



SLR-MM – 536

Seat
No.

**M.Sc. – I (Semester – I) Examination, 2015
(New – CBCS)
ZOOLOGY
Biosystematics (Paper – 1)**

Day and Date : Monday, 16-11-2015

Max. Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

Instructions : 1) Question number **1, 2 and 6** are **compulsory**.
2) Attempt **any two** from question number **3, 4 and 5**.

1. MCQ (Per question **2** marks) (**Compulsory**) : **14**

- 1) Binomial nomenclature means of
 - a) One name given by two scientists
 - b) Two names, one scientific, other local
 - c) Two names, one latinize, other of a person
 - d) One scientific name consisting of a generic and a specific epithet
- 2) All species in a grouping share a common ancestor and all species derived from a common ancestor called as
 - a) Monophyletic
 - b) Paraphyletic
 - c) Polyphyletic
 - d) None of these
- 3) The method of linear invariants is procedures for inferring the evolutionary relationships among species is described by
 - a) Barry
 - b) Hartigan
 - c) Felsenstein
 - d) Cavender
- 4) _____ has an important advantage in all types of phylogenetic research due to high level of variability and a high rate of mutation.
 - a) Nuclear DNA
 - b) Mt DNA
 - c) r RNA
 - d) None of these

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- 5) “International Rules for Zoological Nomenclature” was first proposed in _____ year in Leiden in 3rd International Congress for Zoology.
 a) 1890 b) 1895 c) 1950 d) 1900
- 6) _____ have been used in long time for problems of phylogenetic inference.
 a) Distance method b) Likelihood method
 c) Parsimony method d) Both a and c
- 7) Group is considered monophyletic if
 a) All members of the group share a common ancestor that is included in the group
 b) Not all descendants of the common ancestor are included
 c) All members share homoplastic traits
 d) The group does not contain the most recent common ancestor

2. Long answer type question (**Compulsory**) : **14**
 Describe the different species, subspecies concepts and other interspecific categories.
3. Answer the following : **7**
 A) Chemotaxonomy. **7**
 B) Historical resume of systematic. **7**
4. Explain the following : **5**
 A) Basic concepts of Taxonomy. **5**
 B) Speciation in panmictic and apomictic species. **5**
 C) Biodiversity Indices. **4**
5. Explain in short : **7**
 A) Computer aided taxonomy. **7**
 B) Describe different kinds of Systematic publications. **7**
6. Write short notes (**any four**) (**Compulsory**) : **14**
 1) DNA-DNA hybridizations
 2) Cytotaxonomy.
 3) Phylogenetic inference by distance method.
 4) Construct phylogenetic trees.
 5) Keys in taxonomy.
 6) Immunological techniques.
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**M.Sc. – I (Semester – I) Examination, 2015
(New – CBCS)
ZOOLOGY
Tools and Techniques in Biology (Paper – II)**

Day and Date : Wednesday, 18-11-2015

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

Instructions: 1) Question number **1, 2 and 6** are **compulsory**.
2) Answer **any two** from question number **3, 4 and 5**.

1. MCQ (per question **2** marks) :

14

- 1) _____ generates free radicals of acrylamide.
 - a) TEMED
 - b) Acrylamide
 - c) Ammonium persulphate
 - d) Agarose
- 2) The index or extent of Electrophoretic run is indicated by
 - a) Bromophenol blue
 - b) Acrydine orange
 - c) Methylene blue
 - d) Methyl green
- 3) Sample dissolved in glycine chloride buffer at pH 8-9 _____ in the upper gel buffer exists as zwitterion.
 - a) Chloride
 - b) Protein sample
 - c) Glycine
 - d) Both a) and b)
- 4) _____ gel as a support medium is used for the separation of large molecules of RNA and DNA.
 - a) Polyacrylamide
 - b) Agarose
 - c) Cellulose
 - d) Oligosaccharides
- 5) More recently a term immunoblotting is introduced in _____ technique.
 - a) Southern blotting
 - b) Western blotting
 - c) Northern blotting
 - d) All of above



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**M.Sc. – I (Semester – I) Examination, 2015
(New CBCS Pattern)
ZOOLOGY**

Cell and Molecular Biology (Paper – III)

Day and Date :Friday, 20-11-2015

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

Instructions : 1) Question number **1, 2 and 6** are **compulsory**.
2) Attempt **any two** from question number **3, 4 and 5**.

