NCERT Master Course
Biology Lecture Plan

S.No.	Chapter Name	Lecture No.	Lecture Name
1	Environmental Issues	1	Air Pollution and its Control, Water Pollution and its Control
2	Environmental Issues	2	Solid Wastes, Agro-chemicals and their Effects, Radioactive Wastes, Greenhouse Effect and Global Warming, Ozone Depletion in Stratosphere, Degradation by Improper Resource Utilisation and Maintenance, Deforestation
3	Reproductive Health	1	Reproductive Health-Problems and Strategies, Population Stabilisation and Birth Control,Contraceptive Methods
4	Reproductive Health	2	Medical Termination of Pregnancy,Sexually Transmitted Infactions, Infertility
5	Reproduction in Organism	1	Life Span, Reproduction, Asexual Reproduction
6	Reproduction in Organism	2	Sexual Reproduction ,pre-Fertilisation ,Fertilisation and Post-Fertilisation Events
7	Evolution	1	Origin of Life , Evolution of Life Forms , Evidences for Evolution, Adaptive Radiation
8	Evolution	2	Biological Evolution , Mechanism of Evolution , Hardy-Weinberg Principle , Brief Account of Evolution , Origin and Evolution of Man
9	Human Reproduction	1	Male and Female Reproductive System ,Spermatogenesis ,Human Sperm ,Semen
10	Human Reproduction	2	Oogenesis , Menstrual Cycle , Menstrual Hygiene , Fertilisation and Implantation , Pregnancy and Embryo Development , Parturition and Lactation
11	Biodiversity and Conservation	1	Biodiversity – genetic , species and ecological , Global and Indian biodiversity , Patterns of biodiversity (Latitudinal gradient and Species-Area relationship) , Importance of species biodiversity to ecosystem
12	Biodiversity and Conservation	2	Loss of Biodiversity (The evil quartet) , Why and How to conserve biodiversity , In-situ and Ex-situ methods of conservation , Earth summit , World summit
13	Ecosystem	1	Ecosystem – Structure and Function , Productivity , Decomposition , Energy Flow , Food chain types (Grazing , Parasitic , Detritus) , Food web , Trophic level
14	Ecosystem	2	Ecological pyramids , Ecological succession (Lithosere and Hydrosere) , Nutrient cycling , Carbon cycle , Phosphorus cycle , Ecosystem services
15	Organisms and Populations	1	Levels of Organisation , Organisms and its Environment , Major Abiotic factors Temperature ,Water , Light , Soil , Responses to Abiotic factors (Regulate , Conform , Migrate , Suspend) , Adaptations in Animals and Plants
16	Organisms and Populations	2	Population Attributes , Age Pyramids , Population Growth Models , Life History Variations , Population Interactions
17	Sexual Reproduction in Flowering Plants	1	Flower , Stamen , Microsporangium , Pollen Grain , Microsporogenesis , Pistil , Megasporangium (Ovule) , Embryo sac , Megasporogenesis
18	Sexual Reproduction in Flowering Plants	2	Pollination , Kinds of Pollination , Agents of Pollination , Outbreeding devices , Pollen-Pistil Interaction , Artificial Hybridisation , Double Fertilisation , Endosperm
19	Sexual Reproduction in Flowering Plants	3	Embryo development , Seed , Fruit , Apomixis and Polyembryony
20	Cell the unit of Life	1	What is a cell ,Cell theory ,Overview of Cell ,Prokaryotic cell ,Eukaryotic cell ,Cell membrane ,Cell wall ,Endomembrane system (ER ,Golgi apparatus ,Lysosome ,Vacuole) ,Mitochondria
21	Cell the unit of Life	2	Plastids , Ribosomes , Microbodies , Cytoskeleton , Cilia and Flagella , Centrioles and Centrosomes , Nucleus , Chromosome
22	Cell Cycle and Cell Division	1	Cell Cycle, Interphase, Mitosis
23	Cell Cycle and Cell Division	2	Meiosis
24	Biomolecules	1	How to analyse chemical composition , Acid soluble and Acid insoluble pool , Amino acids , Lipids , Nucleosides , Nucleotides , Primary and Secondary metabolites , Proteins , Structure of Proteins
25	Biomolecules	2	Carbohydrates (Monosaccharides , Oligosaccharides , Polysaccharides) , Polynucleotides , Nucleic acids , Structure of DNA , Dynamic state of body constituents , Metabolic basis for living , The living state
26	Biomolecules	3	Enzymes
27	Digestion and Absorption	1	Alimentary canal , Wall of alimentary canal , Digestive glands (Salivary glands , Liver , Gallbladder , Pancreas) , Digestive juices
28	Digestion and Absorption	2	Digestion of food , GIT Hormones , Gross and Physiological Calorific values , Absorption of digested products , Disorders of digestive system , PEM (Marasmus and Kwashiorkor)
