SARDAR PATEL UNIVERSITY
Programme: BSC (ZOOLOGY)
Semester: VI
Syllabus with effect from: November 2023

Paper Code: US06CZOO51	**Total Credit: 4**
Title Of Paper: Vertebrata	

Objectives	• To Provide systematic studies of Vertebrata and their Adaptations
Out Come	• The students will learn Types of Amphioxus, Lamprey Labeo, Pigeon and Rabbit

Unit	Description in detail	Weighting (%)
1	Introduction and significance of protochordates. Comparison of prochordate sub phyla. Type: Amphioxus Type: Lamprey	25%
2	Origin of class: Pisces Swim bladder and accessory respiratory organs of Fishes Types of fins in Fishes Type: Labeo rohita Adaptive radiation and origin of class Amphibia Adaptive radiation, origin and Evolution of class Reptile Merozoic Reptiles	25%
3	Birds as glorified reptiles Origin of Birds Archeopteryx and its significance Affinities of Birds Flight less birds Type: Pigeon .	25%
4	Aquatic Mammals and their adaptations Flying Mammals and their adaptations Economic importance of Mammals Type: Rabbit	25%

Basic Text & Reference Books:

Vertebrate zoology by R L Kotpal
Chordate zoology by Dhami and Dhami
Chordate zoology E. L .Jhorden and verma

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Paper Code: US06CZOO52	**Total Credit: 4**
Title Of Paper: Developmental Biology	

Objectives	• To Provide Basics of Eggs, Fertilization and The stages of Embryogenesis • To provide Developmental Studies of Frog and Chick
Out Come	• The students will learn about Eggs and Development of Embryo with Reference to Frog and Chick.

Unit	Description in detail	Weighting (%)
1	The Egg membranes Types of Eggs Fertilization :[Cytofertilization, Mechanism of Fertilization, Mono Spermy and Poly Spermy, Significance] Parthenogenesis: [Natural, Artificial, Significance] Cleavage:[Characteristics, Planes , Patterns, Definite and Indefinite Cleavage, Types of Cleavage] Morulla, Blastulla and Blastulation	25%
2	Gastrulation: [Prominent features, General Processes Involved in Gastrulation, Significance] Brief account of Growth and Differentiation Placentation in Mammal[Origin, Types, Physiology] Teratology:[Introduction, Causes and Examples, Principals] Development of Amphioxus: Gametes, Fertilization, Organization of Fertilized Egg, Cleavage, Blastula, gastrulating, Formation of the Primary Organ Rudiments, Hatching, Larval Development, Metamorphosis]	25%
3	Development of frog Ovulation and spawning cleavage and blastula the fate-map gastrulation neurulation metamorphosis	25%
4	Development of chick Gametes and fertilization Cleavage and blastulation Gastrulation Differentiation of mesoderm and coelom Neurulation Development of chick according to incubation Extra embryonic membranes of Chick	25%

Basic Text & Reference Books:

Introduction to embryology: A K Berry
Chordate embryology: Verma and Agrawal
Developmental biology: Sastry and Shukal

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Paper Code: US06CZOO53	Total Credit: 4
Title Of Paper: Metabolism and Evolution	

Objectives	• To provide detail of Carbohydrate, Lipid ,Protein and Nucleic acid Metabolism • To Provide Basics of Evolution and Its theories
Out Come	• To Learn Anabolism and Catabolism of Biological Molecules Carbohydrates, Lipids, Protein and Nucleic acid • To learn Origin of Earth , Life and Evidences of Origin Of life and Theories

