CONTENTS

1. INTRODUCING BIOLOGY

1.1	Growth of biology	1
1.2	Branches of biology	2
1.3	Study of biology helps us in many ways	4

UNIT 1: BASIC BIOLOGY

2. CELL: THE UNIT OF LIFE

2.1	What is a cell?	6
2.2	The Invention of the microscope and the discovery of cell	6
2.3	Cell theory	7
2.4	Cells - How numerous?	8
2.5	Cells - How small?	8
2.6	Cell Shapes - To suit functional requirement	9
2.7	Structure of a cell	9
2.8	The plant and animal cells	15
2.9	Protoplasm	16
2.10	Prokaryotic and eukaryotic cells	16
2.11	Every activity of a living organism is the outcome of cellular activity	16

3. TISSUES : PLANT AND ANIMAL TISSUES

3.1	Tissues — The teams of workers	20
3.2	Plant tissues	20
3 3	Animal tissues	23

UNIT 2: FLOWERING PLANTS

4. THE FLOWER

4.1	Structure of a bisexual flower	29
4.2	General description of the floral parts	30
4.3	Inflorescence and placentation	31



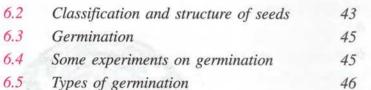






POLLINATION AND FERTILIZATION 5.1 Pollination 34 5.2 Some examples of pollination 38 5.3 Fertilization 39 **UNIT 3: PLANT PHYSIOLOGY** SEEDS — STRUCTURE AND GERMINATION 6.1 What is a seed? 43 6.2 Classification and structure of seeds 43 6.3



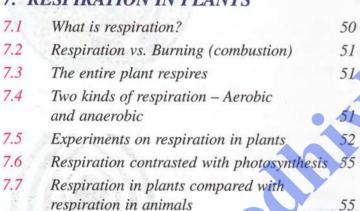


47

Germinattion in some common seeds



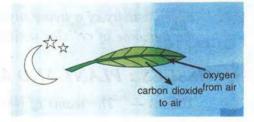
6.6





photosynthesis and respiration occur during the day





UNIT 4: DIVERSITY IN LIVING ORGANISMS

8. FIVE KINGDOM CLASSIFICATION

8.1	What is species?	59
8.2	Categories higher than species	60
8.3	Drawbacks of the old two kingdom classification	60
8.4	Five kingdom classification	61
8.5	Naming on organism	63
8.6	Major groups of animals	64
8.7	Invertebrata and vertebrata	64
8.8	Invertebrate phyla – Porifera to echinodermata	65
8.9	Phylum chordata (vertebrata)	69
		vi







Animals



Fungi



Monera

9. ECONOMIC IMPORTANCE OF BACTERIA AND FUNGI

9.1	Bacteria — A general study	76
9.2	Useful role of bacteria in medicine	78
9.3	Bacteria - Role in agriculture	79
9.4	Bacteria - Role in industry	80
9.5	Spoilage of food by bacteria	80
9.6	Bacterial diseases in plants and animals	81
9.7	Bioweapons	81
9.8	Fungi — A general study	83
9.9	Useful and harmful fungi	84
9.10	Useful role of fungi	84
9.11	Fungi — Role in industry	85



UNIT 5: HUMAN ANATOMY AND PHYSIOLOGY

10. NUTRITION

10.1	Need of nutrition	88
10.2	Classes of nutrients (food substances)	88
10.3	Balanced diet	93



11. DIGESTIVE SYSTEM

11.1	Why the digestive system	95
11.2	The digestive system	95
11.3	Assimilation of food	102
11.4	Liver	103
11.5	Certain experiments on digestion	103
11.6	Practical work on food tests	104

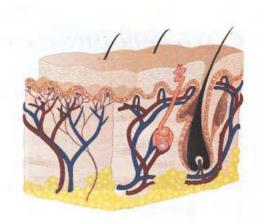


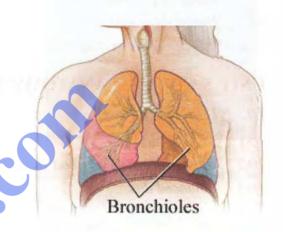
12. SKELETON — MOVEMENT AND LOCOMOTION

12.1	Functions of human skeleton	107
12.2	Bone	107
12.3	The human skeleton	108
12.4	Joints	109
12.5	Muscles	113
12.6	Lever mechanisms	113

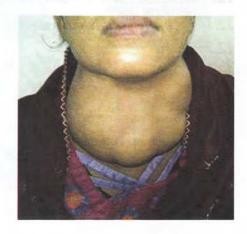


13.	SKIN — "THE JACK OF ALL TRA	DES"
13.1	What is skin?	116
13.2	Functions of the skin	116
13.3	Structure of the skin	116
13.4	The skin proper	117
13.5	Derivatives of the skin	118
13.6	Skin and heat regulation of body	120
14. 7	THE RESPIRATORY SYSTEM	
14.1	The need for respiration	124
14.2	Animals need more energy	124
14.3	Glucose has no alternative for respiration	125
14.4	Two kinds of respiration —	
	Aerobic and Anaerobic	125
14.5	Parts of respiration	126
14.6	Respiratory organs (breathing)	127
14.7	Breathing — Respiratory cycle	129
14.8	Capacities of the lungs	132
14.9	Inspired air vs expired air	132
14.10	Hypoxia and asphyxiation	133
14.11	Some experiments on breathing	
	and respiration	133
UNIT	6: HEALTH AND HYGIENE	
15. H	HYGIENE — [A KEY TO HEALTH]	LIFE]
15.1	Simple personal hygiene	138
15.2	Social hygiene and sanitation	139
15.3	Mosquitoes and diseases	140
15.4	Cockroaches	140
15.5	Rats	140
15.6	Contamination of water and	
	water-borne disease	141
15.7	The three common water borne diseases	141
	DISEASES : CAUSE AND CONTRO	$L^{(i)}$
16.1	What is a disease?	144
16.2	Categories of diseases	144
16.3	Categories of diseases based on the	
	extent of occurrence	144
16.4	Categories of diseases based	
	on communicability	144









12			
16.5	Diseases caused by bacteria	146	
16.6	Diseases caused by protozoa	148	
16.7	Diseases caused by parasitic worms	148	
16.8	Viral diseases	149	
17.	AIDS TO HEALTH		
17.1	Need to keep healthy	153	1
17.2	Immunity	153	
17.3	Vaccination and Immunisation	157	1
17.4	Antitoxins (More appropriately called		
	antibodies)	158	
17.5	Antiseptics and Disinfectants		
	prevent catching diseases	159	-
17.6	Antibiotics - Penicillin and othersy	159	-
17.4	Sulphonamide group of medicines	160	
18.	HEALTH ORGANISATIONS	600	
18.1	Common health problems in India	163	
18.2	International bodies	164	

19. WASTE GENERATION AND MANAGEMENT

19.1 What is a waste?

19.2

Categories of wastes

Selected Glossary of Biological Terms

19.3 Methods of safe disposal of wastes



166

166

168