29	Breathing and Exchange of Gases	1	Respiratory organs , Human respiratory system , Steps of respiration , Mechanism of Breathing , Respiratory Volumes and Capacities
30	Breathing and Exchange of Gases	2	Exchange of gases , Transport of gases (Oxygen and Carbon dioxide) , Regulation of Respiration , Disorders of Respiratory system
31	Body Fluid and Circulation	1	Blood (Plasma and Formed elements) , Blood groups (ABO and Rh) , Blood coagulation , Lymph , Circulatory pathways (Open and Closed) , Evolution of vertebrate heart , Human heart structure
32	Body Fluid and Circulation	2	Nodal musculature , Cardiac cycle , Heart rate , Cardiac output , Heart sounds , ECG ,Double circulation , Blood vessels , Regulation of cardiac activity , Disorders of circulatory system

33	Excretory Products and Their Elimination	1	Ammonotelism , Ureotelism , Uricotelism , Excretory organs in animals , Human excretory system , Kidneys internal structure , Nephron , Urine formation , Function of tubules , Micturition
34	Excretory Products and Their Elimination	2	Mechanism of concentration of filtrate, Regulation of kidney function, Role of other organs in excretion , Disorders of excretory system, Hemodialysis
35	Locomotion and Movement	1	Types of Movement, Muscle, Structure of Contractile of Contractile Proteins, Mechanism of Muscle Contraction
36	Locomotion and Movement	2	Skeletal system , Joints , Disorders of muscular and skeletal system
37	Chemical Coordination and Integration	1	Endocrine Glands and Hormones, Human Endocrine System, Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Thymus, Adrenal Glands
38	Chemical Coordination and Integration	2	Pancreas , Testis , Ovary , Hormones of Heart , Kidney and Gastrointestinal tract , Mechanism of hormone action
39	Neural Control and Coordination	1	Neural system , Human neural system , Sympathetic and Parasympathetic ANS , Neuron , Generation and conduction of Nerve impulse , Transmission of impulses , Central nervous system – Forebrain , Midbrain , Hindbrain
40	Neural Control and Coordination	2	Reflex action and reflex arc , Sensory reception and processing , Sense organs , The Eye , The Ear
41	Biotechnology Principles and Process	1	Principles of biotechnology , Tools of recombinant DNA Technology , Restriction enzymes , Agarose gel electrophoresis
42	Biotechnology Principles and Process	2	Cloning Vectors, Competent Host, Processes of Recombinant DNA Technology, PCR, Biofermentors, Downstream Processing
43	Biotechnology and its Application	1	Biotechnological applications in agriculture (Golden rice , Bt cotton , RNAi , Pest resistant plants , Flavr savr tomatoes) , Biotechnological applications in medicine (Genetically engineered Insulin , Gene therapy)
44	Biotechnology and its Application	2	Biotechnological applications in medicine (Molecular diagnosis) , Transgenic animals , Ethical issues
45	Microbes in Human Welfare	1	Microbes in household products, microbes in industrial products, microbes as biocontrol agents, microbes as biofertilisers
46	Microbes in Human Welfare	2	Microbes in sewage treatment, microbes in production of biogas
47	Human Health and Disease	1	Common diseases in humans, prevention and control of infectious disease
48	Human Health and Disease	2	Immunity , Innate and Acquired immunity , Primary and Secondary immune response , CMI and AMI , Antibody structure and types , Active and Passive immunity , Vaccination and Immunisation , Allergies , Auto-immunity , Immune system in body
49	Human Health and Disease	3	AIDS , Cancer , Drugs and Alcohol abuse
50	The Living World	1	What is living , Diversity in living world , Taxonomic categories , Taxonomic aids
51	Biological Classification	1	Classification of organisms , 5-Kingdom classification , Kingdom Monera , Kingdom Protista
52	Biological Classification	2	kingdom fungi, plantae, animalia, viruses, viroids, prions, lichens
53	Plant Kingdom	1	Classification systems, algae, bryophytes
54	Plant Kingdom	2	Pteridophytes , Gymnosperms , Angiosperms , Plant Life cycles and alternation of generations
55	Animal Kingdom	1	Basis of classification , Phylum Porifera , Cnidaria , Ctenophora , Platyhelminthes , Aschelminthes , Annelida , Arthropoda , Mollusca , Echinodermata , Hemichordata
