

DEPARTMENT OF PRE-UNIVERSITY EDUCATION

FORM-1

(PRACTICAL SUBJECTS - 70 + 30) - 2021-22

SUB: BIOLOGY

CODE:36

CLASS: II PUC

TERMS	CHAPTERS TO BE COMPLETED	PRACTICALS TO BE COMPLETED	TOTAL HOURS (Theory+ Practicals)
1 15-07-2021 TO 15-09-2021	UNIT-VI: REPRODUCTION 1: Reproduction in Organisms Introduction 1.1 Asexual reproduction. 1.2 Sexual reproduction. 1.2.1 Pre-fertilisation events 1.2.1.1 Gametogenesis 1.2.1.2 Gamete transfer 1.2.2 Fertilisation 1.2.3 Post fertilisation events 1.2.3.1 The zygote 1.2.3.2 Embryogenesis. 2: Sexual Reproduction in Flowering Plants Introduction 2.1. Flower - A fascinating organ of angiosperms 2.2 Pre-fertilisation - Structures and events 2.2.1 Stamen, microsporangium and pollen grain 2.2.2 The pistil, megasporangium (ovule) and embryo sac 2.2.3 Pollination 2.3 Double fertilization	Exercise-1 : To study the reproductive parts of commonly available flowers Exercise-2 : To calculate percentage of pollen germination Exercise-3 : To study pollen tube growth on stigma Exercise-4 : To study the discrete stages of gametogenesis in mammalian testis and ovary Exercise-5 : To study and identify various stages of female gametophyte development in the ovary of a flower Exercise-12 : To perform emasculation, bagging and tagging for controlled pollination	(33+12)

	<p>2.4 Post-fertilization Structures and events</p> <p>2.4.1 Endosperm</p> <p>2.4.2 Embryo</p> <p>2.4.3 Seed</p> <p>2.5 Apomixis and polyembryony</p> <p>3: Human Reproduction</p> <p>Introduction</p> <p>3.1 The male reproductive system</p> <p>3.2 The female reproductive system</p> <p>3.3 Gametogenesis</p> <p>3.4 Menstrual cycle</p> <p>3.5 Fertilisation and implantation</p> <p>3.6 Pregnancy and embryonic development</p> <p>3.7 Parturition and lactation.</p> <p>4: Reproductive Health</p> <p>Introduction</p> <p>4.1 Reproductive health - Problems and strategies</p> <p>4.2 Population stabilisation and birth control</p> <p>4.3 Medical termination of pregnancy (MTP)</p> <p>4.4 Sexually transmitted infections (STIs)</p> <p>4.5 Infertility</p> <p>UNIT-VII : GENETICS AND EVOLUTION</p> <p>5: Principles of Inheritance and Variation</p> <p>Introduction</p> <p>5.1 Mendel's laws of inheritance</p> <p>5.2 Inheritance of one gene</p> <p>5.2.1 Law of dominance</p> <p>5.2.2 Law of segregation</p> <p>5.2.2.1 Incomplete dominance</p> <p>5.2.2.2 Co-dominance</p>		
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<p>I -TEST</p>	<p align="center">13-09-2021 TO 15-09-2021</p> <p align="center">(Based on the chapters covered in the first term)</p> <p align="center">The pattern and design of the TEST will be on par with the board examination standards</p>		
<p>FIRST ASSIGNMENT</p>	<p align="center">The assignment would comprise questions that test the logical thinking and reasoning ability of students</p>		
<p align="center">2</p> <p align="center">16-09-2021 TO 30-11-2021</p>	<p>UNIT-VII : GENETICS AND EVOLUTION</p> <p>5 : Principles of Inheritance and Variation</p> <p>Continuation</p> <p>5.3 Inheritance of two genes</p> <p>5.3.1 Law of independent assortment</p> <p>5.3.2 Chromosomal theory of inheritance</p> <p>5.3.3 Linkage and recombination</p> <p>5.4 Polygenic inheritance</p> <p>5.5 Pleiotropy</p> <p>5.6 Sex determination</p> <p>5.6.1 Sex determination in humans</p> <p>5.6.2 Sex determination in honey bee</p> <p>5.7 Mutation</p> <p>5.8 Genetic disorders</p> <p>5.8.1 Pedigree analysis</p> <p>5.8.2 Mendelian disorders</p> <p>5.8.3 Chromosomal disorders</p> <p>6: Molecular Basis of Inheritance</p> <p>Introduction</p> <p>6.1 The DNA</p> <p>6.1.1 Structure of polynucleotide chain</p> <p>6.1.2 Packaging of DNA helix</p> <p>6.2 The search for genetic material</p>	<p>Exercise-8 : To study the blastula stage of embryonic development in mammal, with the help of permanent slide, chart, model or photograph</p> <p>Exercise-6 : Preparation and study of mitosis in onion root tips</p> <p>Exercise-7 : Study of stages of meiosis using permanent slides</p> <p>Exercise-11 : Preparation and analysis of pedigree charts</p> <p>Exercise-13 : Staining of nucleic acid by acetocarmine</p> <p>Exercise-14 : To identify common disease-causing organisms and the symptoms of the diseases</p>	<p align="center">(30+12)</p>

