#### 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
<ol> <li>Realises need for Taxonomy</li> <li>Understands species concept.</li> </ol>	<ul> <li>1.1. Taxonomic System</li> <li>1.1.1. Introduction - Taxa and species</li> </ul>	1. Usage of Charts	1. Sketches of flow charts and relevant diagrams	<ol> <li>What is biological species concept?</li> <li>What is the</li> </ol>	4 periods
<ol> <li>Knows the importance of similarities and dissimilarities in Phenetic method.</li> </ol>	concepts - Methods of Taxonomy 1.1.2. Phenetic Methods			importance of Karyotypes in taxonomy?	
4. Becomes familiar with identification keys	1.1.3. Identification Keys			What is palaeotaxonomy?	
5. Knows the methods of Nomenclature.	<ul> <li>1.1.4. Cyto taxonomy</li> <li>1.1.5. Chemo taxonomy</li> <li>1.1.6. Palaeotaxonomy</li> <li>1.1.7. Nomenclature - Methods</li> </ul>			4. What is the importance of Iso-enzymes in taxonomy?	

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#### 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.	<ul><li>1.2. Animal Groups</li><li>1.2.1. Methods of grouping animals</li></ul>	<ol> <li>Visit to Museum</li> <li>Visit to Zoo.</li> </ol>	1. Figures of important examples	<ol> <li>What is a coelenterate?</li> <li>Mention the</li> </ol>	8 periods
2. Recalls the role of coelom in grouping of metazoans	1.2.1. Major phyla - General characters with appropriate examples.	3. Observing preserved specimens	<ol> <li>2. Life cycle of Plasmodium</li> <li>3. Relevent</li> </ol>	2. Mention the parasitic adaptations of platyhelminthic worms.	
3. Knows the intermediary position of Prochordates between Invertebrates and Vertebrates.	Protozoa - Porifera - Coelenterata - Platyhelminthes - Aschelminthes - Annelida - Arthropoda - Mollusca -	<ol> <li>Learning Taxidermy and wet preservation.</li> <li>Usage of Charts vedio clippings and Films.</li> </ol>	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.		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.					

#### 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	<ul> <li>2.2. Animal cell - Ultra structure</li> <li>2.2.1. Plasma Membrane</li> <li>2.2.2. Nucleus and Nuclear content.</li> <li>2.2.3. Mitochondria</li> <li>2.2.4. Ribosomes</li> <li>2.2.5. Endoplasmic Reticulum</li> <li>2.2.6. Lysosomes</li> <li>2.2.7. Golgibodies</li> <li>2.2.8. Centrosomes</li> <li>2.2.9. Chromosomes</li> </ul>	<ol> <li>Observing Charts.</li> <li>Preparing models and cutouts</li> </ol>	<ol> <li>Ultra structure of a cell</li> <li>Diagrams of organelles</li> </ol>	1. Write short notes on any cell organelles.	5 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?	3 periods
2. Knows the names of various forms of cancers.	<ul><li>2.4.2. Types of Cancer</li><li>2.4.3. Chemotherapy</li><li>2.4.4. Radio therapy</li></ul>			2. What are carcinogenic agents?	
3. Knows that cancer is pathological	2.4.4. Naulo melapy			3. What is Chemo- therapy?	
<ol> <li>Familiarises with various treatment procedures.</li> </ol>					

#### III Human Anatomy

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. Becomes familiar with history of anatomy	<u>3.1.</u> <u>Human</u> <u>Systems</u>	1. Charts	1. Relevant Diagrams	1. Describes the anatomy of any organ	20 periods
2. Knows the structural	3.1.1. Historical Account	2. Preserved organs		system.	
components of all systems.	3.1.2. Skin and its derivatives	3. Skeleton - Real / Model			
3. Able to Draw sketches.	3.1.3. Skeletal system	4. CD			
	3.1.4. Muscular system	5. Dissecting a mammal			
	3.1.5. Digestive system				
	3.1.6. Respiratory system				
	3.1.7. Circulatory system				
	3.1.8. Lymphatic system				
	3.1.9. Nervous system				
	3.1.10.Sense organs				
	3.1.11.Endocrine system				
	3.1.12.Excretory system				
	3.1.13. Reproductive system				

### **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
<ol> <li>Understands incomplete dominance</li> <li>Knows multiple factors</li> </ol>	<b>4.1. Quantitative</b> Inheritance	1. Charts	1. Photographs of whites, negroes and negro - Whites	<ol> <li>What are multiple factors?</li> <li>Related problems.</li> </ol>	2 periods

### **IV Principles of Genetics**

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

### **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.         2. Understands the functioning of modifiers and supressors         3. Knows the role of pleiotropic genes.	2 4.3. Pleiotropy	3 1. Charts	4 1. Suitable diagrams	5 1. Provide an example for pleiotropic genes	6 2 periods

### **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
<ol> <li>Knows sex linked traits</li> <li>Understands sex linkage in Drosophila</li> <li>Knows sex linked characters in man</li> </ol>	4.4. Sex linked inheritance	1. Charts	1. Suitable diagrams	<ol> <li>Make a list of sex linked characters in man.</li> <li>Related problems</li> <li>What is criss- cross inheritance</li> </ol>	3 periods

### **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 various types of blood grouping	<u>4.5.</u> <u>Multiple alleles</u> 4.5.1. Blood groups	1. Charts	1. Picture showing antiserum effects	1. Problems related to blood group	2 periods
2. Understands the concept of aglutinin and aglutinogen in blood grouping				2. What is erythro blastosis - foetalis?	
3. Knows Rhesus factor					