56	Animal Kingdom	2	Phylum Chordata , Urochordata , Cephalochordata , Vertebrata , Class Cyclostomata , Chondricthyes , Osteicthyes , Amphibia , Reptilia , Aves , Mammalia
57	Strategies for enhancement in food production	1	Animal husbandry , Plant breeding ,Single cell protein , Tissue culture
58	Mineral Nutrition	1	Hydroponics , Essential mineral elements , Mechanism of absorption of elements , Translocation of solutes , Soil as reservoir of essential elements
59	Mineral Nutrition	2	Metabolism of nitrogen , Nitrogen cycle , Biological nitrogen fixation , Nodule formation , Fate of Ammonia
60	Respiration in Plants	1	Respiratory substrate , Do plants breathe , Aerobic and anaerobic respiration , Glycolysis , Fermentation ,Aerobic respiration , Link reaction , Krebs cycle
61	Respiration in Plants	2	Electron transport system , Oxidative phosphorylation , Respiratory balance sheet , Difference between fermentation and aerobic respiration , Amphibolic pathway , Respiratory quotient
62	Photosynthesis in Higher Plants	1	Photosynthesis Early experiments , Site of photosynthesis , Chloroplast structure , Photosynthetic pigments , Absorption and Action spectrum , Difference between Light reaction and Dark reaction , Photosystems I and II
63	Photosynthesis in Higher Plants	2	Splitting of water , Cyclic and Non-cyclic photophosphorylation , The Electron transport , Chemiosmotic hypothesis , Introduction to Dark reaction
64	Photosynthesis in Higher Plants	3	Calvin Cycle, C4 Cycle
65	Photosynthesis in Higher Plants	4	Photorespiration , Factors affecting photosynthesis
66	Plant growth and development	1	Growth,growth is measurable ,phases of growth ,conditions for growth ,arithmetic and geometric growth ,absolute and relative growth rate ,
67	Plant growth and development	2	Plant growth regulators, Auxin , Gibberellins, Cytokinins, Ethylene, abscissic acid
68	Plant growth and development	3	Photoperiodism, Vernalisation, Seed dormancy
69	Principles of inheritance and variations	1	Mendel's laws of inheritance , Inheritance of one gene , Law of dominance , Law of segregation , Incomplete dominance , Codominance , Mutiple allelism , Pleiotropy

70	Principles of inheritance and variations	2	Inheritance of two gene , Law of Independent Assortment , Polygenic inheritance , Chromosomal theory of inheritance , Linkage and Recombination , Gene map
71	Principles of inheritance and variations	3	Sex determination , Mutations , Pedigree analysis , Mendelian disorders , Chromosomal disorders
72	Molecular basis of inheritance	1	The DNA , Structure of polynucleotide chain , Double helix DNA Structure , Packaging of DNA Helix , Search for genetic material , Transforming principle , Biochemical characterization of transforming principle ,
73	Molecular basis of inheritance	2	DNA Replication machinery and enzymes , Transcription , Genetic code
74	Molecular basis of inheritance	3	Mutations and Genetic code , RNA , Translation , Regulation of gene expression , Lac operon , Human genome project , DNA Fingerprinting
75	Morphology of flowering plant	1	Root, Stem ,Leaf , Venation, Phyllotaxy
76	Morphology of flowering plant	2	Inflorescence, the flower, corolla, calyx, aestivation, androecium, cohesion, gynoecium, placentation, the fruit and seed, fabaceae, solanaceae, liliaceae, brassicaceae family
77	Anatomy of Flowering Plants	1	Meristematic and permanent tissue , simple tissue parenchyma , collenchyma , sclerenchyma , complex tissue xylem and phloem , tissue systems (epidermal , ground , vascular) , anatomy of dicot and monocot leaf
78	Anatomy of Flowering Plants	2	Anatomy of dicot and monocot root , Anatomy of dicot and monocot stem , Secondary growth in dicot stem , Spring and Autumn wood , Heart and Sap wood , Secondary growth in dicot root
79	Structural Organisation in Animals	1	Animal tissue – Epithelial tissue , Connective tissue , Muscle tissue , Neural tissue
80	Structural Organisation in Animals	2	Morphology and Anatomy of Earthworm , Cockroach , Frog
81	Transport in Plants	1	Short and long distance transport, means of transport, plant water relations, osmosis, water potential, DPD, Imbibition
82	Transport in Plants	2	Long distance transport of water, How do plants absorb water, Root pressure, Transpiration, Ascent of sap, Uptake and translocation of mineral ions, Phloem transport, Pressure flow hypothesis