Unit	Description in detail	Weighting (%)
1	Classification of Carbohydrate Carbohydrate Metabolism: Glycolysis Acetyle Co-A formation Kreb's cycle Electron Transport Chain Reactions Classification of Lipids Lipid Metabolism: Transport of Lipids by Lipoproteins Sources and Significance of Blood Cholesterol The Fate of Lipids, Triglyceride Storage Lipid Catabolism: Lipolysis, Lipid Anabolism: Lipogenesis	25%
2	Classification of Protein Protein Metabolism: The Fate of Proteins, Protein Catabolism, Protein Anabolism Classification of Nucleic acids Nucleic acids metabolism: Biosynthesis of Purine nucleotide, Biosynthesis of Pyrimidine nucleotides Catabolism of Purine Nucleotide,Catabolism of Pyrimidine Nucleotide	25%
3	Concept of organic evolution Origin of earth Origin of life Evidences of organic evolution Theories of organic evolution[Darwinism, Lamarkism, de vries	25%
4	Isolation, Colouration Speciation Tempo of evolution. Artificial selection Sexual selection	25%

Basic Text & Reference Books:
Principal of Anatomy and Physiology by Gerard J Tortora and Braya Derrickson
Biochemistry-U.Satyanarayan
Organic Evolution by P S verma

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Paper Code: US06CZOO54	**Total Credit: 4**
Title of Paper: Comparative Anatomy of Chordates	

Objectives	• To Provide Comparative anatomy of chordates of Major systems
Out Come	• The students will learn Differences between Entire Vertebrate systems • The common characters among Integumentary system, Digestive system, Reproductive system and Circulatory system

Unit	Description in detail	Weighting (%)
1	**Integumentry System** Integument proper Integumentary glands Scales, Feathers Hair, Beaks Claws, Nail and hoofs, Horns and antlers	25%
2	**Digestive system** Mouth and associated structure, Lips, Vestibule, Oral cavity and oral glands Teeth Tongue Esophagus Stomach Intestine Liver Pancreas	25%
3	**Reproductive System** Ovaries Oviducts Testes Maleduct Copulatory organs	25%
4	**Circulatory System** Blood & blood vessels Evolution of Heart Arterial system Venous system Lymph & lymphatic system	25%

Basic Text & Reference Books:

Elements of Chordate anatomy- Charles Weichert
Vertebrate body – Romar
Modern text book of Vertebrate Zoology- R .L .Kotpal
Biology of Chordate – H.C. Nigam

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Semester: VI

Syllabus with effect from: June 2020

Paper Code: US06CZOO25	
Title Of Paper: Practical Based on papers US05CZOO21-22-23-24	**Total Credit: 4**

Part -1	Protochordata : Oikopluera, Botryllus, Amphioxus, T.S. of amphioxus through,oral hood, pharynx, intestine, testes, ovary. Cyclostomata: ammocete larva, Myxine Pisces: hammer headed shark, eagle ray, pristis, chimaera, catla, belone, hemiramphus, pterois, syngnathus, diodon, Amphibian: ambystoma, amphiuma, triton, proteus, necturus, siren, pipa, hyla, toad[bufo],rhacophorus. Reptilia: gecko, mabuia, eryx, rattle snake, Aves: flamingo, , vulture, peacock, saras crane, owl, Mammalia:, duckbill platypus, kangaroo, flying fox, ant eater, squirrel, mongoose, Pigion- digestive, urinogenital, Brain Mountings- Section of Feather, LS of Syrinx,LS of Crop of Pigion, Pectin Rabbit-digestive ,urino genital System, Brain, Mountings- muscle, nerve,	25%
Part-2	Colour and Precipitation Reactions on Food Stuffs Carbohydrates Proteins Lipids Test of Tripsin Enzymes on Protein Evolutionary Study of Skull Chromatography	25%
Part-3	Development of Amphioxus By Permanent Slides Development of frog By Permanent Slides Development of chick By Permanent Slides Temporary preparation of chick embryo. Bull's Sperm Counting Bull's Sperm Motility and Mortality Observation of migratory birds [Field Study] Visit to national park and sanctuary Study of Collection of feathers Coparative study of Skin	25%

Basic Text & Reference Books:

Practical zoology invertebrate: P S Verma.
Practical zoology invertebrate: S S Lal.

Practical physiology anatomy and biochemistry: Patel and goel
Practical biochemistry: Plumer