



साप्ताहिक विच्छेदित पाठ्यक्रम

मई 2024-मार्च 2025

कक्षा-12

विज्ञान संकाय

एकीकृत
शैक्षणिक कैलेंडर
2024 के साथ
समन्वित



सम्बंधित दस्तावेज एवं शैक्षणिक सामग्री
के लिए QR कोड को SCAN करें।



झारखण्ड शैक्षिक अनुसंधान एवं प्रशिक्षण परिषद्, राँची
Jharkhand Council of Educational Research and Training, Ranchi

साप्ताहिक विच्छेदित पाठ्यक्रम 2024-25

कक्षा - 12

विज्ञान संकाय



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BIOLOGY

*** It is mandatory to conduct practical classes of related lessons simultaneously as per the syllabus.**

Month	Week	Chapters	Subtopics	Practicals
May (17 days) & June (16 days)	May 1st, 2nd, 3rd, 4th & 5th (17 days)	1. Sexual Reproduction in flowering plants	Panchanan Maheshwari Introduction 1.1 Flower- A Fascinating organ of Angiosperms 1.2 Pre-Fertilisation: Structures and Events	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.
			1.2.1 Stamen, Microsporangium and Pollengrains	
			1.2.2 The Pistil, Megasporangium (Ovule) and Embryo Sac	
			1.2.3 Pollination	
	June 1st, 2nd & 3rd (6 days)	1. Sexual Reproduction in flowering plants	1.3 Double Fertilisation	5. Study fruits and seeds of any common fruit (e.g. legume) at different stages of development.
			1.4 Post Fertilisation: Structures and Events 1.4.1 Endosperm	
			1.4.2 Embryo 1.4.3 Seed 1.5 Apomixis and Polyembryony summary, Exercise & revision	
July	June 4th & 5th (10 days)	2. Human Reproduction	Introduction 2.1 The Male Reproduction System 2.2 The Female Reproductive System 2.3 Gametogenesis	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).
			2.4 Menstrual Cycle	
			2.5 Fertilisation and Implantation 2.6 Pregnancy and Embryonic Development 2.7 Parturition and Lactation summary, Exercise & revision	
	1st (6 day) 2nd (6 days)	2. Human Reproduction	2.4 Menstrual Cycle	9. Study of t.s. of blastula through permanent slide.
			2.5 Fertilisation and Implantation 2.6 Pregnancy and Embryonic Development 2.7 Parturition and Lactation summary, Exercise & revision	
			2.4 Menstrual Cycle	
July (25 days)	3rd (4 days)	3. Reproductive health	Introduction 3.1 Reproductive Health-Problems and Strategies 3.2 Population Stabilisation and Birth Control	
			3.3 Medical Termination of Pregnancy (MTP)	
	4th (6 days)	3. Reproductive health	3.4 Sexually Transmitted Infections (STI) 3.5 Infertility summary, Exercise & revision	
			3.4 Sexually Transmitted Infections (STI) 3.5 Infertility summary, Exercise & revision	
	5th (3 days)	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	10. Study Mendelian inheritance using seeds of different colours/size of any plant.
			4.2.1 Law of Dominance 4.2.2 Law of Segregation	

BIOLOGY

Month	Week	Chapters	Subtopics	Practicals
August (24 days)	1st (3 days)	4. Principles of Inheritance and Variation	4.2.2.1 Incomplete Dominance	12. Exercise on controlled pollination – emasculation, tagging and bagging.
			4.2.2.2 Co dominance	
			4.3 Inheritance of two Genes	
			4.3.1 Law of Independent Assortment	
			4.3.2 Chromosomal Theory of Inheritance	
			4.3.3 Linkage and Recombination	
	2nd (6 days)	4. Principles of Inheritance and Variation	4.4 Polygenic Inheritance	11. Prepare pedigree charts for genetic traits such as rolling of tongue, blood groups, widows's peak, colourblindness.
			4.5 Pleiotropy	
			4.6 Sex Determination	
			4.6.1 Sex determination in Humans	
			4.6.2 Sex Determination in Honey bee	
			4.7 Mutation	
	3rd (5 days)	4. Principles of Inheritance and Variation	4.8 Genetic Disorders	
			4.8.1 Pedigree Analysis	
			4.8.2 Mendelian disorders	
			4.8.3 Chromosomal Disorders	
			Summary, Exercise and Revision	
August	4th (5 days)	5. Molecular Basis of Inheritance	Introduction	13. Stain tissue section for nucleic acids (aceto carmine stain).
			5.1 The DNA	
			5.1.1 Structure of Polynucleotide chain	
			5.1.2 Packaging of DNA helix	
			5.2 The Search for Genetic Material	
	5th (5 days)	5. Molecular Basis of Inheritance	Transforming Principle	
			Biochemical Characterisation of Transforming Principle	
			5.2.1 The Genetic Material is DNA	
			5.2.2 Properties of Genetic Material (DNA Versus RNA)	
			5.3 RNA world	
September (20 days)	1st (0 days) 2nd (5 days)	5. Molecular Basis of Inheritance	5.4 Replication	
			5.4.1 The Experimental proof	
			5.4.2 The Machinery and the Enzymes	
			5.5 Transcription	
			5.5.1 Transcription Unit	
		5. Molecular Basis of Inheritance	5.5.2 Transcription Unit and the Gene	
			5.5.3 Types of RNA and the process of Transcription	
			5.6 Genetic Code	
			5.6.1 Mutations and Genetic Code	
			5.6.2 t RNA – The Adapter Molecule	
	5. Molecular Basis of Inheritance	5. Molecular Basis of Inheritance	5.7 Translation	
			5.8 Regulation of Gene Expression	
			5.8.1 The Lac Operon	
			5.9 Human Genome Project	
			5.9.1 Salient Features of Human Genome	

