

Roll No.

Total No. of Questions : 9]
(2033)

[Total No. of Printed Pages : 4

UG (CBCS) IInd Year Annual Examination

3116

B.Sc. ZOOLOGY

(Genetics and Evolutionary Biology)

(DSC-ID)

Paper : ZOOL 202 TH

Time : 3 Hours]

[Maximum Marks : 50

Note :- Attempt *five* questions in all. Attempt *one* question each from Sections-B, C, D and E. Question No. 1 (Section-A) is compulsory.

Section-A

(Compulsory Question)

1. (i) Mendel's conclusions were published in year
..... .

(ii) Position of gene on a chromosome is called
..... .

CA-316

(1)

Turn Over

- (iii) If a single gene affects more than one phenotypic expression. This phenomenon is called
- (iv) Define Multiple Allelism.
- (v) What is extra-chromosomal inheritance ?
- (vi) How many linkage groups are present in maize ?
- (vii) Unit of distance between linked gene is
- (viii) Mutational unit of DNA is
- (ix) extinction is caused by unplanned human activities.
- (x) era is called age of mammals and angiosperms. 1×10=10

Section-B

- ~~2~~ (a) Describe Mendel's Laws of genetics giving examples.
- (b) In humans, blue eye colour is recessive to brown eye colour, brown eyed male and a blue eyed mother :

- (i) What is the genotype of man and his mother ?
- (ii) What are possible genotypes of his father ? 7+3
3. (a) Describe the chromosomal theory of inheritance giving examples.
- (b) What is multiple allelism ? Explain it with examples. How it differs from lethal alleles ? 5+5

Section-C

4. (a) What are chromosomal mutations ? Explain in detail.
- (b) Describe XX (g) - XX type (σ) sex determination. 8+2
- 5 (a) How will you differentiate linkage and crossing over ?
- (b) Briefly describe phenomenon of crossing over. 5+5

Section-D

- ~~6~~ (a) Describe major events in History of life giving theories of origin of life.
- (b) What is Neo-Darwinism ? Explain. 5+5
7. (a) Explain Phylogeny of Horse.
- (b) Describe Natural selection giving example of Industrial Melanism. 5+5

Section-E

- ~~8~~ (a) Write short notes on any *one* of the following :
- (i) Allopatric species and sympatric species
- (ii) Role of extinction in evolution
- ~~(b)~~ Explain Darwin's Finches. 5+5
9. (a) What are the major advantages of Biological species concept ? Give disadvantages also.
- (b) Describe Mass Extinction Concept in detail. 5+5

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B.Sc. ZOOLOGY

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(DSC-ID)

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Note :- Attempt *five* questions in all. Attempt *one* question each from Sections-B, C, D and E. Question No. 1 (Section-A) is compulsory.

Section-A

(Compulsory Question)

I. (A) Do as required :

- (i) Sutton and Boveri proposed the famous theory
- (ii) Determination of a trait by more than two alleles is called

CH-115

(1)

Turn Over

(B) Write short notes on the following :

- (i) Synaptonemal complex
- (ii) Lethal genes
- (iii) Dosage compensation
- (iv) Biological species concept 4×2=8

Section-B

- 2. (a) What is Epistasis ? Explain recessive and dominant epistasis taking suitable examples.
- (b) Explain the structure of B-DNA. 5,3
- 3. (a) What is Codominance ? Explain with examples.
- (b) Discuss Mendel's laws of heredity. 5,3

Section-C

- 4. (a) Differentiate between complete and incomplete linkage.
- (b) What is Inversion ? Discuss its types and importance. 5,3
- 5. (a) Give detailed account of Gene Mutation.
- (b) Discuss Environmental role in determination of Sex. 5,3

- (iii) Codominance is interaction,
while epistasis is
- (iv) Crossing over occurs between
chromosomes.
- (v) The sex chromosomes of domestic chicken
are :
(a) ZO-ZZ
(b) ZW-ZZ
(c) XX
(d) XY
- (vi) is called blue print molecule.
- (vii) Phenomenon of industrial melanism shows :
(a) Artificial selection
(b) Natural selection
(c) Geographic isolation
(d) Reproductive isolation
- (viii) The gas mixture used by Miller in his
experiment was
- (ix) What do you mean by Palaeontology ?
- (x) What is Central Dogma ? 10×1=10

(B) Write short notes on the following :

- (i) Synaptonemal complex
- (ii) Lethal genes
- (iii) Dosage compensation
- (iv) Biological species concept 4×2=8

Section-B

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- (b) Explain the structure of B-DNA. 5,3
- 3. (a) What is Codominance ? Explain with examples.
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Section-C

- 4. (a) Differentiate between complete and incomplete linkage.
- (b) What is Inversion ? Discuss its types and importance. 5,3
- 5. (a) Give detailed account of Gene Mutation.
- (b) Discuss Environmental role in determination of Sex. 5,3

Section-D ✓

6. (a) Briefly describe Lamarckism. How has it been modified in Neo-Lamarckism ?
- (b) Describe the various sources of variation. 5,3
7. (a) Explain the horse evolution with suitable diagrams.
- (b) Explain various types of premating isolation mechanism. 5,3

Section-E

8. Write short notes on the following :
- (i) Industrial melanism
- (ii) Coacervates
- (iii) Macroevolution
- (iv) Frame shift mutation 2×4=8
9. (a) What is Speciation ? Enumerate various modes of Speciation.
- (b) Explain the role of extinction in evolution. 5,3