	<p>6.2.1 The genetic material is DNA 6.2.2 Properties of genetic material (DNA versus RNA) 6.3 RNA world 6.4 Replication 6.4.1 The experimental proof 6.4.2 The machinery and the enzymes 6.5 Transcription 6.5.1 Transcription unit 6.5.2 Transcription unit and the gene 6.5.3 Types of RNA and the process of transcription 6.6 Genetic code 6.6.1 Mutations and genetic code 6.6.2 t-RNA-the adapter molecule 6.7 Translation 6.8 Regulation of gene expression 6.8.1 The Lac operon 6.9 Human genome project 6.9.1 Salient features of human genome 6.9.2 Applications and future challenges 6.10 DNA fingerprinting. UNIT-VIII : BIOLOGY IN HUMAN WELFARE 8: Human Health and Diseases Introduction 8.1 Common diseases in humans 8.2 Immunity 8.2.1 Innate immunity 8.2.2 Acquired immunity 8.2.3 Active and passive immunity 8.2.4 Vaccination and immunisation 8.2.5 Allergies</p>		
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	8.2.6 Auto-immunity 8.2.7 Immune system in the body 8.3 AIDS 8.4 Cancer 8.5 Drugs and alcohol abuse 8.5.1 Adolescence and drug or alcohol abuse 8.5.2 Addiction and dependence 8.5.3 Effects of drug or alcohol abuse 8.5.4 Prevention and control of drug or alcohol abuse		
SECOND ASSIGNMENT	The assignment would comprise questions that test the logical thinking and reasoning ability of students		
MID-TERM EXAMINATION	20-11-2021 TO 30-11-2021 (Based on the chapters covered in the first and second terms) The pattern and design of the Examination will be on par with the board examination standards		
3 01-12-2021 TO 30-01-2022	UNIT-VIII : BIOLOGY IN HUMAN WELFARE 10: Microbes in Human Welfare Introduction 10.1 Microbes in household products 10.2 Microbes in industrial products 10.2.1 Fermented beverages 10.2.2 Antibiotics 10.2.3 Chemicals, enzymes and other bioactive molecules 10.3 Microbes in sewage treatment 10.4 Microbes in production of biogas 10.5 Microbes as biocontrol agents 10.6 Microbes as bio-fertilizers UNIT-IX : BIOTECHNOLOGY 11: Biotechnology - Principles and Processes	Exercise-17 : To study the ecological adaptations in plants living in xeric and hydric conditions Exercise-18 : To study the ecological adaptations in animals living in xeric and hydric conditions Exercise-19 : To determine the pH of different water and soil samples Exercise-21 : To analyse living organisms in water samples Exercise-23 : To study plant population density by quadrat method	(28+14)

