

SARDAR PATEL UNIVERSITY
FIRST YEAR B.Sc. (Second Semester)
BIOLOGY (ZOOLOGY) FSBI-201
Chordate Biology and Physiology
(EFFECTIVE FROM JUNE 2010)
(2 CREDITS, TWO PERIODS PER WEEK)
(TotalMarks-100, Internal-30marks, External-70)

UNIT 1

Outline classification of Chordata with examples

Type study of Lamprey-Systematic position, External Structure, Digestive system, Respiratory system, Excretory system, Nervous system, Reproductive system, Fertilization and development, Significance of (Ammocoete larva)

Type of scales in fishes-Placoid, Cycloid, Ganoid and Cosmoid with examples

Migration of Fishes with examples- Types with examples

Parental care in fishes-Types and examples

UNIT 2

Parental care in amphibians-Types and examples

Migration of birds- Types, causes and significance

Flight adaptations

Type of feathers-Contour, Filoplume, Down, Semiplume, Bristle, Flight feather and Powder down feather

UNIT 3

Type study of Rabbit- External features, Digestive system-Buccal digestion, Type and function of salivary glands, Composition of salivary juice, Gastric digestion, Composition of gastric juice, Intestinal digestion, functions of liver, Respiratory system with mechanism of respiration, Structure and working of heart, Arterial and Venous system,

UNIT 4

Introduction of Blood Physiology- Composition and function of Blood, Type of blood cells(White blood cell-types(Agranular & Granular), Red blood cell, Platelet) and their function, structure and function of haemoglobin.

Excretion- Structure and function of kidney, Physiology of excretion

LIST OF REFERENCE BOOKS:

- 1) Modern Textbook of Zoology (Vertebrates)- R.L.Kotpal
- 2) Vertebrate Zoology- Jordan and Verma
- 3) Biology of Animals(Vertebrate)- Ganguly, Sinha and Adhikari
- 4) Textbook of Vertebrate Zoology –G.S. Sandhu, H. Bhaskar
- 5) Animal Physiology-K.A. Goyal and K.V. Shastri
- 6) Principles of Anatomy and Physiology-Tortora and Derrickson
- 7) A Textbook of Chordates-A. Thangamani, S. Prasannakumar, L.M. Narayanan and N. Arumugam
- 8) Textbook of Vertebrate Zoology-Prasad, S.N. Kashyap
- 9) Fish and fisheries of India- V.G. Jhingran

SARDAR PATEL UNIVERSITY
FIRST YEAR B. Sc. (Second Semester)
BIOLOGY (BOTANY) FEBI-202
Thallophyta, Bryophyta and Pteridophyta
(Effective From June 2010)
(2 CREDITS, TWO PERIODS PER WEEK)
(Total Marks-100, Internal-30 marks, External-70 marks)

Unit -1

Algae-General Characters

Life cycle of following examples with characters of each group in brief

Cyanophyta (Blue Green Algae) : Nostoc

Chlorophyta (Green Algae) : Volvox, Zygnema

Phaeophyta (Brown Algae) : Ectocarpus

Rhodophyta (Red Algae) : Batrachospermum

Economic Importance of Algae

Unit -2

Fungi- General Characters

Life cycle of Rhizopus, Yeast, Penicillium

Edible mushrooms- Button Mushroom (Agaricus bisporous), Paddy straw mushroom (Volvariella), Oyster/Dhingri mushroom (Pleurotus), Nutritive value, Medicinal value of mushrooms

Lichens : Types – Foliose, Fruticose and Crustose, Internal structure of thallus, Economic Importance of Lichens

Economic Importance of Fungi

Unit -3

Bryophyta - General Characters

Life cycle of

Riccia- Occurrence, thallus morphology, Internal structure of thallus, Vegetative and Sexual reproduction, sex organs-antheridium and archegonium, fertilization, Sporophyte, Spores (Morphology, dispersal, germination)

Anthoceros - Occurrence, morphology, Internal structure of thallus, Vegetative and Sexual reproduction, structure of mature antheridium and archegonium, Sporophyte structure, dehiscence, of capsule, Spore germination

Funaria - Occurrence, Plant morphology, Structure of antheridial branch, mature antheridium, archegonial branch, mature archegonium, fertilization, Sporophyte plant (foot, seta, capsule) detailed structure of capsule with diagram, Spore dispersal mechanism and germination

Unit -4

Pteridophyta - General Characters

Distribution, study of vegetative and reproductive parts of

Lycopodium (Sporophyte plant, stem internal structure, strobilus, gametophyte)

Equisetum (Sporophyte plant, stem internal structure, cone, gametophyte)

Nephrolepis (Sporophyte plant, stem internal structure of fern sorus, sporangium, prothallus)

Suggested Reference Books:

1. Gangulee S. C. Das K. S. Dutta C.D, and Kar A.K College Botany Vol. I
2. Smith. G. M – Cryptogamic Botany Vol.I
3. Vasistha.B. R – Botany for Degree students –Vol.I Algae
4. Alexopoulos. C.J – Introductory Mycology
5. Bessey. E.A – Morphology and Taxonomy of Fungi
6. Dubey H. C. –An Introduction to Fungi
7. Gangulee, S. C. Das, K. S. Dutta, C. D. and Kar, A. K. - college Botany Vol.1
8. Parihar N. S. -Bryophyta
9. Prem Puri –Bryophyta
10. Parihar N. S. –PteridoPhyta
11. Smith G.M. –Cryptogamic Botany Vol.I and II
12. Vasishtha, B. R. –Botany for Degree Students: Vol.II Fungi
13. Vasishtha, B. R. –Botany for Degree Students: Vol.III Bryophyta
14. Vasishtha, P. C. –Botany for Degree Students: Vol.VI Pteridophyta Fungi
15. Gangulee S. C. Das, K. S. Dutta C.D. and Kar A.K College Botany Vol. II and III

SARADAR PATEL UNIVERSITY
FIRST YEAR B. Sc. (SECOND SEMESTER)
BIOLOGY Practical (FSBI-203)
EFFECTIVE FROM JUNE 2010.
(2 Credits, Four hours per week)
(Total Marks-100, Internal – 30 Marks, External – 70 Marks)

Part I Zoology Practicals.

