

साप्ताहिक विच्छेदित पाठ्यक्रम 2023-24

CLASS - 12 SUBJECT - BIOLOGY

Month	Week	Chapters	Subtopics	1 Period =45/40 mins	Practicals *(PROJECT REPORT Students are also expected to carry out one investigatory project that would engage them for about a week in actual experimentation. They would be expected to submit a project report of the same that would include a presentation of the results obtained in their investigation)	Learning outcome
June 2023	1st, 2nd & 3rd	1. Sexual Reproduction in flowering plants	Panchanan Maheshwari Introduction	2	1. Study of the reproductive parts of different flowers. 2. Study of flowers adapted to pollination by different agencies (wind, insect). 3. Study of per cent pollen germination on a slide. 4. Study pollen tube growth on the stigma.	1. Learner applies scientific terminology for Organisms, Processes and Phenomena based on Internationally accepted conventions such as Microsporangia, Geitonogamy. 2. Learner explains efficeintly systems, relationship, processes and phenomena such as Double Fertilization, Flower is a modified shoot. 3.Draws labelled diagrams, flow chart, concept maps, graphs such as Male and Female Reproductive parts of Flowers. 4. Learner draws conclusion on the basis of data collected in activities/experiments and investigatory projects conducted by them, such as, only one pollen tubes reach the ovules. Learner calculates using the data given such as percentage of pollen germination.
			1.1 Flower- A Fascinating organ of Angiosperms	2		
			1.2 Pre-Fertilisation: Structures and Events	2		
			1.2.1 Stamen, Microsporangium and Pollen grains	2		
			1.2.2 The Pistil, Megasporangium (Ovule) and Embryo Sac	2		
1.2.3 Pollination	2					
June 2023	4th (5 days)	1. Sexual Reproduction in flowering plants	1.3 Double Fertilisation	2	5. Study fruits and seeds of any common fruit (e.g. legume) at different stages of development.	
			1.4 Post Fertilisation: Structures and Events	4		
			1.4.1 Endosperm	2		
			1.4.2 Embryo	2		
			1.4.3 Seed	4		
			1.5 Apomixis and Polyembryony summary, Exercise & revision	4		
June	5th (3 days)	2. Human Reproduction	Introduction	2	6. Study and identify stages of gamete development in t.s.testis and t.s. ovary. 7. Study mitosis in onion root tips (preparation). 8. Study meiosis in onion bud cells and grasshopper testis (permanent slides).	1. Learners relates processes and phenomena with causes and effects such as Menstuation and hygiene, Pregnancy and embryonic development. 2. Learner explains efficeintly systems, relationship, processes and phenomena such as Double Fertilization, Flower is a modified shoot.
			2.1 The Male Reproduction System	2		
			2.2 The Female Reproductive System	2		
			2.3 Gametogenesis	2		