1. MCQ (Per question **2** marks) : **14**

- 1) Microtubules in axon functions
 - a) synthesis of neurotransmitters
 - b) to conduct electric impulse
 - c) direct axoplasmic transport
 - d) cross link with myosin
- 2) Which of the following cellular structure are not moved by axonal transport ?
 - a) Microfilaments
 - b) Mitochondria
 - c) Nuclei
 - d) ER
- 3) Lysosomes contain enzymes that can
 - a) Lower the pH of the cytosol
 - b) Synthesize protein
 - c) Synthesize ATP
 - d) Degrade many type of cellular molecule
- 4) The region of the cell within the plasma membrane, but outside of organelles is the
 - a) Cytosol
 - b) Matrix
 - c) Vacuole
 - d) Nucleoplasm
- 5) Which of the following cell components is not part of cytoskeleton of eukaryotic cell
 - a) Microfilament
 - b) Mitochondria
 - c) IF
 - d) Microtubules



- 6) During secretion newly made proteins in the ER more is
- | | |
|---------------------------|------------------------|
| a) cis-Golgi stack | b) trans Golgi portion |
| c) medial-Golgi cisternae | d) trans-Golgi network |
- 7) A signal sequence is located at the
- | | |
|-------------------------|--------------------|
| a) N-terminus | b) C-terminus |
| c) Cytosolic face of ER | d) 5' end of m-RNA |

2. Long answer type questions : 14
- 1) What is Cancer ? Add a note on Biology of cancer and causes of cancer.
3. Answer the following :
- | | |
|---|---|
| A) Cytoskeleton. | 7 |
| B) Structure and dynamics of microfilaments and microtubules. | 7 |
4. Explain the following :
- | | |
|--------------------------------------|---|
| A) Chemical synapses | 5 |
| B) Cell cycle control. | 5 |
| C) Lysosomal assembly and functions. | 4 |
5. Explain in short :
- | | |
|---|---|
| A) Protein synthesis on free and bound polysomes. | 7 |
| B) Passive and active transport. | 7 |
6. Write short notes (**any four**) : 14
- 1) Biogenesis of mitochondria
 - 2) Flagella: structure and dynamics
 - 3) Molecular composition
 - 4) Cilia
 - 5) Microtubules in mitosis
 - 6) Integrins.
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**M.Sc. – I (Semester – I) Examination, 2015
(New CBCS)
ZOOLOGY
Population Genetics and Evolution (Paper – IV)**

Day and Date : Monday, 23-11-2015
Time : 10.30 a.m. to 1.00 p.m.

Total. Marks : 70

Instructions : 1) Question Number **1, 2 and 6** are **compulsory**.
2) Attempt **any two** from question number **3, 4 and 5**.

1. MCQ (Per question **2** marks) : **14**
- 1) Slight genetic change over a few generations in a population that does not result in the evolution of a new species is
 - a) microevolution
 - b) macroevolution
 - c) evolutionary equilibrium
 - d) genetic drift
 - 2) “The sum total of the genetically inherited changes in the individuals who are members of a population” is a description of
 - a) Non-random mating
 - b) Genetic drift
 - c) Evolution
 - d) Natural selection
 - 3) The present day epoch is
 - a) Palaeozoic
 - b) Coenozoic
 - c) Mesozoic
 - d) Triassic
 - 4) The model of evolution that involves a slow, progressive change at a more or less constant rate is
 - a) gradualism
 - b) progressive equilibrium
 - c) punctuated equilibrium
 - d) non progressive equilibrium



- 5) The effects of natural selection may be countered by
- a) gene flow
 - b) genetic drift
 - c) mutation
 - d) inbreeding
- 6) What is the ultimate source of genetic variability ?
- a) selection
 - b) migration
 - c) genetic drift
 - d) mutation
- 7) Which of the following would cause deviation from the Hardy-Weinberg equilibrium ?
- a) small population
 - b) isolated
 - c) random mating
 - d) lack of selection pressure no mutations

2. Long answer type question : **14**
- Describe in detail Migration.
3. Answer the following :
- A) Give an account on the role of Genomic studies and its use in Biodiversity. **7**
 - B) Give an account on Assessment of molecular variations. **7**
4. Explain the following :
- A) Reproductive isolation. **5**
 - B) Phylogenetic gradualism. **5**
 - C) Applications of Hardy-Weinberg equation. **4**
5. Explain in short :
- A) Natural Selection and its parameters. **7**
 - B) Estimation of heritability. **7**



6. Write short notes (**any four**) :

14

- 1) Gene evolution
 - 2) Allopatric speciation
 - 3) Assessment of molecular variation
 - 4) Metapopulations
 - 5) Neo-Darwinism
 - 6) Meiotic drive.
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M.Sc. (Part – II) (Semester – III) Examination, 2015
ZOOLOGY (Paper – IX) (CGPA)
Molecular Cytogenetics

Day and Date : Monday, 16-11-2015

Total Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

- Instructions:** 1) Question 1, 2 and 6 are **compulsory**.
2) Attempt **any two** questions from 3, 4 and 5.
3) Draw neat labelled diagram **wherever** necessary.
4) Figures to the **right** indicate marks.

