

KVR GOVT COLLEGE (W), KURNOOL (Autonomous)
NACC RE- ACCREDITED 'A' GRADE
B.SC. SECOND YEAR SYLLABUS 2019-20

ZOOLOGY SYLLABUS FOR III SEMESTER
ZOOLOGY - PAPER - III
CYTOLOGY, GENETICS AND EVOLUTION

Unit - I

1. Cytology - I

- 1.1 Definition, history, prokaryotic and eukaryotic cells.
- 1.2 Electron microscopic structure of eukaryotic cell.
- 1.3 Plasma membrane –Different models of plasma membrane.

Unit – II

2. Cell organelles

- 2.1 Structure and functions of Endoplasmic Reticulum
- 2.2 Structure and functions of Golgi apparatus
- 2.3 Structure and functions of Lysosomes
- 2.4 Structure and functions of Ribosomes
- 2.5 Structure and functions of Mitochondria
- 2.6. Chromatin - Structure and significance, Chromosomes - Structure, types, functions

Unit - III

3.1 Genetics – I

- 3.1.1 Structure of DNA (Watson &Crick model)
- 3.1.2 Replication of DN
- 3.1.3 Types of RNA.

Unit - IV

4.1 Genetics – II

- 4.1.1 Mendel's work on transmission on traits
- 4.1.2 Sex determination
- 4.1.3 Sex linked inheritance
- 4.1.4 Sex limited genes, Sex influenced genes
- 4.1.5 Human karyotyping

Unit - V

5.1 Evolution

- 5.1.1 Origin of life
- 5.1.2 Lamarekism, Darwinism, Neo – Darwinism, Hardy-Weinberg Equilibrium.
- 5.1.3 Variations, isolating mechanisms, natural selection
- 5.1.4 Types of natural selection (directional, stabilizing, disruptive)
- 5.1.5 Artificial selection and forces of evolution
- 5.1.6 Speciation (Allopatric and Sympatric)

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ZOOLOGY SYLLABUS FOR IV SEMESTER

ZOOLOGY - PAPER - IV

EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY

Unit - I

- 1.1 Embryology**
 - 1.1.1 Gametogenesis
 - 1.1.2 Fertilization
 - 1.1.3 Types of eggs
 - 1.1.4 Types of cleavages
- 1.2 Formation and functions of Foetal membrane in chick embryo
- 1.3 Development, types and functions of Placenta in mammals

Unit - II

- 2.1 Physiology - I**
 - 2.1.1 Elementary study of process of digestion
 - 2.1.2 Absorption of digested food
 - 2.1.3 Respiration - Pulmonary ventilation, transport of oxygen and carbon-dioxide
 - 2.1.4 Circulation - Structure and functioning of heart, Cardiac cycle
 - 2.1.5 Excretion - Structure of nephron, urine formation, counter current mechanism

Unit - III

- 3.1 Physiology - II**
 - 3.1.1 Nerve impulse transmission - Resting membrane potential, origin and propagation of action potentials along myelinated and non-myelinated nerve fibers
 - 3.1.2 Muscle contraction - Ultra structure of muscle fibre, molecular and chemical basis of muscle contraction
 - 3.1.3 Endocrine glands - Structure, secretions and the functions (of hormones) of pituitary, thyroid, parathyroid, adrenal glands and pancreas
 - 3.1.4 Hormonal control of reproduction in a mammal

Unit - IV

- 4.1 Ecology - I**
 - 4.1.1 Meaning and scope of Ecology

- 4.1.2 Ecosystem – abiotic and biotic factors
- 4.1.3 Nutrient cycles - Nitrogen, carbon and phosphorus
- 4.1.4 Components of Ecosystem (Example:lake), food chains and food web, energy flow in ecosystem

Unit - V

5.1 Ecology - II

- 5.1.1 Habitat and ecological niche
- 5.1.2 Community interactions - Mutualism, commensalism, parasitism, competition, predation
- 5.1.3. Population studies

5.2 Zoogeography

- 5.2.1 Zoogeographical regions
- 5.2.2 Study of physical and faunal peculiarities of Oriental, Australian and Ethiopian regions
- 5.2.3. Biodiversity in India, Threatened species in India .

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SECOND YEAR 2019-20

ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER

ZOOLOGY - PAPER - III

CYTOLOGY, GENETICS AND EVOLUTION

Periods: 24

Max. Marks: 50

I. Cytology

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis and Meiosis with prepared slides
3. Mounting of salivary gland chromosomes of *Chironomus*

II. Genetics

1. Study of Mendelian inheritance using suitable examples
2. Study of human karyotypes

III. Evolution

1. Study of fossil evidences
2. Study of homology and analogy from suitable specimens and pictures
3. Phylogeny of horse with pictures
4. Darwin's finches (pictures)
5. Visit to natural history museum and submission of report

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ZOOLOGY PRACTICAL SYLLABUS FOR IV SEMESTER

ZOOLOGY - PAPER - IV

EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY

Periods: 24

Max. Marks: 50

I. Embryology

1. Study of T.S. of testis, ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8 cell stages)
3. Study of chick embryos of 18 hours, 24 hours, 33 hours and 48 hours of incubation

II. Physiology

1. Qualitative tests for identification of carbohydrates, proteins and fats
2. Qualitative tests for identification of ammonia, urea and uric acid
3. Study of activity of salivary amylase under optimum conditions
4. Study of prepared slides of T.S. of duodenum, liver, lung, kidney, spinal cord, bone and cartilage

III. Ecology

1. Determination of pH of given sample
2. Estimation of dissolved oxygen of given sample
3. Estimation of total alkalinity of given sample
4. Estimation of salinity of given sample