

**GOVT.D.B. GIRL'S P.G. AUTONOMOUS COLLEGE**

**RAIPUR CHHATTISGARH**

**FACULTY OF BOTANY**

**SYLLABUS**

**OF**

**B.Sc. (BOTANY)**

**PART-I, II, III**

**2020-21**

Signature of Chairman

Signature of Member (Subject)

**DEPARTMENT OF BOTANY**  
**CLASS-B.Sc. PART-III (Botany)**

**SESSION: 2020-21**

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**PAPER –I**

**PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY**

**MAXIMUM MARKS: 50**

**NUMBER OF UNIT: V**

**MINIMUM MARKS: 17**

**Unit-I**

1. Plant water relations: importance of water to plant life; physical properties of water; diffusion & osmosis; absorption, transport of water & transpiration; physiology of stomata.
2. Mineral nutrition: Essential macro & micro elements & their role; mineral uptake; deficiency & toxicity symptoms.

**Unit-II**

1. Transport of organic substances: Mechanism of phloem transport; source- sink relationship; factors affecting translocation.
2. Basic of enzymology: Discovery & nomenclature; characteristics of enzymes; concepts of holoenzyme, Apoenzyme, coenzyme and cofactor; regulation of enzyme activity, mechanism of action.
3. Photosynthesis: Significance; historical aspects; photosynthetic pigments, action spectra & enhancement effects, concept of 2 photosystem, Z- scheme, photophosphorylation; Calvin cycle; C<sub>4</sub> pathway, CAM plants, photorespiration.

**Unit-III**

1. Respiration: ATP- The biological energy currency; aerobic and anaerobic respiration; Krebs's cycle, electron transport mechanism (Chemi- Osmotic theory) ; redox potential ,Oxidative phosphorylation ,pentose phosphate pathway.
2. Nitrogen and lipid metabolism; biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

### **Unit-IV**

1. Growth and development: Definitions; phases of growth and development; kinetics of growth, seed dormancy, seed germination and factors of their regulation; plant movements; the concept of photoperiodism; physiology of flowering; florigen concept; biological clocks; physiology of senescence, fruit ripening; plant hormones: Auxins, gibberellins, cytokinins, abscisic acid, ethylene, history of their discovery, biosynthesis and mechanism of action, photomorphogenesis, phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.

### **Unit-V**

1. Genetic engineering: tools and techniques of recombinant DNA technology; Cloning vectors; Genomic and cDNA library; transposable elements; techniques of gene mapping and chromosome walking.
2. Biotechnology: functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of agro bacterium; vectors for gene delivery and marker genes; salient achievements in crop biotechnology.

#### **APPROVED BY THE BOARD OF STUDIES ON**

<b>NAME</b>	<b>IN THE CAPACITY OF</b>	<b>SIGNATURE</b>
Dr. J.N.Verma	CHAIRMAN	
Dr. J K Verma	SUBJECT EXPERT(V. C. Nominee)	
Dr. S. Moghae	SUBJECT EXPERT(Principal Nominee)	
Dr. P.K.Saluja	MEMBER OF THE DEPARTMENT	
Dr. Aruna Shrivastava	MEMBER OF THE DEPARTMENT	
Mrs. Deepa Shrivastava	MEMBER OF THE DEPARTMENT	
Dr. V. Acharya	MEMBER OF THE DEPARTMENT	
Dr. B.M. Lall	MEMBER OF THE DEPARTMENT	
Dr. Neetu Harmukh	MEMBER OF THE DEPARTMENT	

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**PAPER –II**

**ECOLOGY AND UTILIZATION OF PLANTS**

**MAXIMUM MARKS: 50**

**NUMBER OF UNIT: V**

**MINIMUM MARKS: 17**

**Unit-I**

1. Plants and environment: Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photo synthetically active radiation), temperature, soil (development of soil profiles, hysic-chemical properties), and biota.
2. Morphological, anatomical and physiological responses of plants to water (hydrophytes & xerophytes), temperature (thermoperiodicity), light (photoperiodism, heliophytes & sciophytes) & salinity.

**Unit-II**

1. Community Ecology: Community characteristics, frequency, density; cover, life forms biological spectrum; ecological succession.
2. Ecosystems: Structure, abiotic & biotic components; food chain, food web, ecological pyramids, energy flow; biogeochemical cycles of carbon, nitrogen and phosphorus.

**Unit-III**

1. Population ecology: Growth curves; ecotypes; ecaedes.
2. Biogeographical regions of India.
3. Vegetation types of India: Forests & grasslands.

**Unit-IV**

1. Utilization of plants
2. Food plants: rice, wheat, maize, potato, sugarcane.
3. Fibers: Cotton & Jute
4. Vegetable oils: groundnut, mustard and coconut
5. General account of sources of firewood, timber & bamboos.

## Unit-V

1. Spices: General account.
2. Medicinal plants: :General account
3. Beverages : Tea & coffee
4. Rubber.

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Dr. Neetu Harmukh	MEMBER OF THE DEPARTMENT	

## PRACTICAL SCHEME

B.Sc. PART III (2020-21)

TIME 4Hrs.

M.M. 50

S.NO.	TITLE	MARKS
1.	Physiology	08
2.	Ecology	08
3.	Utilization of Plants	05
4.	Biochemistry/ Biotechnology	05
5.	Spotting (1-5)	10
6.	Project work	04
7.	Viva	05
8.	Sessional	05
<b>Total No.</b>		<b>50</b>

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