14

1. 1) RNAs that catalyze biological reactions, such as self-splicing introns, are known as
 - a) enzymes
 - b) spliceosomes
 - c) ribozymes
 - d) RNase
- 2) The regions of DNA in a eukaryotic gene that encode a polypeptide product are called
 - a) hnRNAs
 - b) exons
 - c) enhancers
 - d) leader sequences
- 3) mRNA will form hybrids only with the coding strand of DNA because
 - a) DNA will not reanneal at high temperatures
 - b) The salt concentration will affect DNA reannealing
 - c) DNA will not reanneal at low temperatures
 - d) RNA:DNA hybridization follows the base-pairing rules
- 4) Which of the following molecules functions to transfer information from the nucleus to the cytoplasm ?
 - a) DNA
 - b) mRNA
 - c) tRNA
 - d) Proteins

P.T.O.



- 5) _____ is defined as the most efficient and most beneficial utilization of the natural resources.
- a) Ecoosytem b) Conservation c) Ecotone d) Community
- 6) Fishery resources are one of the important _____ resources and are greatly valued by man as food.
- a) Biotic b) Non-renewable
c) Non-living d) Abiotic
- 7) The term _____ is defined as the study of how living systems influence, and are controlled by, the geology and chemistry of the earth.
- a) Biophysics b) Biogeochemistry
c) Geology d) Ecology

SECTION – II

2. What are the different natural factors affecting ecosystem ? Add a note on Tsunami. **14**
3. Answer the following :
- A) Give an account of Traditional Fishing methods. **7**
B) Give an account on food chain and food web. **7**
4. Explain the following :
- A) Give an account on Hot spots in India. **5**
B) Pyramids of energy. **5**
C) Urbanization. **4**
5. Explain in short :
- A) Cryopreservation for gametes. **7**
B) Effect of landslides on Ecosystem. **7**

SECTION – III

6. Short notes (**any four**) : **14**
- 1) Tropical and rain forest.
2) Ecological indicators.
3) Quantifying community diversity.
4) Ecotone.
5) Deforestation.
6) Earth summit Agenda.
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M.Sc. – II (Semester – III) Examination, 2015
ZOOLOGY (CGPA)
Paper No. XI : Comparative Animal Physiology

Day and Date : Friday, 20-11-2015

Max. Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

- Instructions :** 1) Question 1 and 2 are **compulsory**.
2) Attempt **any 2** questions from questions 3, 4 and 5.
3) Draw **neat** labelled diagram **wherever** necessary.
4) Figures to the **right** indicate marks.

1. Multiple Choice Questions (Write the correct answer) : 14

- 1) Which of the following drug reduces the excretion of water in urine ?
a) Vasopressin b) Oxytocin c) TSH d) FSH
- 2) Parental care in males is stimulated by
a) Prolactin b) Oxytocin c) Thyroid d) Adrenalin
- 3) Labour pain is caused due to
a) Prolactin b) Oxytocin c) Thyroid d) Adrenalin
- 4) Which of the following is largest endocrine gland ?
a) Thyroid b) Parathyroid c) Pancreas d) All the above
- 5) The total rate of glomerular filtration for the whole body is normally about
a) 125 ml per minute b) 150 ml per minute
c) 200 ml per minute d) 250 ml per minute
- 6) Pain occurs due to
a) Release of certain chemicals from damaged tissue
b) Ischaemia of tissue
c) Muscle spasms
d) All of the above
- 7) In circulatory system maximum surface area is seen in
a) Veins b) Capillaries c) Arterioles d) Arteries

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|---|----|
| 2. Write an account on human eye. | 14 |
| 3. A) Functions of blood. | 7 |
| B) Difference between arteries and veins. | 7 |
| 4. Explain the following : | |
| A) Functions of fats. | 5 |
| B) Basal Metabolic Rate. | 5 |
| C) Osmoregulation. | 4 |
| 5. A) Types of respiration. | 7 |
| B) Difference between RBC and WBC. | 7 |
| 6. Write short note (on any four) : | 14 |
| 1) Taste receptors | |
| 2) Functions of ear | |
| 3) Structure of sperm | |
| 4) Types of ovum | |
| 5) Communication in bee | |
| 6) Role of chromatophore. | |
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- vi) For vegetarians, pulses are an important source of
 - A) Carbohydrates
 - B) Proteins
 - C) Fat
 - D) Iron
 - vii) Hemoglobin has a high content of this amino acid
 - A) Proline
 - B) Leucine
 - C) Arginine
 - D) Histidin
 - 2. Write an essay on the structures and role of proteins. 14
 - 3. A) Explain in details the reactions of Glycolysis pathway. 7
 B) Add a note on its regulation and energetic. 7
 - 4. Discuss in details :
 - A) Phospholopids and their roles. 5
 - B) First law of thermodynamics. 5
 - C) Site directed mutagenesis. 4
 - 5. Explain in short :
 - A) Enzyme Engineering. 7
 - B) Isoenzymes. 7
 - 6. Write short notes (**any four**) : 14
 - a) Micro-RNA
 - b) Ribozymes
 - c) Hydrogen Bond
 - d) Co-enzymes
 - e) Significance of Km
 - f) Immobilized Enzymes.
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