

SRI VENKATESWARA UNIVERSITY : : TIRUPATHI
ZOOLOGY SYLLABUS FOR III SEMESTER
ZOOLOGY -PAPER-III (THEORY)
CYTOLOGY, GENETICS AND EVOLUTION

PERIODS- 60

REVISED

MAX. MARKS -100

UNIT-I

1. Cytology-I

- 1.1. Definition , History, Prokaryotic and eukaryotic cells, virus ,viroids
Mycoplasma
- 1.2. Electron microscopic structure of eukaryotic cell.
- 1.3. Plasma Membrane-Different models of plasma membrane

UNIT- II

2.1 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 Nucleus
- 2.7 Chromatin-Structure and Significance, Chromosomes-Structure, Types ,
Functions

UNIT-III

3.1 Genetics-I

- 3.1.1 Mendels work on transmission of traits
- 3.1.2 Principles of inheritance
- 3.1.3 Incomplete dominance and co-dominance
- 3.1.4 Lethal alleles, Epistasis, Pleiotropy

UNIT-IV

4.1 Genetics-II

- 4.1.1 Sex Determination
- 4.1.2 Sex Linked inheritance
- 4.1.3 Linkage and crossing over .
- 4.1.4 Extra chromosomal inheritance
- 4.1.5 Human Karyotyping

UNIT-V

5.1 Evolution

- 5.1.1 Origin of life
- 5.1.2 Lamarckism, 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 Selections and forces of evolution
- 5.1.6 Speciation (Allopatric and Sympatric)
- 5.1.7 Macro evolutionary principles(Examples : Darwin's finches)

Suggested readings

- Lodish Berk, zipursky, Matsudaria, Baltimore, Darnell 'Molecular cell Biology'
W.H Free man and Company New York..
- Gardner, E.J., Simmons.,M.J Snustad,D.P(2008), Principle of Genetics. VIII
Edition wiley india.
- Snustand , D.P Simmons,M.J (2009) Principles of Genetics.V Edition. John.
Mohan.P Arora-History and Genetics, Himalaya Publishing House.
- Klug, W.S Cummings, M.R Spencerm C.A(2012). Concepts of Genetics. X
Edition Benjamin Cummings.
- Russell, P J (2009) Genetics-A Molecular Approach. III Edition, Benjamin
Cummings.
- Griffiths, A.J.F Wessler, S .R Lewonthin, R.C and carroll, S.B Introudction top
genetic analysis. IX Edition W.H Free man and Co.
- Ridely.M.(2004) Evolution. III Edition , Blackwell Publishing.
- Douglas, J Futuyma(1997), Evolutionary Biology Sinauer Assocites.
- Minkoff. E(1983). Evolutionary Biology Addison -Wesley.
- Neil A.Cambel., Jane. B Reece, Bilogy,7th ed, Cimmings
- De.Robertis & De Robertis 'Cell and Molecular Biology' by Saunders College.
- James D.Watson, Naney H Hopkins' Molecular Biology of the Gene.
- P Arora, ' Molecular Biology' Himalaya Publishing house Pvt. Ltd.
- Edward Gasque' Manual of Laboratory Experiments in Cell Biology 'W.C Brouh
Publishers.
- Mohan P.Arora , ' Biomolecules,' Himalaya Publishing House Pvt.Ltd.

Md Azhar Baig

25-5-2016

Dr. Md Azhar Baig
BOS Chairman

SRI VENKATESWARA UNIVERSITY : : TIRUPATHI
ZOOLOGY PRACTICAL EXAMINATION FOR III SEMESTER
ZOOLOGY -PAPER-III (PRACTICAL)
CYTOLOGY, GENETICS AND EVOLUTION

PERIODS- 24

REVISED

MAX. MARKS -50

1. Cytology

- 1 Preparation of Temporary slides of Mitotic division with onion root tips.
- 2 Observation of Various Stages of Mitosis and meiosis (Prepared slides)
- 3 Mounting of Salivary gland Chromosomes of Chironomus larva .

2. Genetics

- 1 Study of Mendelian Inheritance using suitable examples
- 2 Study of linkage recombination, gene mapping using the data
- 3 Study of human karyotypes *iva*

3. Evolution

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

Certified Laboratory record should be submitted at the time of practical examination.

Md Azhar Baig

25-5-2016

Dr. Md Azhar Baig
BOS Chairman

SRI VENKATESWARA UNIVERSITY : TIRUPATHI
ZOOLOGY MODEL QUESTION PAPER FOR III SEMESTER
ZOOLOGY - PAPER-III (THEORY)
CYTOLOGY, GENETICS AND EVOLUTION
REVISED

TIME- 3 Hrs

MAX MARKS 75

- PART-A**
- I. Answer any Five of the following
Each question carry 5 marks
Draw labeled diagrams wherever necessary

EXS-25

1. Mitochondrion
2. Ribosomes
3. Neo Darwinism
4. Natural selection
5. Incomplete Dominance
6. Crossing over
7. Mendel's Laws
8. Hardy Weinberg equilibrium

PART-B

- II. Answer any five questions .each question carry 10.marks 10X 5=50
Draw labeled diagrams wherever necessary

9. Give account of Plasma membrane .

Or

Describe types, Structure and functions of Chromosomes.

10. Write an essay on Extra Chromosomal inheritance.

Or

Give an account of Sex linked inheritance

11. Explain the significance of human karyotyping .

Or

Give an account of Gene Interactions .

12. Write an essay on Sex Determination

Or

Write an essay on Mutations.

13. Give an account of isolating Mechanisms .

Or

Write an essay on Organic Variations.

Md Azhar Baig

25-5-2016

Dr. Md Azhar Baig
BOS Chairman

SRI VENKATESWARA UNIVERSITY : TIRUPATHI
ZOOLOGY MODEL PRACTICAL EXAMINATION FOR III SEMESTER
ZOOLOGY - PAPER-III (Practical)
CYTOLOGY, GENETICS AND EVOLUTION
REVISED
MAX. MARKS -50

TIME- 2 Hrs

1. Squash Preparation of Onion root tip for Mitotic Chromosomes. 10M
Or
Mounting of salivary gland chromosomes of *chironomus*
2. Identify and Comment on the following spotters 5 X 6 = 30 M
- 1) Mitosis stage -1
 - 2) Meiosis State- 1
 - 3) Human Karyotype
 - 4) Horse evolution clipping- 1
 - 5) Homologous clipping -1
 - 6) Hardy -Weinberg Equalibraium-1
3. Certified Record 10M

Examiners are instructed to set the question paper as per the practical syllabus.

Spotters :

Identification -1 Mark
Diagram -2 Mark
Comments -2 Mark

Certified Practical Record is Compulsory. Student is not admitted to Practical's without Record Book.

Md Azhar Baig

25-5-2016
Dr. Md Azhar Baig
BOS Chairman