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Month	Week	Chapters	Subtopics	Practicals
September	3rd (5 days)	5. Molecular Basis of Inheritance	5.10 DNA Fingerprinting summary, Exercise & revision	
		6. Evolution	Introduction	
			6.1 Origin of Life	
			6.2 Evolution of Life forms- A Theory	
	4th (3 days)	6. Evolution	6.3 What are the evidences for Evolution?	23. Study analogous and homologous organs in various plants and animals.
			6.4 What is Adaptive Radiation?	
			6.5 Biological Evolution	
October (21 days)	5th (6 days) & 6th (1 day)	6. Evolution	6.6 Mechanism of Evolution	
			6.7 Hardy -Weinberg Principle	
			6.8 A Brief Account of Evolution	
	1st (3 days)	6. Evolution	6.9 Origin and Evolution of Man	
			summary, Exercise & revision	
October		7. Human Health and Diseases	M.S. Swaminathan	14. To identify common disease causing organism like Ascaris, Entamoeba, Plasmodium, ring worm. Comment on the symptoms of the diseases that they cause.
			Introduction	
			7.1 Common diseases in Humans	
	2nd (3 days)	7. Human Health and Diseases	7.2 Immunity	
			7.2.1 Innate Immunity	
			7.2.2 Acquired Immunity	
			7.2.3 Active and Passive Immunity	
			7.2.4 Vaccination and Immunisation	
			7.2.5 Allergies	
			7.2.6 Autoimmunity	
			7.2.7 Immune Systems in the body	
	3rd (6 days)	7. Human Health and Diseases	7.3 AIDS	
			7.4 Cancer	
			7.5 Drugs and Alcohol Abuse	
			7.5.1 Adolescence and Drug/Alcohol Abuse	
October	4th (6 days)	7. Human Health and Diseases	7.5.2 Addiction and Dependence	
			7.5.3 Effects of Drug/Alcohol Abuse	
			7.5.4 Prevention and Control	
			summary, Exercise & revision	
		8. Microbes in Human Welfare	Introduction	
			8.1 Microbes in Household Products	
			8.2 Microbes in Industrial products	
	5th (3 days)	8. Microbes in Human Welfare	8.2.1 Fermented Beverages	
			8.2.2 Antibiotics	
			8.2.3 Chemicals, Enzymes and their Bioactive molecules	

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Month	Week	Chapters	Subtopics	Practicals
November (21 days)	1st (1 day) & 2nd (4 days)	8. Microbes in Human Welfare	8.3 Microbes in Sewage Treatment	
			8.4 Microbes in Production of Biogas	
			8.5 Microbes as Biocontrol Agents	
			8.6 Microbes as Biofertilisers	
	3rd (5 days)	8. Microbes in Human Welfare	summary, Exercise & revision	
		9. Biotechnology - Principles and Processes	9.1 Principles of Biotechnology	Make a model of DNA. Observe the quality and shelf life etc of fruits/ seeds available in the market.
			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)	
	4th (6 days)		9.3 Processes Of Recombinant DNA Technology 9.3.1 Isolation of the Genetic Material (DNA)	
November			9.3.2 Cutting of DNA at Specific Locations	
			9.3.3 Amplification of Gene of Interest using PCR	
	5th (5 days)	9. Biotechnology - Principles and Processes	9.3.4 Insertion of Recombinant DNA into the Host Cell/ Organism	
			9.3.5 Obtaining the Foreign Gene Product	
			9.3.6 Downstream Processing	
December (19 days)	1st (0 days) & 2nd (6 days)	10. Biotechnology And Its Applications	Introduction	
			10.1 Biotechnological Applications In Agriculture	
		10. Biotechnology And Its Applications	10.2 Biotechnological Applications In Medicine	
			10.2.1 Genetically Engineered Insulin	
			10.2.2 Gene Therapy	
			10.2.3 Molecular Diagnosis	
			10.3 Transgenic Animals	
			10.4 Ethical Issues	
			summary, Exercise & revision	
	3rd (6 days)	11. Organisms And Populations	11.1 Populations	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	

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Month	Week	Chapters	Subtopics	Practicals
December	4th (5 days), 5th (2 days) & 6th (0 days)	12.Ecosystem	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 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.
			12.2. Productivity	
			12.3 Decomposition	
			12.4 Energy Flow	
			12.5 Ecological Pyramids	
			summary, Exercise & revision	
January (6 days)	1st (0 day) & 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 * (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 investigat)	
January (3rd, 4th & 5th) (13 days), February (20 days) March (21 days) (till board examination)			Revision & Test	
Total Working Days – 224 Days (Tentative)				