	<p>Introduction</p> <p>11.1 Principles of biotechnology</p> <p>11.2 Tools of recombinant DNA technology</p> <p>11.2.1 Restriction enzymes</p> <p>11.2.2 Cloning vectors</p> <p>11.2.3 Competent host (For transformation with r-DNA)</p> <p>11.3 Processes of recombinant DNA technology</p> <p>11.3.1 Isolation of the genetic material (DNA)</p> <p>11.3.2 Cutting of DNA at specific locations</p> <p>11.3.3 Amplification of gene of interest using PCR</p> <p>11.3.4 Insertion of recombinant DNA into the host cell or organism</p> <p>11.3.5 Obtaining the foreign gene product</p> <p>11.3.6 Downstream processing.</p> <p>12: Biotechnology And Its Application</p> <p>Introduction</p> <p>12.1 Biotechnological applications in agriculture</p> <p>12.2 Biotechnological applications in medicine</p> <p>12.2.1 Genetically engineered insulin</p> <p>12.2.2 Gene therapy</p> <p>12.2.3 Molecular diagnosis</p> <p>12.3 Transgenic animals</p> <p>12.4 Ethical issues</p> <p>UNIT-X : ECOLOGY</p> <p>13: Organisms and Populations</p> <p>Introduction</p> <p>13.1 Organism and its environment</p> <p>13.1.1 Major abiotic factors</p> <p>13.1.2 Responses to abiotic factors</p> <p>13.1.3 Adaptations</p> <p>13.2 Populations</p>	<p>Exercise-24 : To study plant population frequency by quadrat method</p> <p>Exercise-25 : Study of homologous and analogous organs in plants and animals</p>	
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	13.2.1 Population attributes 13.2.2 Population growth 13.2.3 Life history variation 13.2.4 Population interactions 15: Biodiversity and Conservation Introduction 15.1 Biodiversity 15.1.1 How many species are there on earth and how many in India? 15.1.2 Patterns of biodiversity 15.1.3 The importance of species diversity to the ecosystem 15.1.4 Loss of biodiversity 15.2 Biodiversity conservation 15.2.1 Why should we conserve biodiversity? 15.2.2 How do we conserve Biodiversity?		
II - TEST	28-01-2022 TO 31-01-2022 (Based on the chapters covered in the third term) The pattern and design of the TEST will be on par with the board examination standards.		
4 01-02-2022 TO 31-03-2022	UNIT-VII : GENETICS AND EVOLUTION 7: Evolution Introduction 7.1 Origin of life 7.2 Evolution of life forms - A theory 7.3 What are the evidences for evolution? 7.4 What is adaptive radiation? 7.5 Biological evolution 7.6 Mechanism of evolution 7.7 Hardy-Weinberg's principle 7.8 A brief account of evolution	Exercise-9 : To verify the Mendel's law of segregation Exercise-10 : To verify the Mendel's law of independent assortment Exercise-15 : To study the texture of soil samples Exercise-16 : To determine the water holding capacity of soils Exercise-20 : To study turbidity of water	(29+12)

	<p>7.9 Origin and evolution of man</p> <p>UNIT-VIII : BIOLOGY IN HUMAN WELFARE</p> <p>9: Strategies for Enhancement in Food Production</p> <p>Introduction</p> <p>9.1 Animal husbandry</p> <p>9.1.1 Management of farms and farm animals</p> <p>9.1.1.1 Dairy farm management</p> <p>9.1.1.2 Poultry farm management</p> <p>9.1.2 Animal breeding</p> <p>9.1.3 Bee-keeping</p> <p>9.1.4 Fisheries</p> <p>9.2 Plant breeding</p> <p>9.2.1 What is plant breeding?</p> <p>9.2.2 Plant breeding for disease resistance</p> <p>9.2.3 Plant breeding for developing resistance to insect pests</p> <p>9.2.4 Plant breeding for improved food quality</p> <p>9.3 Single cell protein (SCP)</p> <p>9.4 Tissue culture</p> <p>UNIT-X : ECOLOGY</p> <p>14: Ecosystem</p> <p>Introduction</p> <p>14.1 Ecosystem-Structure and function</p> <p>14.2 Productivity</p> <p>14.3 Decomposition</p> <p>14.4 Energy flow</p> <p>14.5 Ecological pyramids</p> <p>14.6 Ecological succession</p> <p>14.6.1 Succession of plants</p> <p>14.7 Nutrient cycling</p> <p>14.7.1 Ecosystem - Carbon cycle</p>	<p>samples</p> <p>Exercise-22 : To determine the amount of suspended particulate matter (SPM) in air at different sites in a city</p>	
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	<p>14.7.2 Ecosystem-Phosphorous cycle</p> <p>14.8 Ecosystem services</p> <p>16: Environmental Issues</p> <p>Introduction</p> <p>16.1 Air pollution and its control</p> <p>16.1.1 Controlling vehicular air pollution: A case study of Delhi</p> <p>16.2 Water pollution and its control</p> <p>16.2.1 Domestic sewage and industrial effluents</p> <p>16.2.2 A case study of integrated waste water treatment</p> <p>16.3 Solid wastes</p> <p>16.3.1 Case study of remedy for plastic waste</p> <p>16.4 Agrochemicals and their effects</p> <p>16.4.1 Case study of organic farming</p> <p>16.5 Radioactive wastes</p> <p>16.6 Greenhouse effect and global warming</p> <p>16.7 Ozone depletion in the stratosphere</p> <p>16.8 Degradation by improper resource utilisation and maintenance</p> <p>16.9 Deforestation</p> <p>16.9.1 Case study of people's participation in conservation of forests</p>		
PRE-FINAL EXAMINATION	24-03-2022 TO 30-03-2022 (Based on the complete syllabus covered during the academic year)		
ANNUAL EXAMINATION	(Based on the complete syllabus covered during the academic year)		
		TOTAL TECHING HOURS	(120 + 50)