



SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

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Ms Mriganka Upadhyay

Lesson/Course Plan(2014-)

Department Of Zoology

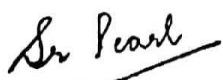


TEACHING PLAN 2017-18



B.Sc. (Zoology) (Semester –I)
PAPER : 102 Cell & Molecular Biology

Month	Unit and Topics Covered	Other activities
July	Unit - I	
	Introduction to Cell: Morphology, size, shape and characteristics of Prokaryotic, Eukaryotic Cell (animal cell) basic idea of virus and cell theory.	
	Cell-membrane: Characteristics of cell membrane molecules, Fluid-mosaic model of Singer and Nicolson, Concept of unit membrane.	Group discussion Quiz
	Cell-membrane transport: Passive (diffusion and osmosis) and active transport.	Open book test
	Nucleus: Structure and function of nuclear envelope, nuclear matrix, and nucleolus. Structure and functions of Lysosomes, Centrioles and Basal Bodies.	
August	Unit - II	Assignment
	Structure and biogenesis of mitochondria ; electron transport chain and generation of ATP molecules.	
	Structure and functions of endoplasmic reticulum, ribosomes (prokaryotic and eukaryotic) and Golgi complex	Project
	Structure and functions of cilia, flagella	

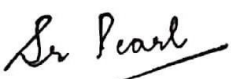

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September	Chromosomes: Morphology, chromonema, chromomeres, telomeres, primary and secondary constrictions, chromatids, prokaryotic chromosome. Giant Chromosomes: polytene and lampbrush chromosomes. Chromosomal organizations: euchromatin, heterochromatin, nucleosome concept.	Test
3 rd week of September		C.I.A
October	Unit – III a) DNA Structure, polymorphism (A, B and Z type) and replication (semi-conservative mechanism), elementary idea about polymerases, topoisomerases, single strand binding protein, replication forks(Both unidirectional and bidirectional), leading and lagging strands, RNA primers and Okazaki fragments, b) RNA structure and types (mRNA, rRNA and tRNA) and transcription (elementary idea about polymerases, capping, poly A tail, exon and introns). Transcription and Translation, (Protein synthesis): Mechanism of transcription, Translation	Power Point Presentation Mock test
November	END SEMESTER EXAMINATION	


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**B.Sc (Zoology) (Semester –III)
PAPER : 302 Microbiology & Biotechnology**

Month	Unit and Topics Covered	Other activities
July	Unit – II	
	Biotechnology	
	Recombinant DNA technologies and its application: Elementary idea	Group discussion
	Vectors for gene transfer (plasmids and phages). Basic concepts of cell and tissue culture, Hybridoma technology Monoclonal antibodies and their applications.	Quiz Open book test
August	Unit - III	
	Transgenic animals and their uses in biotechnology. Brief account of cloning ; (i) Nuclear transfer techniques (ii) Cloning, mechanism and applications.	Assignment Project
September	Food and dairy microbiology (outline idea only): Fermented food production: dairy products AIDS The causative agents	Test
3 rd week of September	Transmission, treatment and prevention	C.I.A
October	The Prokaryota (Bacteria) Structural organization : Size, shapes and patterns Structural organization Slime layer (capsule), cell envelopes cytoplasmic membrane (inner membrane) cell wall (outer membrane) of Gram negative and Gram positive bacteria,	Power Point Presentation

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	<p>mesosomes, cytoplasmic organization cell projections, flagella and pili.</p> <p>Genetic material of bacteria.</p> <p>Chromosome ,Plasmids ,replication of bacterial DNA Reproduction in Bacteria , asexual reproduction: binary fission, budding, endospore formation, exospore and cyst formation, sexual reproduction: conjugation.</p> <p>Bacteria of medical importance: Brief introduction</p> <p>Tetanus ,Diarrhoea,Tuberculosis,Streptococcal pharyngitis,Gonorrhoea,Botulism</p>	Mock test
November	END SEMESTER EXAMINATION	

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B.Sc (Zoology) (Semester –V) PAPER : 502 Comparative Anatomy of Chordates

