

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 Mendel's 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.



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 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.

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

REVISED

MAX. MARKS -75

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** **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

TIME- 2 Hrs

REVISED

MAX. MARKS -50

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.

Md Azhar Baig

25-5-2016

Dr. Md Azhar Baig
BOS Chairman