July	1st (1 day)	2. Human Reproduction	2.4 Menstrual Cycle	2		3. Draws labelled diagrams, flow chart, concept maps, graphs such as Male and Female Reproductive System of Human.
July	2nd (6 days)	2. Human Reproduction	2.5 Fertilisation and Implantation	4	9. Study of t.s. of blastula through permanent slide.	4. Learner plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena or to seek answers to queries on their own such as How many daughter cells are produced at the end of Meiosis? , At which stage of follicular development, is ovum released?
			2.6 Pregnancy and Embryonic Development	4		
		3. Reproductive health	2.7 Parturition and Lactation	2		
			summary, Exercise & revision	2		
July	3rd (5 days)	3. Reproductive health	Introduction 3.1 Reproductive Health- Problems and Strategies 3.2 Population Stabilisation and Birth Control	8		1. Learners are able to differentiate phenomena and processes based on certain characteristics and salient features such as In vitro and In vivo fertilization, Medical Termination of Pregnancy (MTP). 2. Learner appreciates technological applications and processes in Biology towards the improvement in the quality of life and sustainable development such as Multiple Ovulation Embryo Transfer Technology for herd improvement. 3. Learner exhibits ethics and values of honesty, objectivity, rational thinking and freedom from myth and superstitious beliefs while taking decisions, respect for life such as Reports and records experimental data accurately, myth that Sexually Transmitted Diseases are spread by casual physical contact.
			3.3 Medical Termination of Pregnancy (MTP)	2		
July	4th (6 days)	3. Reproductive health	3.4 Sexually Transmitted Infections (STI)	2		1. Learners are able to differentiate phenomena and processes based on certain characteristics and salient features such as Genotype and Phenotype, Transcription and Translation, Replication, Mutation, Pleiotropy, Sex determination etc. 2. Learner explains efficiently systems, relationship, processes and phenomena such as Mendelian and Chromosomal disorders, Human Genome Project. 3. Learner describes contribution of
			3.5 Infertility	4		
			summary, Exercise & revision	2		
		4. Principles of Inheritance and Variation	James Watson and Francis Crick Introduction 4.1 Mendel's Law of Inheritance 4.2 Inheritance of one gene	4		
July	5th (5 days)	4. Principles of Inheritance and Variation	4.2.1 Law of Dominance 4.2.2 Law of Segregation	2		
			4.2.2.1 Incomplete Dominance 4.2.2.2 Co dominance	2	12. Exercise on controlled pollination – emasculation, tagging and bagging.	

August	1st (5 days)	4. Principles of Inheritance and Variation	4.3 Inheritance of two Genes	2	Scientists/Researchers all over the world in Systematic evolution of concepts, Scientific discoveries and inventions in the field of Biology based on historical scientific events /timelines etc such as Mendelian genetics to modern work for Linkage and Recombination, Hershy and Chase experiment to establish the concept that the DNA is Genetic Material, Watson and Crick model of DNA.
			4.3.1 Law of Independent Assortment		
			4.3.2 Chromosomal Theory of Inheritance	2	
			4.3.3 Linkage and Recombination	2	
			4.4 Polygenic Inheritance 4.5 Pleiotropy 4.6 Sex Determination	2	
August	2nd (5 days)	4. Principles of Inheritance and Variation	4.6.1 Sex determination in Humans	2	11. Prepare pedigree charts for genetic traits such as rolling of tongue, blood groups, widows's peak, colourblindness.
			4.6.2 Sex Determination in Honey bee		
			4.7 Mutation	2	
			4.8 Genetic Disorders 4.8.1 Pedigree Analysis	4	
			4.8.2 Mendelian disorders	2	
August	3rd (4 days)	4. Principles of Inheritance and Variation	4.8.3 Chromosomal Disorders	4	
			Summary, Exercise and Revision	4	
August	4th (5 days)	5. Molecular Basis of Inheritance	Introduction	2	13. Stain tissue section for nucleic acids (aceto carmine stain).
			5.1 The DNA		
			5.1.1 Structure of Polynucleotide chain	2	
			5.1.2 Packaging of DNA helix	2	
			5.2 The Search for Genetic Material Transforming Principle Biochemical Characterisation of Transforming Principle	4	
August	5th (3 days)	5. Molecular Basis of Inheritance	5.2.1 The Genetic Material is DNA	2	
			5.2.2 Properties of Genetic Material (DNA Versus RNA)		
			5.3 RNA world	2	
			5.4 Replication		
			5.4.1 The Experimental proof	2	
5.4.2 The Machinery and the Enzymes					
September	1st (2 days)	5. Molecular Basis of Inheritance	5.5 Transcription	2	
			5.5.1 Transcription Unit		
			5.5.2 Transcription Unit and the Gene		
			5.5.3 Types of RNA and the process of Transcription	2	
			5.6 Genetic Code		

