REV-00 MSZ/65/70

2015/12

M.Sc. ZOOLOGY Third Semester GENETICS & EVOLUTION (MSZ – 11)

Juration: 3Hrs.

Full Marks: 70

PART A (Objective) =20 PART-B (Descriptive)=50

PART-B (Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any *five* of the following questions:

1. Define Stromatolites. How does fossil presents the evidence of evolution? Also, explain the origin of life on the basis of Oparin and Haldanes theory.

(2+3+5=10)

Or

Describe about the evolution of Bird. Mention how they are linked to reptiles.

(5+5=10)

2. What is meant by Unique and repetitive DNA? State in detail about the euchromatic and heterochromatic region of a chromosome. Mention its significance.

(2+6+2=10)

- Explain Kimura's Neutral theory of Evolution and its view against Natural selection. (5+5=10)
- 4. How does the sex determination in mammal differ from that of a bird? Explain the sex determination in drosophila. State the significance of Y chromosome.

(2+6+2=10)

РТО

Describe about the evolution of human being with reference to its various stages of development of posture and Brain. (10)

 $(2 \times 5 = 10)$

Or

Write short notes on any two of the following:

- i) Genetic counseling and its principles.
- ii) Mechanism of dosage compensation in human females.
- iii) Role of SRY gene in sexual differentiation in human.
- 6. What is the difference between macro and micro evolution? State the various types of Micro evolution. State the significance of macro evolution and evolutionary synthesis. (1+4+5=10)
- 7. What is meant by cell cycle checkpoint? Explain with proper illustration how a cell stops progression of a cell division after a single stranded DNA damage. (2+8=10)
- Discuss common autosomal and sex chromosomal abnormalities in human being.
 Describe their chromosomal basis and their phenotypic character. (2+8=10)

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Duration: 20 minutes

I. Choose the correct option:

PART-A (Objective)

Time: 20 mins

Total Marks: 20

 $1 \times 20 = 20$

Marks-20

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1. Which of the following describes gene flow?

- a) Random mating b) Migration
- c) Genetic drift d) Selection
- 2. In the process of evolutionary changes, the resultant alterations and loss of genetic variability has been termed as:
 - a) Genetic drift b) Bottleneck effect
 - c) Mutation d) founder effect
- 3. The microevolution is associated with the process of:
 - a) Mutation, recombination and natural selection.
 - b)Recombination, allele frequency suffling and natural selection.
 - c) Genetic drift, recombination and natural selection.
 - d) Mutation, genetic variation and genetic bottleneck.
- 4. Which of the following is not an assumption of Hardy-weinberg equillibrium? a) Mating occurs preferentially.
 - b) The size of the population is very large.
 - c) There is no migration.
 - d) There are no mutations.
- 5. The eukaryotic cell cycle is controlled several points ; which of these statement is not true? a) Cell growth is assessed at the G₁/S checkpoint.
 - b) DNA Replication is assessed at the G₂/M checkpoint.
 - c) The chromosomes are assessed at the G_2/M checkpoint.
 - d) Environmental conditions are assessed at the G₀ checkpoint.
- 6. Prezygotic isolating mechanisms include all of the following except:
 - a) Hybrid sterility b) Courtship rituals
 - c) Habitat separation d) Seasonal reproduction
- 7. Which of the following is an example of living fossils?a) Pinusb) Ricciac) Gingkod) Gnetum

2015/12

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	First life emerged on earth was: a) Autographs c) Chemoheterotrophs	b) Cyanobacteria d) Photoautotrophs	
	Which of the following is not a v a) Nails c) Coccyx	estigial organ of Man? b) Third molar d) Segmented muscles of abdome	en
	The effects of natural selection m a) Gene flow c) Mutation	ay be countered by: b) Genetic drift d) None	
	Motoo Kimura's theory that oppo a) Natural theory c) Neutral theory	osed Natural selection was the: b) Nearly neutral theory d) Adaptive theory	
2	The random loss of allele in a pop a) Mutation c) Genetic drift	pulation is called: b) Selection d) None	
	The movement of new genes into called: a) Founder principle c) Bottleneck effect	a population as a result of migratib) Selectiond) Adaption	on or hybridization is
	A species inhabiting different geo a) Sympatric c) Sibling	ographical area is known as: b) Allopatric d) Biospecies	
	The Mutation may be described a a) Continuous genetic variation c) Discontinuous genetic variation	b) Phenotypic chang	
	Genetic drift is found in: a) Small population with or witho b) Large population with random c) Plant population. d) Animal population.		
	How many DNA molecules are p of cell cycle? a) 23 b) 46	resent in the nucleus of a human so c) 69 d) 92	omatic cell in G ₂ stage
	The effect of mutation in cdc25 ⁻ g a) Premature cell division. b) No affect on cell division. c) Cell does not divide but continu d) Cell cycle stops.		

19.Match the following:

Column –I

A. Down's syndromeB. Cri-du-chatC. Klinefelter's syndromeD. Turner's syndrome

Column-II

- P. An additional sex chromosome
- Q. Loss of a part of chromosome
- R. Absence of sex chromosome
- S. Presence of an extra chromosome
- T. Presence of two extra chromosome

D-R
D-Q
D-R
D-P

20.Dosage compensation in human female is achieved by:

a) Hypoactivation of both X chromosome.

b) Hypoactivation of anyone X chromosome.

c) Hypoactivation of Maternal X chromosome.

d) Hypoactivation of Paternal X chromosome.