1. Preparation of Haemin crystals.
2. Detection of Blood group.
3. Study of Blood cells (Through charts/ Permanent slides)
4. Classification of Protochordata and Vertebrates (Pisces and Amphibia) – Amphioxus, Lamprey, Shark, Electric Ray, Sting Ray, Sea Horse, Ichthyophis and Toad.
5. Classification of Reptilia, Aves and Mammalia – Turtle, Calotes, Chamaeleon, Cobra, Alligator, Cuckoo, Wood Pecker, Shrew, Bat and Rabbit.
6. Study of General Viscera, Digestive system and Urinogenital system of Rat.
7. Study of Histological slides of mammalian Tissues/Organs – T.S of Stomach, Small Intestine, Liver, Pancreas, Testis, Ovary and Spinal Cord.
8. Collection and Types of Feathers.
9. Parental care in Fishes (Chart/Specimen).
10. Parental care in Amphibians (Chart/Specimen).
11. Field Study/Study tour.

Part II Botany Practicals.

1. Study of Algae – Nostoc, and Volvox, Zygnema. (Temporary mounting and P.S)
2. Study of Ectocarpus and Batrachospermum. (Temporary mounting and P.S)
3. Study of Yeast and Penicillium. (Temporary mounting and /P.S)
4. Study of Rhizopus. (Temporary mounting and P.S), Mushroom (Specimen)
5. Study of Lichens (Permanent Slides and Specimen)
6. Study of Riccia (Thallus Morphology, Internal structure and sex organs with P.S)
7. Study of Anthoceros (Thallus Morphology, Internal structure and sex organs with P.S)
8. Study of Funaria (Thallus Morphology, Internal structure and sex organs with P.S)
9. Study of Fern (Plant Morphology, Mounting of Sporangia)
10. Study of lycopodium (Stem T.S, Cone structure with help of specimen and P.S)
11. Study of Equisetum (Stem T.S, Cone structure with help of specimen and P.S)

SARDAR PATEL UNIVERSITY
FIRST YEAR B. Sc. (SECOND SEMESTER)
EFFECTIVE COURSE FSELE201-BIOLOGY
EFFECTIVE FROM JUNE-2010
(2 Credits, Two hours per week)
(Total Marks-100.Internal-30 Marks, External-70 Marks)

UNIT-1

Animal Biology Branches and Behaviour

- A) Introduction to various branches of zoology: Physiology, Cell Biology, Biochemistry, Biostatistics, Molecular Biology, Biotechnology, Biophysics, Entomology, Immunology.

Introduction to sub division of zoology based on animal studies

- B) Animal Behaviour – Classification of behavioural patterns and Analysis of behaviour with common Examples

UNIT-2 Animal Physiology

- (a) Nutrition in animals- Type of Nutrition (Autotrophic, Heterotrophic- Holozoic, Saprozoic, Osmotrophic, Parasitic, Nutrition), Type of Digestion (Intracellular.)
- (b) Circulation- Type of Hearts (Neurogenic and Myogenic Heart) open and close circulation
- Blood-Composition and Function

UNIT-3

Diversity of life forms in plant kingdom (Important Character of each group and brief Description of each example)

Virus	:Bacteriophage
Bacteria	:Morphological forms only
Algae	:Spirogyra
Fungi	:Mushroom, Mucor
Bryophyte	:Riccia
Pteridophyte	:Fern
Angiosperm	:Monocot-Maize, Dicot-Sunflower
Gymnosperm	:Cycas

UNIT-4

Biotic Interactions:

- Positive Interactions (Symbiosis) With suitable Examples.
 - Commensalism
 - Mutualism
- Negative Interactions with suitable example
 - Parasitism
 - Predation
 - Antibiosis
- Ecological Adaptations in Plants: Morphology of Hydrophytes and Xerophytes

Suggested Reference Books:

1. Modern Textbook of Zoology(Vertebrates)-R.L.Kotpal
2. Invertebrate Zoology- Jordan and Verma
3. Animal Physiology- K.A Goyal and K.V Shastri
4. Animal behaviour – Reena Mathur
5. Gangulee S. C. , Das , K.S. Dutta,C.D., and A.K. college Botany Vol-1
6. Smith, G. M.- Cryptogamic Botany Vol-1
7. Vaishtha B R- Botany for Degree students- vol-1algae
8. Alexopoulos C J- introduction Mycology
9. Bessy, E. A- Morphology and taxonomy of fungi
10. Dubey. H. C- An introduction to Fungi
11. Gangulee,S. C.- das, K.S. Dutta, C.D. and Kar College Botany Vol-1
12. Parihar N. S. - Bryophyta
13. Prem puri – Bryophyta
14. Parihar N. S.- pteridophyta
15. Smith,G. M.- Cryptogamic Botany Vol-1 and 2
16. Vasishtha B. R. – botany for degree students vol-2 fungi
17. Vasishtha B. R. – botany for degree students vol-3 bryophyta
18. Vasishtha B. R. – botany for degree students vol-4 Pteridophyta
19. Gangulee S. C., Das,K.S, Dutta, C.D. and kar, A. K. college botany vol 2&3