September	2nd (5 days)	5. Molecular Basis of Inheritance	5.6.1 Mutations and Genetic Code	2		
			5.6.2 t RNA - The Adapter Molecule			
			5.7 Translation	6		
			5.8 Regulation of Gene Expression			
		5.8.1 The Lac Operon				
5. Molecular Basis of Inheritance	5.9 Human Genome Project	4				
	5.9.1 Salient Features of Human Genome					
September	3rd (5 days)	5. Molecular Basis of Inheritance	5.10 DNA Fingerprinting	2		1. Students will be able to recognize and describe the contributions made by Scientists and Researchers in the field of Evolutionary biology as well as in Systematic evolution of concepts, scientific discoveries and inventions. 2. Learners are able to differentiate phenomena and processes based on certain characteristics and salient features such as Divergent and Convergent Evolution, Homologous and Analogous Organs. 3. Learner explains efficiently systems, relationship, processes and phenomena such as Process of Evolution.
			summary, Exercise & revision	2		
		6. Evolution	Introduction	2		
			6.1 Origin of Life			
			6.2 Evolution of Life forms- A Theory	2		
6.3 What are the evidences for Evolution?	2					
September	4th (4 days)	6. Evolution	6.4 What is Adaptive Radiation?	2	23. Study analogous and homologous organs in various plants and animals.	
			6.5 Biological Evolution	2		
			6.6 Mechanism of Evolution	2		
			6.7 Hardy -Weinberg Principle	2		
September	5th (3 days)	6. Evolution	6.8 A Brief Account of Evolution	4		
			6.9 Origin and Evolution of Man	2		
October	1st (4 days)	6. Evolution	summary, Exercise & revision	2	14. To identify common disease causing organism like Ascaris, Entamoeba, Plasmodium, ring worm. Comment on the symptoms of the diseases that they cause.	
			7. Human Health and Diseases	M.S.Swaminathan		2
				Introduction		
		7.1 Common diseases in Humans	6			
October	2nd (6 days)	7. Human Health and Diseases	7.2 Immunity	2	15. To identify common disease causing organism like Ascaris, Entamoeba, Plasmodium, ring worm. Comment on the symptoms of the diseases that they cause. 1. Learners are able to differentiate phenomena and processes based on certain characteristics and salient features such as Inbreeding and Outbreeding, In vitro and In vivo fertilization. 2. Learners are able to relate Processes and phenomena with causes and effects such as diseases with symptom, AIDS (Acquired Immuno Deficiency Syndrome) 3. Draws labelled diagrams, flow chart, concept maps, graphs such as Life cycle of Plasmodium. 4. Learner applies scientific concepts in daily life and solving problems such as Maintain hygiene and sanitation during Menstruation. 5. Learner exhibits ethics and values of honesty, objectivity, rational thinking and freedom from myth and superstitious beliefs while taking decisions, respect for life such as belief that	
			7.2.1 Innate Immunity			
			7.2.2 Acquired Immunity			
			7.2.3 Active and Passive Immunity	2		
			7.2.4 Vaccination and Immunisation			
			7.2.5 Allergies	2		
			7.2.6 Autoimmunity			
7.2.7 Immune Systems in the body	2					

