

NORTH MAHARASHTRA UNIVERSITY,
JALGAON : 425 001.

APPENDIX " A "

Out line Structure (Skeleton) of Syllabus.

ZOOLOGY

(With effect from June, 1992.)

F. Y. B. Sc.

PAPER

SECTION

NAME OR TITLE

I

I

Nonchordates I and Chordates I.

II

Parasitology.

II

I

Cell Biology.

II

Genetics.

III

Practs Based on Paper I & II.

S. Y. B. Sc.

I

I

Nonchordates II & Chordates II.

II

Environmental Biology.

II

I

Histology

III

II

Mammalian Physiology.
Practs Based on Paper I & II.

T. Y. B. Sc.

I

I

Nonchordates III.

II

Nonchordates III.

II

I

Chordates III.

II

Chordates III.

III

I

General Physiology.

II

Endocrinology.

IV

I

Biochemistry.

II

Mol. Biology & Genetics.

V

I

Developmental Biology.

II

Microtechnique.

VI

I

Inland Fisheries or Gen. Pathology or
Agricultural Pest & Their Control or
Biotechnology or Economic Zoology.

II

Apiculture or Sericulture or
Public health & Hygiene or
Drosophila Genetics or Organic
Evolution & Palaeontology.

VII

Practs Based on Papers I & IV.

VIII

Practs Based on Papers II & V.

IX

Practs Based on Papers III & VI.

(With effect from June, 1992)

DETAILED SYLLABUS

ZOOLOGY

F.Y.B.Sc.

(Periods)

PAPER I, SECTION I.

NONCHORDATES I & CHORDATES I.

- I Study of Cockroach with referance to the following :-
- | | | | |
|------------------------|---|---------------|----|
| 1) Systematic position | 2) Habitat | 3) Life cycle | 2. |
| 4) Ext. Characters | 5) Internal organisation | | 2. |
| 6) Function anatomy- | a) Locomotion | | 1. |
| | b) Digestive system : Food and Feeding habits of nutrition | | 3. |
| | c) Respiratory system : Source of oxygen, spiracles. tracheal system and mechanism. | | 2. |
| | d) Ciroulatory system : Haemocoele, Haemolymph, Sinuses, Heart, Segmental vessels, Dorsal diaphragm, Alary muscles, Pericardial cells & mechanism of circulation of haemolymph. | | 3 |
| | e) Excretory System : Malpighian tubules - structure and role, urate cells and moulting. | | 2. |
| | f) Nervous System - Central, Visceral & peripheral | | 2. |
| | g) Sense organs : Chemoreceptors, Mechanoreceptors, Auditory and photoreceptors. | | 2. |
| | h) Reproductive System : Sexual diamorphism, Male and Female reproductive organs, mating, ootheca, Developmental stages nymph and imago, | | 3 |

Total (22)

- II Study of Amphioxus with reference to the following :-

- | | | | |
|--------------------------|---|---------------------|----|
| 1) Systematic position | 2) Habitat | 3) Ext. Characters, | 1. |
| 4) Internal organisation | | | 1. |
| 5) Functional anatomy : | | | |
| | a) Locomotion, b) Digestive System, c) Respiratory System, | | |
| | d) Circulatory system, e) Excretory system, f) Nervous system, g) Sense organs, h) Reproductive system. | | 9. |
| 6) Embryology. | | | 2 |

Total (13)

GRAND TOTAL (35)

(35)

PAPER I, SECTION II : PARASITOLOGY

- I Interoduction to Parasitism :
- (1) Animal associations : (a) Intra-specific (b) Inter specific-
i) Commensalism, ii) Mutualism, iii) Parasitism.
 - (2) Definition of Parasitism. (3) Types of Parasites.
 - (4) Types of Hosts.

- II Study of the following parasites with reference to the aspects (Periods) below : i) External morphology of various stages in the life cycle, ii) Life cycle, iii) Occurrence - various hosts, iv) Classification v) Transmission vi) Effect of host vii) Parasitic adaptations viii) Prevention and control ix) Treatment of parasitic diseases :-

- 1) Ehtamoeba histolytica - Parasitic species in man.
- 2) Plasmodium vivax - Parasitic species in man.
- 3) Easciola hepaticae.
- 4) Taenia solium - Parasitic species in man.
- 5) Wuchereria bancrofti.
- 6) Ascaris lumbricoides.
- 7) Human louse
- 8) Sacculina.

- III Biological importance of the following parasites with reference to their hosts, pathological effect (if any) and vector.

- 1) Giardia intestinalis, 2) Trypanosoma ambiense, 3) Opalina,
- 4) Balantidium, 5) Nyctotherus, 6) Monocystis, 7) Schistosomn.
- 8) Trichinella spiralis, 9) Ancylostoma duodenale.
- 10) Bed bug, 11) Mosquito, 12) Leach.

- IV Inter-relations between host and parasites :

- 1) Effect of parasite on host, 2) Response of host to parasite,
- 3) Types of vectors 4) Modes of transmission, 5) Specificity of hosts, 6) Adaptations of parasites and hosts.

- V Prevention and control of parasites :

- 1) Chemical - Pesticides and Chemo - therapy.
- 2) Biological - a) Radiation of vectors and carriers.
b) Immuno - therapy.
c) Genetic measures.