### 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.	<ol> <li>Differentiate micro and macrolecithal eggs.</li> <li>What are telolecithal egg?</li> <li>What is cleidoic egg?</li> <li>Name the organism producing alecithal egg.</li> </ol>	1 period

### 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
<ol> <li>Recalls planes of Cleavage</li> <li>Understands that cleavage is related to amount of yolk.</li> </ol>	5.2. Cleavage and types - Frog's egg	1. Charts, slides and models	1. Appropriate diagrams	<ol> <li>What is a discoidal egg.</li> <li>Trace the planes of Cleavage in Frog's egg.</li> </ol>	1 period

### 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?	2 periods
2. Differentiates a blastula from a gastrula				<ol> <li>What is the role of dorsal lip of the blastopore?</li> <li>What is an organiser?</li> </ol>	

### 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         2. Knows the process of formation of organs like Eye, Brain & Heart.	2 5.4. Organogenesis 5.4.1. Neurulation 5.4.2. Ectodermal derivatives 5.4.3. Mesodermal derivatives 5.4.4. Endodermal derivatives	3 1. Charts, Models	<b>4</b> 1. Appropriate diagrams	<ol> <li>How is the coelom formed?</li> <li>Mention the formation of alimentry canal</li> <li>What is promeso and metaaephros?</li> </ol>	6 periods

### 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 - Ornamental	1. Charts specimens photographs videos	1. Appropriate diagrams and photographs	<ol> <li>What is regeneration?</li> <li>What are coral reefs?</li> </ol>	8 periods
2. Recalls the importance of vermi culture	6.1.2. Planaria - Regeneration studies			3. Name the beneficial	
3. Knows the value of fishes	6.1.3. Earthworm - Vermiculture 6.1.4. Beneficial			insects	
	insects 6.1.5. Prawns, Crabs, Lobsters			4. What is the importance of omega fatty acids in	
	6.1.6. Pearl oysters 6.1.7. Fishes - Nutritive value & Omega			nutrition?	
	Fatty acid - Medical & Economical importance			5. How will you 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
<ol> <li>Recalls the diseases caused by animals</li> <li>Recollects insects as carriers of diseases</li> <li>Knows the poison apparatus of a snake</li> </ol>	<ul> <li>6.2. Harmful <u>Animals</u></li> <li>6.2.1. Disease causing organisms - vectors</li> <li>6.2.2. Poisonous organisms</li> <li>6.2.3. Fowling organisms</li> <li>6.2.4. Pests</li> <li>6.2.5. Vectors</li> </ul>	1. Charts, pictures	<ol> <li>Diagrams of disease causing organism</li> <li>Poison apparatus of Cobra</li> </ol>	<ol> <li>What are vector borne diseases?</li> <li>What is a neurotoxic poison?</li> <li>How does a honey bee sting?</li> <li>What are fowling organisms?</li> <li>Differentiate pests and vectors</li> </ol>	5 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
<ol> <li>Thinks about origin of all forms of life.</li> <li>Becomes familiar with all theories</li> </ol>	Z7.1.Theories7.1.1.Theory of Special creation7.1.2.Cosmozoic Theory7.1.3.Theory of spontaneous generationBig Bang theoryA.I. Oparin's theoryJ.B.S.Haldane's hypothesisUrey - Miller Hypothesis and ExperimentCoacervation	1. Charts Pictures	<ol> <li>Diagram showing Urey- Miller experiment</li> <li>Appropriate Pictures</li> </ol>	<ol> <li>What is the opinion of Oparin regarding origin of life?</li> <li>How did oxygen come into our environment?</li> </ol>	8 periods
	Theory				

### 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
<ol> <li>Familiarises with all eras and periods</li> <li>Knows the importance of studying geological time scale.</li> <li>Understands major events in each period.</li> </ol>	<ul> <li>7.2. Geological time scale</li> <li>7.2.1. Eras</li> <li>7.2.2. Periods</li> <li>7.2.3. Epochs</li> <li>7.2.4. Major events in each period</li> </ul>	1. Charts	<ol> <li>Table showing eras, periods and their durations.</li> </ol>	<ol> <li>What was pre - cambrian period?</li> <li>Why do you call palaeo - zoic era as the "craddle of ancient life?"</li> <li>Which was the age of fishes?</li> <li>Which was the golden age of reptiles?</li> </ol>	6 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
<ol> <li>Recalls extinction of animals</li> <li>Understands methods of fossilisation</li> <li>Knows the importance of dating of fossils</li> </ol>	7.3. Palaentology 7.3.1. Extinct animals - Mass extinctions 7.3.2. Fossils 7.3.3. Fossilization 7.3.4. Dating of Fossils 7.3.5. Fossils and Evolutionary significance	1. Charts	1. Diagrams of fossils	<ol> <li>Why did Dinosaurs become extinct by the end of Mesozoic era?</li> <li>What is petrification?</li> <li>What is carbon dating?</li> </ol>	4 periods

#### SYLLABUS FOR PRACTICAL

#### **ZOOLOGY** - (Short 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. Amphioxus entire
  - 6. 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. Star fish
- 10. Amphioxus
- 11. Shark
- 12. Frog
- 13. Calotes
- 14. A snake
- 15. Pigeon
- 16. Quill feather
- 17. Rat
- VI Demonstration only
  - 1. 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