			7.3 AIDS	2		Vaccination is not important for prevention of diseases.	
			7.4 Cancer	2			
October	3rd (4 days)	7. Human Health and Diseases	7.5 Drugs and Alcohol Abuse	2			
			7.5.1 Adolescence and Drug/Alcohol Abuse	4			
			7.5.2 Addiction and Dependence	2			
October	4th (3 days)	7. Human Health and Diseases	7.5.3 Effects of Drug/Alcohol Abuse	2		1. Learners are able to relate Processes and phenomena with causes and effects such as Production with use of Fertilisers. 2. Learner appreciates technological applications and processes in biology towards the improvement in the quality of life and sustainable development such as Plant breeding for the development of resistant varieties of plants, Plant tissue culture.	
			7.5.4 Prevention and Control summary, Exercise & revision		2		
		8. Microbes in Human Welfare	Introduction	2			
			8.1 Microbes in Household Products				
			8.2 Microbes in Industrial products				
October	5th (2 days)	8. Microbes in Human Welfare	8.2.1 Fermented Beverages	2			
			8.2.2 Antibiotics	2			
			8.2.3 Chemicals, Enzymes and their Bioactive molecules				
November	1st & 2nd (5 days)	8. Microbes in Human Welfare	8.3 Microbes in Sewage Treatment	4			
			8.4 Microbes in Production of Biogas				
			8.5 Microbes as Biocontrol Agents	4			
			8.6 Microbes as Biofertilisers	2			
		8. Microbes in Human Welfare	summary, Exercise & revision	2			
November	3rd & 4th (6 days)	9. Biotechnology - Principles and Processes	9.1 Principles of Biotechnology	6	Make a model of DNA. Observe the quality and shelf life etc of fruits/seeds available in the market.	Learner appreciates technological applications and processes in biology towards the improvement in the quality of life and sustainable development such as Microbial fermentation for industrial production, Waste water treatment, Biogas production technology.	
			9.2 Tools Of Recombinant Dna Technology				
			9.2.1 Restriction Enzymes				
			9.2.2 Cloning Vectors				
			9.2.3 Competent Host (For Transformation with Recombinant DNA)				
			9.3 Processes Of Recombinant DNA Technology	4			
			9.3.1 Isolation of the Genetic Material (DNA)				
			9.3.2 Cutting of DNA at Specific Locations				
			9.3.3 Amplification of Gene of Interest using PCR				

November	5th (3 days)	9. Biotechnology - Principles and Processes	9.3.4 Insertion of Recombinant DNA into the Host Cell/Organism	6	
			9.3.5 Obtaining the Foreign Gene Product		
			9.3.6 Downstream Processing		
December	1st (2 days)	10. Biotechnology And Its Applications	Introduction	4	
			10.1 Biotechnological Applications In Agriculture		
December	2nd (6 days)	10. Biotechnology And Its Applications	10.2 Biotechnological Applications In Medicine	4	
			10.2.1 Genetically Engineered Insulin		
			10.2.2 Gene Therapy		
			10.2.3 Molecular Diagnosis	6	
			10.3 Transgenic Animals		
			10.4 Ethical Issues		
		summary, Exercise & revision	2		
December	3rd (5 days)	11. Organisms And Populations	11.1 Populations	10	21. Study of plant population density by quadrat method. 22. Study of plant population frequency by quadrat method.
			11.1.1 Population Attributes		
			11.1.2 Population Growth		
			11.1.3 Life History Variation		
			11.1.4 Population Interactions		
			summary, Exercise & revision		
		12.1 Ecosystem–Structure and Function		15. Collect and study soil from different sites and study them for texture and moisture content. 16. Study the pH and water holding capacity of soil. Correlate with the kinds of plants found	
		12.2. Productivity			
		12.3 Decomposition			
		12.4 Energy Flow			
		12.5 Ecological Pyramids			

December	4th (6 days)	12.Ecosystem	summary, Exercise & revision	12	in them. 17. Study plants and animals found in dry conditions. Comment upon on their adaptations/ ecosystems. 18. Study plants and animals of aquatic conditions. Comment upon on their adaptations/ ecosystems. 19. Collect water from different water bodies around you and study them for pH, clarity and presence of any living organisms. 20. Study the amount of suspended particulate matter in air at the two widely different sites.	
January	1st & 2nd (6 days)	13.Biodiversity & Conservation	13.1 Biodiversity 13.1.1 How Many Species are there on Earth and How Many in India? 13.1.2 Patterns of Biodiversity 13.1.3 The importance of Species Diversity to the Ecosystem 13.1.4 Loss of Biodiversity 13.2 BIODIVERSITY CONSERVATION 13.2.2 How do we conserve Biodiversity? summary, Exercise & revision	12		
January, February till board examination			Revision & Test			