

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.Sc. (GEN)/SEM-2/MSGEN-205/2013  
2013**

**GENETIC BIODIVERSITY AND TAXONOMY**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP - A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Which of the following is called  $\beta$ -diversity ?
  - a) Ecological diversity
  - b) Genetic diversity
  - c) Forest diversity
  - d) Species diversity.
- ii) The first National Park of India was
  - a) Jim Corbett National Park
  - b) Kaziranga National Park
  - c) Gir National Park
  - d) Panna National Park.



- iii) An exotic weed which has invaded many forest lands of India is
- a) *Parthenium hysterophorus*
  - b) *Lantana Camara*
  - c) *Chenopodium alba*
  - d) *Eichornia crassipes.*
- iv) Succession of communities occurs because
- a) each existing community changes the environment
  - b) climatic changes lead to reduced water availability
  - c) most population have a limited life span and die making room for others
  - d) resources in any area are limited.
- v) The number of individuals that a particular habitat can support with no degradation of the habitat is called
- a) biotic potential
  - b) survivorship
  - c) niche
  - d) carrying capacity.
- vi) Red Data Book was produced by
- a) IBWL
  - b) MAB
  - c) WWF
  - d) IUCN.



- vii) Best method for conserving genetic material of plants is
- Cold storage
  - Tissue culture
  - seed storage
  - growing in natural habitat.
- viii) Which is not a reason of maximum diversity in tropics ?
- Higher pest pressure
  - Evolutionary older zone
  - High rate of out crossing
  - Greater environmental variations.
- ix) Which of the following exotic species has become menace to many water bodies in India ?
- Lantana camara*
  - Eichornia crassipes*
  - Parthenium hysterophorus*
  - Eupatorium odoratum*.
- x) Rock Pigeon was originally introduced in our country from
- Malayasia
  - Middle East
  - USA
  - Japan.



- xi) Black Buck ( *Antilope cervicapra* ) is an example of
- a) Endangered species
  - b) Extinct species
  - c) Vulnerable species
  - d) Conservation dependent species.
- xii) The karyotypic orthoselection was coined by
- a) Dobzhansky, 1938      b) Murphy, 2001
  - c) Muller, 1999          d) White, 1978.
- xiii) Conservation and maintenance of wild life within the natural ecosystem is
- a) *Ex situ* conservation
  - b) Botanical garden
  - c) *In situ* conservation
  - d) all of these.
- xiv) Which of the following proteins accumulated most mutations in evolutionary time scale ?
- a) Cytochrome *C*
  - b) Hemoglobin beta chain
  - c) Lysozyme
  - d) Fibrinopeptide *B*.



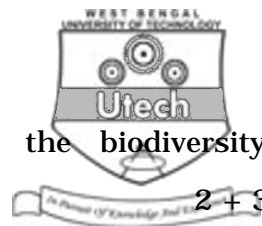
- xv) Neutral theory of molecular evolution was proposed by
- a) Charles Darwin                      b) Lamarek  
c) Motoo Kimura                        d) None of them.
- xvi) The common precursor of present day cytochrome C among animals and plants existed in a primitive microbe about
- a) 1 billion years ago                  b) 2 billion years ago  
c) 3 billion years ago                  c) 4 billion years ago.
- xvii) The number of amino acids in human cytochrome C is
- a) 104                                        b) 204  
c) 304                                        d) none of these.

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.                  3 × 5 = 15

2. Name five major threats to biodiversity and explain them in brief.
3. What do you mean by values of biodiversity ? Explain.
4. Describe the patterns of species diversity.
5. Define *K* and *r* strategies with example.
6. Explain Categories of IUCN Red List.



7. Define Biodiversity hotspot. What are the biodiversity hotspots of India ?  $2 + 3$
8. Discuss the roles of changes in chromosome number and structure in speciation.  $2 \frac{1}{2} + 2 \frac{1}{2}$
9. Discuss diagrammatically how slippage during replication may form new alleles.
10. Discuss how immunological techniques could be used for phylogenetic studies.

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

11. Name two exotic fish or fruits or animals introduced in India. Discuss how exotic species creates menace in aquatic ecosystem. Exotic species as alien invasion in India. Discuss.  $2 + 6 + 7$
12. What is the role of ESA in habitat protection ? What do you mean by critical habitat ? What is IUCN ? What are the functions of IUCN ?  $5 + 2 + 3 + 5$
13. Why conservation of biodiversity is needed ? What are the main strategies of conservation ? Mention the main differences between National Park, wild-life sanctuaries and biosphere reserve.  $2 + 7 + 6$



14. What do you mean by biopiracy ? How it relates with bioprospecting and traditional knowledge ? Discuss in brief the benefits and criticism of GM crops. 2 + 5 + 8
15. Define *C* value and *C* value paradox. Discuss *C* value paradox with examples. What are the forces that might act upon the genome to cause it to grow. 2 + 7 + 6
16. Discuss how DNA-DNA hybridization technique can be applied for phylogenetic studies. What is chromosome painting ? Mention its applications. 9 + 5 + 1
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