I Bio - Diversity

STANDARD XI

1.1. Taxonomic System

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Realises need for Taxonomy	1.1. Taxonomic System	1. Usage of Charts	1. Sketches of flow charts and relevant	1. What is biological species	10 periods
2. Understands species concept.	1.1.1. Introduction - Taxa and species concepts -		diagrams	concept? 2. What is the	
3. Knows the importance of similarities and dissimilarities in Phenetic method	Methods of Taxonomy 1.1.2. Phenetic			Karyotypes in taxonomy?	
4. Becomes familiar with identification keys	Methods 1.1.3. Identification Keys			o. What is palaeotaxonomy?	
5. Knows the methods of Nomenclature.	 1.1.4. Cyto taxonomy 1.1.5. Chemo taxonomy 1.1.6. Palaeotaxonomy 			4. What is the importance of Iso-enzymes in taxonomy?	
	1.1.7. Nomenclature - Methods				

1

I Bio - Diversity

STANDARD XI

1.2. Animal Groups

	Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
	1	2	3	4	5	6
1	Realises the differences between Parazoa and Metazoa.	1.2. Animal Groups 1.2.1. Methods of grouping animals	 Visit to Museum Visit to Zoo. 	1. Figures of important examples	1. What is a coelenterate?	30 periods
2	2. Recalls the role of coelom in grouping of metazoans	1.2.1. Major phyla - General characters with appropriate examples.	3. Observing preserved specimens	 2. Life cycle of Plasmodium 3. Relevant 	2. Mention the parasitic adaptations of platyhelminthic worms.	
3	3. Knows the intermediary position of Prochordates between Invertebrates and Vertebrates.	Protozoa - Porifera - Coelenterata - Platyhelminthes - Aschelminthes - Annelida - Arthropoda - Mollusca -	 4. Learning Taxidermy and wet preservation. 5. Usage of Charts vedio clippings and Films. 	diagrams.	3. Differentiate radial and bilateral symmetry with examples.	
4	Recalls the life cycle of Plasmodium.	Echinodermatea - Chordata - Prochordata - Vertebrata - Pisces				
5	 Compares the organ systems of earthworm and frog. 	- Amphibia - Reptilia - Aves - Mammalia.				
		1.2.3. Type study - Plasmodium - Earthworm - Amphioxus - Frog - Pigeon				

II Cell Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the units of measurements	2.1. Introduction - Microscopy and cytological techniques	1. Observing the parts of a compound Microscope.	1. Photograph of an Electron Microscope	1. What is the advantage of using	3 periods
2. Knows the principles of Electron Microscopy.	reeninques	2. Preparing temporary mounts.	2. Diagramatic sketch	Electron Microscope.	
3. Realises the need for staining in Microscopy.		3. Making observations under a microscope.	showing path of electrons in an Electron microscope		
4. Knows the methods of preparation of temporary mounts.			mcroscope		

II Cell Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the various cell organelles and their functions	 2.2. Animal cell - Ultra structure 2.2.1. Plasma Membrane 2.2.2. Nucleus and Nuclear content. 2.2.3. Mitochondria 2.2.4. Ribosomes 2.2.5. Endoplasmic Reticulum 2.2.6. Lysosomes 2.2.7. Golgibodies 2.2.8. Centrosomes 2.2.9. Chromosomes 2.2.10.Cytological techniques - Micro techniques, staining techniques, staining techniques, temporary and permanent mounts, Electron microscopic studies 	 Observing Charts. Preparing models and cutouts 	 Ultra structure of a cell Diagrams of organelles 	1. Write short notes on any cell organelles.	8 periods

II Cell Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Realises that cancer is due to abnormal cell divisions	2.4. Cancer Biology 2.4.1. Cancer - Definition	1. Pictures showing various types of cancer.	1. Suitable diagram showing Radio therapy	1. Why is cancer caused?	9 periods
2. Knows the names of	2.4.2. Types of Cancer			2. What are	
various forms of cancers.	2.4.3. Chemotherapy			agents?	
 3. Knows that cancer is pathological 4. Familiarises with various treatment procedures. 	2.4.4. Radio therapy			3. What is Chemo- therapy?	

III Human Anatomy

No. of Periods
6
1e 40 periods
th the second se

IV Principles of Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Understands incomplete dominance	<u>4.1. Quantitative</u> <u>Inheritance</u>	1. Charts	1. Photographs of whites, negroes and negro -	1. What are multiple factors?	3 periods
2. Knows multiple factors			Whites	2. Related problems.	

IV Principles of Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls Chromosome theory of Sex determination	<u>4.2.</u> <u>Sex</u> <u>determination</u>	1. Charts	1. Relevant sketches	1. What is a gynandro - morph.	3 periods
2. Understands Genic balance theory of sex determination				2. What is sex reversal.	
3. Realises the role of sex determination.					

IV Principles of Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the role of genes in bringing out phenotypic characters.	<u>4.3. Pleiotropy</u>	1. Charts	1. Suitable diagrams	1. Provide an example for pleiotropic genes	3 periods
2. Understands the functioning of modifiers and supressors					
3. Knows the role of pleiotropic genes.					

