SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science

M .Phil. Examination syllabus

FOR COURSE WORK

ZOOLOGY

Jan/Feb 2010.

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ZOOLOGY- Jan/Feb 2010

INSTRUCTIONS:

***CANDIDATE HAS TO APPEAR FOR THREE THEORY PAPERS EACH CARRYING HUNDRED MARKS.**

1. **PAPER – I : INFORMATION TECHNOLOGY & RESEARCH METHODOLOGY: -**

   SECTION I- INFORMATION TECHNOLOGY **50 MARKS**
   SECTION II – RESEARCH METHODOLOGY **50 MARKS**

2. PAPER – II **GENERAL ZOOLOGY** **100 MARKS**

3. PAPER – III **RECENT ADVANCES IN ZOOLOGY** **100 MARKS**

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PAPER I

INFORMATION TECHNOLOGY & RESEARCH METHODOLOGY

SECTION I INFORMATION TECHNOLOGY- 50 MARKS

1 **Introduction to computers:**

a) Input and out devices

b) Concept of memory

c) Primary and Secondary

d) Operating system: DOS and Windows

2 **Computer applications:**

a) Data collection

b) Data analysis

c) Use of internet in search of references

d) Power point presentations

e) WORD FILES: Management, Sequencing, Insertion of figures

SECTION II RESEARCH METHODOLOGY 50 MARKS

1. **Insight of Research**
   a) Objectives of research
   b) Significance of research
   c) Research techniques
   d) Finding research material
   e) Scientific writings

2. Organization of research paper

a) Title of paper
b) Authors and address
c) Acknowledgement
d) Writing abstract
e) Writing introduction
f) Writing material and methods
g) Writing results
h) Writing discussion
i) Method of writing references

3. Tables and Illustrations

a)Multiples and submultiples
b) International system of Units (SI units)
c) Probability tables
d) Basics of illustrations (Tables and graphs etc.)

4. Presentation of a scientific paper / document

a) Conference report
b) Oral presentation
c) Poster presentation
d) Audiovisual Aids in oral presentation.

5. Biostatistics

a) Samples and Population
b) Statistical parameters
c) Random sampling
d) Statistical inference
e) Testing hypothesis
f) Estimations
g) Measurement of central tendencies
h) Measures of variations
i) Correlation
J) Regression
k) Testing significance: Student 'T' test, Chi square test

6. Writing a thesis

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PAPER II

GENERAL ZOOLOGY 100 MARKS

1) **Evolutionary Biology**
   a) Synthetic theory of evolution
   b) Mechanism of speciation

2) **Biodiversity**
   a) Species concept
   b) Biological nomenclature
   c) Wildlife biology and conservation strategies

3) **Environmental Biology**
   a) Food chain, energy flow
   b) Population ecology and biological control
   c) Environmental pollution

4) **Cell Biology**
   a) Cell diversity- prokaryotic and eukaryotic
   b) Cell division

5) **Genetics**
   a) Gene structure, regulation of gene action
   b) Karyotyping
   c) Genetic disorders
   d) Chromosomal aberration
   e) DNA damage and repair

6) **Physiology and Biochemistry/ Endocrinology**
   a) Metabolism and its regulation (Carbohydrate metabolism and interconversion)
   b) Neurohormones and neurotransmitter
   c) Endocrine regulation in reproduction of mammals

7) **Enzymes and Coenzymes**

8) **Developmental Biology**
   a) Totipotency, Regulation of cleavages, Patterns of cleavages
   b) Cell differentiation and differential gene activity
   c) Blastula, Gastrula and organogenesis in general

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PAPER III

RECENT ADVANCES IN ZOOLOGY 100 MARKS

1) **Biotechnology**
   a) Bacterial genome- organization, conjugation, transformation and transduction
   b) DNA recombinant technology – scope, importance and application (animal cloning technique)
   c) Embryonic stem cells
   d) Hybridoma

2) **Bioinformatics**
   a) Genomics, data sequencing
   b) Sequencing DNA, sequencing amino acids
   c) Identifying similar sequences
   d) Proteomics
   e) Sequencing software

3) **Techniques in life sciences**
   a) Animal cell culture technique
   b) Cell separation and cell fractionation
   c) Electrophoresis and Column chromatography
   d) Immunological techniques- Immuno electrophoresis
   e) PCR, ELISA, Blot techniques, DNA fingerprinting

4) **Induced breeding techniques in fishes.**

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