics
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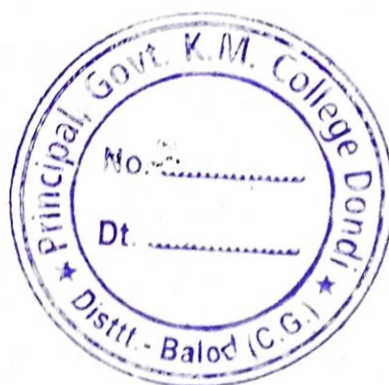
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