

**SRI VENKATESWARA UNIVERSITY : : TIRUPATHI**  
**ZOOLOGY SYLLABUS FOR III SEMESTER**  
**W.E.F. 2016-17**  
**ZOOLOGY –PAPER-III (THEORY)**  
**CYTOLOGY, GENETICS AND EVOLUTION**

PERIODS- 60

MAX. MARKS -100

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**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., Simons., M.J Snustad, D.P(2008), Principle of Genetics. VIII  
Edition wiley india.
- Snustand , D.P Simons, M.J (2009) Principles of Genetics. V Edition. John.  
Mohan. P Arora- History and Genetics, Himalaya Publishing House.
- Klug, W.S Cummings, M.R Spencer 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 Introduction to  
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 Associates.
- Minkoff. E(1983). Evolutionary Biology Addison –Wesley.
- Neil A. Campbell., Jane. B Reece, Biology, 7<sup>th</sup> ed, Cummings
- De Robertis & De Robertis 'Cell and Molecular Biology' by Saunders College.
- James D. Watson, Nancy 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.

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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

MAX. MARKS -50

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**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 Chironomes 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

**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.

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*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**

TIME- 3 Hrs

MAX. MARKS -75

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**PART-A**

- I. Answer any Five of the following** **5X5=25**  
**Each question carry 5 marks**  
**Draw labeled diagrams wherever necessary**

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** **5X10=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.
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*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**

TIME- 2 Hrs

**REVISED**

MAX. MARKS -50

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1. Squash Preparation of Onion root tip for Mitotic Chromosomes. 10M  
Or  
Mounting of salivary gland chromosomes of chironomous

2. Identify and Comment on the following spotters 5 X6= 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.

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*Md Azhar Baig*

25-5-2016

**Dr. Md Azhar Baig**  
**BOS Chairman**