IV Principles of Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Knows sex linked traits	<u>4.4. Sex linked</u> <u>inheritance</u>	1. Charts	1. Suitable diagrams	1. Make a list of sex linked characters in	3 periods
2. Understands sex linkage in Drosophila				man.	
3. Knows sex linked characters in man				2. Related problems	
				3. What is criss- cross inheritance	

IV Principles of Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
 Recalls various types of blood grouping Understands the concept of aglutinin and aglutinogen in blood grouping Knows Rhesus factor 	4.5. Multiple alleles 4.5.1. Blood groups	1. Charts	1. Picture showing antiserum effects	 Problems related to blood group What is erythro blastosis - foetalis? 	3 periods

IV Principles of Genetics

4.7. Hardy - Weinberg law - Population Genetics

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
 Realises the role of genes at a population level. Familiarises himself with the Hardy weinberg law. 	4.7. Hardy - Weinberg Law - Population Genetics.		1. Relevant diagrams	 What are the conditions for the operation of Hardy-Weinberg Law? What is the importance of Population Genetics? 	4 periods

V Developmental Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls types of eggs based on yolk content	5.1. Egg types - outline idea	1. Charts and slides	1. Diagrams showing types of eggs.	 Differentiate micro and macrolecithal eggs. What are telolecithal egg? What is cleidoic egg? Name the organism producing alecithal egg. 	3 periods

V Developmental Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
 Recalls planes of Cleavage Understands that cleavage is related to amount of yolk. 	5.2. Cleavage and types - Frog's egg	1. Charts, slides and models	1. Appropriate diagrams	 What is a discoidal egg. Trace the planes of Cleavage in Frog's egg. 	3 periods

V Developmental Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the process of gastrulation	<u>5.3.</u> <u>Gastrulation -</u> <u>Frog's egg</u>	1. Charts and Slides	1. Stages in gastrulation	1. What is epiboly and emboly?	3 periods
2. Differentiates a blastula from a gastrula				 What is the role of dorsal lip of the blastopore? What is an organiser? 	

V Developmental Biology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Understands the process of Neurulation	5.4. Organogenesis 5.4.1. Neurulation	1. Charts, Models	1. Appropriate diagrams	1. How is the coelom formed?	10 periods
2. Knows the process of formation of organs like Eye, Brain & Heart.	 5.4.2. Ectodermal derivatives 5.4.3. Mesodermal derivatives 5.4.4. Endodermal derivatives 			 Mention the formation of alimentry canal What is promeso and metaaaephros? 	

VI Economic Zoology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Realises that there are economically beneficial animals.	<u>6.1.</u> <u>Beneficial</u> <u>animals</u> 6.1.1. Corals - reaf building -	1. Charts specimens photographs videos	 Appropriate diagrams and photographs 	1. What is regeneration?	8 periods
2. Recalls the importance of vermi culture	Ornamental 6.1.2. Planaria - Regeneration studies			3. Name the	
3. Knows the value of fishes	6.1.3. Earthworm - Vermiculture 6.1.4. Beneficial			beneficial insects	
	insects 6.1.5. Prawns, Crabs, Lobsters			4. What is the importance of omega	
	6.1.6. Pearl oysters 6.1.7. Fishes - Nutritive value & Omega			nutrition?	
	Medical & Economical importance			establish an aquarium?	
	6.1.8. Guano (Bird Excreta)				
	6.1.9. Ornamental, Aesthetic values - Aquarium, Terrarium - Vivarium (Zoo)				

VI Economical Zoology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the benefits derived from insects.	<u>6.2.</u> <u>Economic</u> <u>Entomology</u>	1. Charts, museum specimens	1. Relevant pictures	1. What is Entomophily?	6 periods
2. Knows methods of sericulture and Apiculture.	6.2.1. Beneficial Insects 6.2.2. Harmful Insects			2. What are the insects that affect the stored food products?	
3. Understands the role of insection in spreading diseases				3. Where is vector control	
4. Knows agricultural pests				Research Centre located?	

VI Economical Zoology

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls the diseases caused by animals	<u>6.3. Harmful</u> <u>Animals</u> 6.3.1. Disease causing	1. Charts, pictures	1. Diagrams of disease causing organism	1. What are vector borne diseases?	6 periods
2. Recollects insects as carriers of diseases	organisms - vectors		2. Poison	2. What is a neurotoxic poison?	
3. Knows the poison apparatus of a snake	6.3.2. Poisonous organisms		Cobra	3. How does a honey bee	
	6.3.3. Fowling organisms			sting?	
	6.3.4. Pests 6.3.5. Vectors			fowling organisms?	
				5. Differentiate pests and vectors	

