

Agril. Polytechnic – Syllabus

First Year

Subject :- (C) Biology – I (Theory)

Reference Book :- Biology Std XI

Publisher :- Secretary, Maharashtra State Board of Secondary & Higher Secondary Education, Pune – 411004.

Reprint- 2012


Marks -40

Theory Classes - 45

Sr. .No.	Name of Topic	No of Hours	Weightages	Reference Book Page Nos.
Section- First Botany				
1. 1.1	Systematic and binomial system of nomenclature - meaning of the terms taxonomy, systematics,	01	} 02	2-3
1.2	classification and nomenclature, Need of classification.	02		2-3
1.3	Taxonomic hierarchy with examples. Binomial nomenclature explanation, significance and examples.	02		2-4
2 2.1	Classification of living organisms (five Kingdom classification) – Major groups and principles of classification for each Kingdom with examples.	02	} 02	5-8
2.2.	Lichens - Meaning, characters, examples and importance.	01		8-9
2.3	Viruses and viroids - Definitions, characters, types with examples, Economic importance and list of viral diseases.	01		9-11
3 3.1	Diversity in living organisms-Brief idea.	01	} 02	1
3.2	Salient features of major plant groups - Algae, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms (Dicotyledons and Monocotyledons). Three to five salient features and two examples of each category.	02		13-17
3.3	Botanical gardens and herbaria - Meaning, importance and list of	01		17-19

4	4.1	gardens and herbaria in India. Biochemistry of cell Basic chemical constituents of living bodies.	01	}	21	
	4.2	Structure and function of carbohydrates, proteins, lipids and nucleic acids in brief.	01		} 04	21-25
	4.3	Enzymes - Definition,				
5	5.1	Cell cycle	01	}	29	
	5.2	Mitosis	01		} 04	30-32
	5.3	Meiosis	01			32-35
6	6.1	Morphology of Plants Morphology, anatomy and functions of different parts	02	}	38-58	
	6.2	Plant tissues.	01		60-69	
	6.3	Movement of water, food, nutrients and gases.-	02		73-77	
	6.4	Mineral deficiency symptoms, Mineral toxicity, Elementary idea of Hydroponics, biological nitrogen fixation	01		82-84	
	6.5	Plant Growth and Development: Seed dormancy. Germination - Hypogeal, epigeal and viviparous.	01		} 06	87-88
	6.6	Definition and characteristics of growth. Phases of growth, Conditions of growth, Differentiation, de-differentiation, redifferentiation Sequence of developmental process in a plant cell	01			89-91
	6.7	Growth regulators - auxins, gibberellins, cytokinines, ethylene and abscissic acid (role in brief)	01		91-94	
	6.8	Photoperiodism, Photomorphogenesis including brief account of Phytochromes (Elementary idea) Vernalization.	01		94-96	

		Section-II Zoology				
7.	7.1	Diversity in Living World: Kingdom Animalia: Salient features of major phyla under kingdom Animalia. Classification of following phyla with three to five salient features and two examples of each category: Porifera, Coelenterata, Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata.	02	} 06	99-106	
	7.2.	Classification of phylum chordata upto class level with three to five salient features and two examples of each category: Chondrichthyes,	01		} 06	106-113
	7.3	Osteichthyes, Amphibia, Reptilia, Aves and Mammalia.	01			
8	8.1	Structure and function of cell: Organization of Cell: Cell theory - brief account Prokaryotic and eukaryotic cell - structure and examples. Plant cell and animal cell.	01	} 06	118-126	
	8.2	Nuclear organization - Nucleus, nucleolus and nucleoplasm.	01			126-129
	8.3	Cell wall and cell membrane - (fluid mosaic model).	01			121
	8.4	Cell organelles: Plastids, Mitochondria, Golgi complex, Lysosomes, Endoplasmic reticulum, Vacuoles, Ribosome and Centrioles (ultrstructure and functions). Microbodies, cytoskeleton, cilia and flagella.	02			122-129

9. 9.1	Structural organisation in Animals: Study of Animal Tissues Animal tissues - types: a) Epithelial tissues - simple epithelium (squamous, cuboidal, columnar, Ciliated, glandular). - compound epithelium (stratified and transitional).	02	 06	131-133
9.2	Connective tissue - (Areolar, Adipose, Tendons, Ligaments, Cartilage and Bone).	01		133-135
9.3	Muscular tissue - (Smooth, striated and cardiac).	01		136-137
9.4	Nervous tissue (Neurons, glial cells and types of neurons).	01		137-139
10.	Study of Animal Type: Morphology, anatomy and functions of digestive, circulatory, respiratory, nervous, and reproductive systems of cockroach	02	02	141-147

Subject :- (C) Biology- I (Practical)

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Practical Classes - 20

Sr. No.	Name of Topic	No of Hours
1.	Study of parts of compound microscope.	01
2.	Preparation of T. S. of dicot (sunflower) and monocot roots and stem to study different plant tissues.	02
3.	Study and describe three locally available flowering plants from the families-Solanaceae, Fabaceae and Liliaceae with respect to types of root- (tap and adventitious), stem (herbaceous and woody), leaf (arrangement, shape, venation, simple and compound) and floral characters.	03
4.	Study of specimens and identification with reasons: Bacteria, Amoeba, Oscillatoria, Spirogyra, Rhizopus, yeast, Agaricus, Usnea, Riccia, Funaria, Nephrolepis, Cycas , sunflower and maize.	02
5.	Study of different modifications of root (parasitic root) pneumatophores).	02
6.	Study of different modifications of stem	02
7.	Study of different modification of leaf	02
8.	xylem, phloem, squamous epithelium, muscle fibres, mammalian blood smear, through temporary or permanent slides.	02
9.	Study of specimens and their identification with reasons – <i>Sycon, Hydra</i> , Liverfluke, <i>Ascaris</i> , Leech, Earthworm, Prawn, Silkworm Honey bee , Snail, Star-fish, <i>Balanoglossus</i> , Shark, Rohu, Frog, Lizard, Pigeon and Rat.	02
10.	Study of external morphology of earthworm, cockroach and frog through models.	02

Nature of Practical Exam

I) Botany

Q-1. T.S. – Slide Preparation – 02 Marks

OR

Q.1 Dissection of Flowers 02 Mark

Q.2 Spotting – 3 Nos. 01 Mark each
(Root/Stem/Leaf)

II) Zoology

Q.1 Tissue Slide - 01 Mark

Q.2 Classification of Specimens - i) Non Chordata - 01 Mark
ii) Chordata – 01 Mark

Q.3 Animal Types –
External Morphology- 02 Mark