

UNIVERSITY OF KOTA, KOTA
SEMESTER SCHEME
ACADEMIC YEAR: 2022-23
BACHELOR OF SCIENCE- ZOOLOGY
SEMESTER-VI



B. Sc. Semester- VI

- Z- 601** Paper I Developmental Biology
- Z- 602** Paper II Animal Ecology and Biostatistics
- Z- 603** Practical (Based on Paper I & Paper II)

B.Sc. VI Semester

Paper-I Developmental Biology

Unit-I

- (a) History, Theories and scope of developmental Biology.
- (b) General idea of asexual reproduction (fission, budding, gemmule formation, mutagenesis, polyspermy, etc).
- (c) General idea of sexual reproduction.
- (d) Neuro endocrine regulation of reproductive organ: estrogen and menstrual cycles.

Unit- II

- (a) Gametogenesis: Definition, structure of gametes (sperm & egg).
- (b) Spermatogenesis.
- (c) Oogenesis.
- (d) Types of eggs- Detailed structure of amphibian, avian and mammalian egg.

Unit-III

- (a) Fertilization: definition, Types and Events of fertilization.
- (b) Polyspermy and mechanism of prevention, significance of fertilization.
- (c) Parthenogenesis.
- (d) Evolution of viviparity.

Unit-IV

- (a) Cleavage: Definition, patterns of cleavage, morula.

- (b) Blastulation, Types of Blastula.
- (c) Gastrulation, Types, mechanism & fate maps.
- (d) Embryonic induction, competence.

Unit-V

- (a) Neurula formation, growth & organogenesis (organogenesis of limb).
- (b) Regeneration.
- (c) Extra embryonic membranes in chick, placentation in mammals.
- (d) Metamorphosis in frog & its endocrine regulation.

Z- 602 Paper-II Animal Ecology and Biostatistics

Unit-I

Ecology – Definition, meaning and history. Modern concept, scope, components of ecosystem, Abiotic factors: temperature, light, water, soil and soil profile, current, pressure, gravity. Biotic factors, Intra specific and interspecific relation. Concept of limiting factors: Liebig's law of minimum, Shelford's Law of tolerance.

Unit-II

Population ecology: population density – Determination & factors affecting population density, demography community ecology, Bio-community, interdependence for reproduction and protection; Ecosystem homeostasis. Ecosystem and productivity concept, types and methods.

Energy flow, food chain, food web, ecological pyramid, ecological niche.

Unit-III

Aquatic ecology-freshwater (lotic and lentic) habitat and biota. Marine habitat biota and zonation. Ecology and biota of deep sea zone, estuarine habitat and biota. Terrestrial habitat-forest and desert ecosystem and biome.

Unit-IV

Natural resource, renewable resource (forest & wild life), non-renewable resources (water, mineral resource), aquaculture and mariculture conservation, management of Natural resources- renewable & non-renewable, resources, Environmental pollution (water, air, soil, noise, insecticide) Bioaccumulation, biomagnification and biodegradation of pollutants.

Unit-V

Biostatistics – Definition, scope & Importance, frequency distribution graphical presentation of data. Mean, Mode and Median.

B.Sc. Semester-IV

Practical Exercise (based on paper I & II)

1. Exercise in Developmental Biology

- (a). Study of development of chick: whole mounts & sections of 18 to 72 hour's embryo.
- (b). Histological study of development of frog/toad: egg, early cleavage, blastula, gastrula, neurula & different stages of tadpole.

(c). Study of spermatogenesis, oogenesis, fertilization & metamorphosis of frog/toad through charts/models.

2. Exercise in ecology:

(a) Water analysis: pH, acidity, alkalinity, dissolved O₂ and free CO₂, chloride (salinity).

(b) Soil analysis: pH

(c) Qualitative estimation of Zooplankton in a given sample of water.

3. Biostatistics

(a). Frequency table, bar diagrams, histogram, polygons, pie charts.

(b). Exercise on Mean, Median and Mode.

Scheme of distribution of Marks.

Duration: 4 hrs

Max. M. 50

Q. 1. Ecology	08
Q. 2. Exercise in developmental biology – Through charts/model	07
Q. 3. Spot 5x2	10
Q. 4. Biostatistics	05
Q.5. Record	10
Q. 6. Viva-Voce	10
Total	50