PAPER II. SECTION I. : CELL BIOLOGY (35)

- A Introduction to cell Biology and its importance 1.
- B Contributions of the following scientists 1.
Hook, Brown, Schleiden and Schwan, Virchow.
- C. General structure of cells. 3
C-1 Cell as a structural unit; shape, size.
C-2 Cell types - Prokaryotic and Eukaryotic
C-3 General organisation of a Prokaryotic cell as illustrated with the help of E.coli.
C-4 General Organisation of Eukaryotic cell.
C-5 Comparison between pro and eukaryotes.
- D Microscopy. 3
D-1 Units of Microscopic measurement.
D-2 Working of light and electron microscope.
D-3 Resolving power and magnifying power.
- E Cell Wall
E-1 Origin, middle lamella.
E-2 Types-Primary, Secondary and tertiary.
E-3 Chemical composition of primary and secondary wall.
E-4 Ultrastructure of Primary wall.
E-5 Methods of wall formation - Intususception and apposition
E-6 Functions.

F	Membrane system.	
	F-1 Membrane as a limiting system.	
	F-2 Evidences for chemical composition.	
	F-3 Molecular Organisation with the help of Danielli Davson model.	
	F-4 Concept of unit membrane.	
	F-5 Functions.	
G	Vascular system.	
	G-1 Endoplasmic Reticulum.	
	i) Organisation; ii) Origin; iii) Types; iv) Functions.	
	G-2 Golgi complex.	
	i) Organisation; ii) Origin; iii) Chemical composition; iv) Functions.	
	G-3 Lysosomes.	
	i) Structure; ii) Origin; iii) Enzymes; iv) Polymorphism; v) Functions.	
	G-4 Ribosomes.	
	i) Occurrence; ii) Types - 70S & 80S; iii) Chemical composition; iv) Structure; v) Functions.	
H	Plastids.	
	H-1 Schimper's classification.	3
	H-2 Chloroplasts - i) Ultrastructure, ii) Chemical composition, iii) Functions.	
I	Mitochondria.	
	i) Ultrastructure; ii) Chemical composition; iii) Mitochondria as symbionts; iv) Functions.	4
J	Nucleus.	3
	J-1 Shape, size, number, position.	
	J-2 Nuclear membrane and pores - Ultrastructure.	
	J-3 Nucleolus - Organisation, Chemical composition, functions.	
	J-4 Nuclear sap.	
K	Chromosomes.	5
	K-1 Number, size, shape, structure - arm ratio.	
	K-2 General organisation-chromonemata, pellicle, matrix centromere, eu and heterochromatin sat chromosomes, concept of gene.	
	K-3 Types - auto and sex chromosomes.	
	K-4 Giant chromosomes - Salivary gland, chromosome, Balbiani rings and puffs.	

PAPER II, SECTION II : GENETICS. 35

A.	Introduction, Definition.	1
B.	Mendel's Laws of Inheritance.	
	B-1 Phenomenon of Dominance.	
	B-2 Law of segregation of characters & purity of gametes.	
	B-3 Law of independent assortment.	3
C.	Gene-interactions and modified Mendelian ratios -	
	C-1 Incomplete dominance (1 : 2 : 1 ratio)	4
	C-2 Complementary factor (9 : 7 ratio)	
	C-3 Recessive epistasis (9 : 3 : 4 ratio)	
	C-4 Dominant epistasis (12 : 3 : 1 ratio)	

- D. Lethal genes - concept.
 D-1 Albinism in corn (3 : 0 ratio)
 D-2 Coat colour in mice (2 : 1 ratio) 2
- E Chromosomal basis of heredit and sex determination.
 E-1 Sutton's hypothesis.
 E-2 Discovery of sex chromosomes.
 E-3 Sex linkage and sex determination in Drosophila
 (White eved - mutant in Drosophila)
 E-4 Chromosomal method of sex determination.
 1) XY method, ii) XO method, iii) ZW method,
 iv) Honey-bee method. 6
- F Linkage and crossing over.
 F-1 Concept.
 F-2 Coupling Vs. repulation.
 F-3 Linkage in Maize.
 F-4 Crossing over-general idea (Theories not expected)
 Significance of crossing over. 4
- G Multiple alleles.
 G-1 Concept and characteristics.
 G-2 Discovery of Blood groups by Carl Landsteiner.
 G-3 Blood typing.
 G-4 Blood transfusions.
 G-5 Inheritance of Blood groups - A, B, O, +Rh.

PAPER II, SECTION II. : GENETICS CCNTD.

- G G-6 Significance of blood typing. a) Transfusion;
 b) Medical legal applicationdisputed parentage.
 G-7 Goat colour in Rabbit. 5
- H Non-Mendelian inheritance :
 Cytoplasmic inheritance
 a) Inheritance of Plastids.
 b) Kappa particles.
- I Chromosomal aberrations.
 I-1 Delation.
 I-2 Duplication.
 I-3 Inversion.
 I-4 Translocation. 2
- J Numerical changes in chrosomes.
 J-1 Aneuploody.
 J-2 Euploidy.
 J-3 Significance, of chromosomal variations. 1
- K Simple examples on the topics B,C,D and G. 2
- Total 35.