VII Origin of life

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
 Thinks about origin of all forms of life. Becomes familiar with all theories 	 7.1. Theories 7.1.1. Theory of Special creation 7.1.2. Cosmozoic Theory 7.1.3. Theory of spontaneous generation Big Bang theory A.I. Oparin's theory J.B.S. Haldane's hypothesis Urey - Miller Hypothesis and Experiment Coacervation Theory 	1. Charts Pictures	 Diagram showing Urey- Miller experiment Appropriate Pictures 	 What is the opinion of Oparin regarding origin of life? How did oxygen come into our environment? 	2 periods

VII Origin of life

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Familiarises with all eras and periods	7.2. Geological time scale	1. Charts	1. Table showing eras, periods and their	1. What was pre - cambrian period?	2 periods
2. Knows the importance of studying geological time scale.	7.2.1. Eras 7.2.2. Periods 7.2.3. Epochs		durations.	2. Why do you call palaeo - zoic era as the	
3. Understands major events in each period.	7.2.4. Major events in each period			"craddle of ancient life?"	
				3. Which was the age of fishes?	
				4. Which was the golden age of reptiles?	

VII Origin of life

Expected Specific Outcomes of Learning	Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
1	2	3	4	5	6
1. Recalls extinction of animals	7.3. Palaentology 7.3.1. Extinct animals -	1. Charts	1. Diagrams of fossils	1. Why did Dinosaurs become	2 periods
2. Understands methods of fossilisation	Mass extinctions 7.3.2. Fossils			extinct by the end of Mesozoic era?	
3. Knows the importance of dating of fossils	7.3.3. Fossilization 7.3.4. Dating of Fossils			2. What is petrification?	
	7.3.5. Fossils and Evolutionary significance			3. What is carbon dating?	

VII Origin of life

STANDARD XI

7.4. Evidences for evolution

Content in terms of Concepts	Curriculum Transactional Strategies	Illustrations	Evaluation	Suggested No. of Periods
2	3	4	5	6
7.4. Evidences for evolution	1. Charts	1. Relevant diagrams	1. What are vestigeal organs?	4 periods
 7.4.1. Comparative anatomy 7.4.2. Embryology 7.4.3. Physiology 7.4.4. Vestigeal organs 7.4.5. Geographical distribution 			 What is the significance of the island fauna? Compare the hearts in vertebrates 	
	Content in terms of Concepts27.4. Evidences for evolution7.4.1. Comparative anatomy7.4.2. Embryology7.4.3. Physiology7.4.4. Vestigeal organs7.4.5. Geographical distribution	Content in terms of ConceptsCurriculum Transactional Strategies237.4. Evidences for evolution1. Charts7.4.1. Comparative anatomy1. Charts7.4.2. Embryology7.4.3. Physiology7.4.4. Vestigeal organs7.4.5. Geographical distribution	Content in terms of ConceptsCurriculum Transactional StrategiesIllustrations2347.4. Evidences for evolution1. Charts1. Relevant diagrams7.4.1. Comparative anatomy1. Charts1. Relevant diagrams7.4.2. Embryology7.4.3. Physiology1. An	Content in terms of ConceptsCurriculum Transactional StrategiesIllustrationsEvaluation23457.4. Evidences for evolution1. Charts1. Relevant diagrams1. What are vestigeal organs?7.4.1. Comparative anatomy1. Charts2. What is the significance of the island fauna?7.4.2. Embryology3. Compare the hearts in vertebrates7.4.3. Physiology3. Compare the hearts in vertebrates7.4.5. Geographical distribution1. Network organs

SYLLABUS FOR PRACTICAL

ZOOLOGY - (Long Version)

STANDARD - XI

- I Earthworm Mounting of Body setae minimum 3 setae
- II Shark Mounting of Placoid scales
- III Study of parts of a compound microscope and dissection microscope. Demonstration -Circulation Blood in the wing of a live cockroach.
- IV Prepared slides observation drawing and writing notes on
 - 1. Plasmodium any 2 stages
 - 2. Paramoecium entire, Paramoecium conjugation
 - 3. Hydra entire
 - 4. Tapeworm Scolex
 - 5. Earthworm Body setae and Peneal setae Cross section of body
 - 6. Amphioxus entire
 - 7. Amphioxus Cross section through different regions
 - 8. Shark Placoid scales

V Museum specimens

- 1. Simple sponge
- 2. Corals
- 3. Tapeworm entire

- 4. Ascaris entire (male and female)
- 5. Earthworm entire
- 6. Prawn entire
- 7. Cockroach Dorsal and ventral view
- 8. Apple snail
- 9. Sepia
- 10. Star fish
- 11. Sea urchin
- 12. Amphioxus
- 13. Shark
- 14. A Teleost fish
- 15. Frog
- 16. Calotes
- 17. A snake
- 18. Pigeon
- 19. Quill feather
- 20. Rat

VI Demonstration only

- 1. Earthworm Viscera and Nervous system
- 2. Frog Buccal cavity, viscera and Digestive system.

VII Human anatomy

- 1. Upper and lower jaw with dentition
- 2. Models / actual bones humerus, radius ulna, femur, tibia, fibula, vertebrae, pelvic girdle