B.Sc, New Scheme of Zoology

(Paper – A)

(Invertebrate) Marks: 30

Classification (up to orders) and general organization (Structure Function, mode of life, reproduction and eyeless, adaptations, distribution and economic importance) of the following groups types wherever mentioned shall be used for understanding the structure function problems in the groups. In addition special topics mentioned in each group shall be dealth with in greater detail.

Protozoa: General organization special aspect. Parasitism. Porifera: Type: Sycon General organization Special aspect: Canal System.

Coelenterate: Type: Obelia General Organization Polymorphism, Corals and coral reefs.

Ctenophora: Diagnostic features only.

Platyhelminthes: Type: Fasciola: General Organization, Special aspect: parasitic adoptions.

Aschelminths: Diagnostic features Type: Ascaris. Anneldda. Type: Leech General Organization, Special Aspects: Coelom, Metamerism. Development, Minor Phyla: Diagnostic features only. Mollusca: Type: Union, General Organization, Special aspects: shell Foot & Locomotion: Feeding and respiration: Arthropoda: Type: Cockroach: General Organization: Special aspects: Feeding, Metamorphosis: Appendages and Locomotion: Echinodermata: Type: Starfish: General Organization, Special aspects: Skeleton: Larvai forms.

Part – I Invertebrates Practical.

(a) Dissection: Union, Leech, Cockroach.
(b) Examination of Prepared Slides: Protoz:

Euuglena, Volvox, Trypanosoma, Opaline, Entamoeba, Forminifera, Radio-Iarva, Malarial, Parasite, Monesystis, Balantidium, Collodium, Varticella, Stouter, Nyctotheres.

Porifera:	Spicules of sponges, section of Sycon……
Coelenterata:	Section of Hydra, Medusa of Obelia (Whole mount).
Platyhelminthes:	Whole mount Planarian, Fasciola, Taenia seginata.
Aschelminthes:	T.S. of Ascris, Hookworm, Nemertine (Whole mount).
Annelids:	T.S of leech
Arthropoda:	Whole mount of rat-flea, lice.
Echinodermata:	T.S any Echinoderm. Use of Vital Stains.

(c) General survey of invertebrates from museum specimens.

(Paper – B)

(Cell Biology:) Marks: 30

Cell Biology: Natural history of cell small molecules of living machine: Nuclei acids and proteins: Enzymes Catalysis: Metabolic Pathways: Mitochondrion: Nucleus and the storage and transmission of information: Ribosomes: Conversion of chemical energy into work: Membrane system: Genetics: Chromosome duplication and division, Duplication of genetic material and its implication: Segregation of genes: Independent assortment: Linkage and recombination of genes: Cytoplasm in heredity, Mutation Genes action and synthesis of Proteins: Genetic Units of recombination: mutation and function.

Part – II **Marks: 15**

Cell Biology & Genetics Practicals

(a) Microscopic study and preparations. Study of live Protozoa from Laboratory Culture. Leucosolenia, Obelia, Medusa, Marginal Lappets of gelly fish, Mature segment of cestode, nephridium of leech, parapodium of Neries: mouth parts of cockroach, House fly, mosquito, Butter-fly.

(b) Preparation and study of meiosis in Grasshopper. Demonstration of RNA & DNA in Protozoan and blood cells. Chemical tests for the identification of carbohydrates, Lipids & Proteins.

Preparation and study of chromosomes from Drosophila and Chironomid larvae.

Books Recommended:

1. Invertebrate Zoology: Hegner and Engelman.
2. Cell structure and function by Lowey and Sickvits, National Book Foundation of Pakistan, 1972.
3. Genetics by R.P. Levine, Reprinted by National Book Foundation 1976.

IV – Year

Paper – C Chordata **Marks – 30**

Origin of chordate, Comparative, anatomy and function of integumentary, skeletal, muscular, digestive, circulatory, respiratory, excretory, Nervous (including sense organs), hormonal & reproductive system of Chordates.

(Paper – D)

(Cell Biology :) Marks: 30

Biology of Chordates, Embryology & Ecology

(a) Biology of Chordates:

Classification of Chordates (Up to Orders), Natural History (Mode of Life: equatic, sursorial, fossorial, arboreal, aerial): Animal migration, parental care, breeding habits; biting mechanism in sakes.

Distribution of various groups of Chordates. A brief account of Dinosaurs and Archaeopterix.

(b) Embryology:

Early development of vertebrates. Eggtypes, cleavage blastula, formations, gastrulation and germlayer formation, embryonic membranes and placentation.

(c) Ecology:

Ecosystem: Energy Flow and nature, Metabolism: biogeo-chemical cycle: Limiting factors ecological regulation. Ecosystem of the World. A brief account of wild life of Pakistan.

Practical – II **Marks: 15**

Part – I

(a) Dissection: Pigeon, Uromastix.
(b) Demonstration of brain, heart and eye of sheep.
(c) Skeletons: Detail account of Labia, varanus & Rabbit. Girdles of tortoise & pigeon, horse or cow. Skull of dog.
(d) Different types of scales of fishes. Different types of feathers of birds shell of a tortoise. Dermal & epidermal scales of Crocodile, Modification of hair, horn, scales & spines, nails, claws hooves, antlers (Demonstration from museum specimen only).
(e) Demonstration of following prepared slides:
Amphioxus (Whole mount and T.S through different regions. Pharynx of Ascidian).
Section of skin of fish, amphibian, and mammals.
Development of Amphioxus, frog, chick, Demonstration of chic embryo.
(f) Study of histological prepared slides of the following: Section of liver, kidney, spleen, thyroid gland, testis, ovary, heart, muscle, pancreas, nerve, cord, lung, intestine, stomach of vertebrates.
(g) General survey of Chordates forms the museum specimens.

Part – II

Ecology:

Ecology notes on animals of different habitats. Four field trips to study the animal life in different types of habitats (Record of field trips to be maintained and presented at the time of examination)

Books Recommended:

1. The vertebrate body by Romer (short version) Reprinted by National Book Foundation, 1976.
2. Ecology by Edum, Modern Biological series Reprinted by National Book Foundation (1980).