Month	Unit and Topics Covered	Other activities
	UNIT II	
July	Heart and aortic arches Respiratory system	Group disussion
	Unit - III	
August	Excretory system Reproductive system	Assignment
September	Basic plan of vertebrate endoskeleton.	Project
3 rd week of September	Brain	C.I.A
	Unit - I	
October	Comparative study of Pisces, Amphibians, Reptiles, Aves and Mammals. (<i>Scoliodon</i> , Frog, <i>Varanus</i> , Fowl and rabbit Integument including structure and development of placoid scales, feathers and hair. Alimentary canal	Power Point Presentation Mock test
November	END SEMESTER EXAMINATION	

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**B.Sc (Zoology) (Semester –II)
PAPER : 202 Developmental Biology**

Month	Unit and Topics Covered	Other activities
December	Unit – I Gametogenesis: Spermatogenesis and Oogenesis a) Formation of egg and sperm b) Vitellogenesis	Group discussion
January	Fertilization: Activation of ovum, essence of activation, changes in the organization of the egg cytoplasm. Unit – II Cleavage: Definition, types of cleavage, planes and patterns Significance of cleavage, morulation and blastulation. Gastrulation : definition, fate maps, morphogenetic cell movements,significance of gastrulation.	Assignment Project
February	Embryonic induction; primary organizer, differentiation, competence Regeneration Types- Morphollaxis and Epimorphic regeneration,regeneration abilities in different animals. Amphibian limb regeneration	Test
Last week of Feb		C.I.A
March	Unit – III Embryonic adaptations- elementary idea of cleidoic egg. Extra-embryonic membranes in chick. Placentation in Mammals: Definition, types,classification on the basis of morphology	Quiz

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	and histology, functions of placenta Elementary idea about Xenobiotics , teratological effects of Xenobiotics. Stem Cells : types and applications	Mock test
April	END SEMESTER EXAMINATION	

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**B.Sc (Zoology) (Semester –IV)
PAPER : 402 Biochemistry & Immunology**

Month	Unit and Topics Covered	Other activities
December	UNIT II Immunology: Definition, types of immunity, innate and acquired, humoral and cell mediated.	Group discussion
January	Structure of Antibodies. Structure of different classes of Antibodies Hinge region, Light chain, heavy chain Proteolytic cleavage of antibody by papain and pepsin. Unit – III Cells and Molecules of the immune system: Phagocytes, Basophils, Eosinophils, Mast cells, dendritic cells, T cells, B cells, Neutrophils. Interleukins, Interferons, Growth factors.	Assignment
February	Antigen – Antibody interactions: Precipitation reaction– Radial immunodiffusion; Agglutination reaction–ELISA	Test
Last week of Feb		C.I.A
March	Unit – I Carbohydrate: Structure, function and significance. Oxidation of glucose through glycolysis, Krebs cycle and oxidative phosphorylation. Proteins: Essential and non-essential amino acids, Structure, function and significance of Protein. Lipids: Basic structure, function and significance. Unit – II ENZYMES	Power Point Presentation

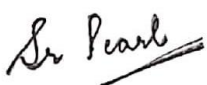
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	Definition and structure of enzyme, Mechanism of enzyme action, Specificity of enzymes Classifications of Enzymes Factors affecting enzyme activity: pH, Temperature, Substrate concentration Enzyme substrate <i>Inhibitors: Types of Inhibitors 'Feedback Inhibition Allosteric Regulation and Inhibition</i>	Mock test
April	END SEMESTER EXAMINATION	


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B.Sc (Zoology) (Semester –IV) PAPER : 601 Environmental Biology

Month	Unit and Topics Covered	Other activities
December	UNIT III Basic concepts of Eutrophication, bioaccumulation, biomagnifications and biodegradation of pollutants.	Group discussion
January	Unit – III. Green House Effect, Ozone layer, depletion and Ozone Hole. Global Warming and Acid Rain. Unit – II Biogeochemical cycle of O ₂ , CO ₂ , H ₂ O, N, P, and role of microbes Habitat ecology - Characteristics and fauna of fresh water, marine, terrestrial.	Assignment Project work
February	Natural resources: Present status and future needs and its management .	Test
Last week of Feb		C.I.A
March	Unit – I Population: interspecies and intraspecies interactions. Characteristics of natural communities: structure, composition, stratification, succession, concept of monocl意思, diclimax, polyclimax, climatic and edaphic climaxes, periodicity,	Power Point Presentation

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	ecotonal communities, ecological indicators. Ecosystem- Biotic and abiotic factors, Homeostasis, Food chain, Food web, Trophic levels, Ecological Pyramids, Energy flow and Productivity.	Mock test
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