Total No. of Printed Pages—4

5 SEM TDC ZOO M 1

2017

(November)

ZOOLOGY

(Major)

Course : 501

(Genetics and Evolution)

Full Marks : 48
Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. Select the correct answers from the following MCQs : 1×4=4

(a) Which among the following is not a model organism in genetic analysis?

(i) Zebra fish

(ii) White rat

(iii) Mouse-deer

(iv) *Caenorhabditis elegans*

(b) The major reason for the success of Mendelian experiments was

(i) garden pea was true breeding

(ii) garden pea was cross-breeding

(iii) garden pea was heterozygous

(iv) garden pea was easily available

(c) Linkage prevents

(i) homozygous condition

(ii) segregation of alleles

(iii) hybrid formation

(iv) heterozygous condition

(d) The most important example of point mutation is found in a disease called

(i) thalassemia

(ii) night blindness

(iii) sickle cell anaemia

(iv) down's syndrome

2. Answer any *four* of the following questions very briefly : 2×4=8

(a) Why is incomplete dominance regarded as non-Mendelian inheritance?

(b) What effect does crossing-over have on linked genes?

(c) What is meant by complementary and supplementary factors?

(d) What is cytoplasmic inheritance? Give one example.

(e) Define a gene and a gene pool.

(f) How is mutation an evolutionary agent?

3. What is linkage? Describe the mechanism of complete and incomplete linkage. 1+3+3=7

Or

How the genetic materials between non-sister chromatids of homologous chromosome assort independently? Explain the mechanism with significance. 1+6=7

4. Enlist various methods of sex determination in animals. Describe the genic balance mechanism of sex determination. 2+5=7

Or

Define genome. Write an account on fine structure of gene. 1+6=7

5. Write an account on genetic significance of mutation and its practical implications. 4+3=7

Or

Mention two dominant and two recessive traits of human. Write about any one inborn trait leading to inborn errors in metabolism. 2+5=7

6. What is evolution? Describe about modern synthetic theories of evolution. 1+6=7

Or

What is meant by variation? Describe different types of variation. 1+6=7

7. Define speciation. Write an account on sympatric and allopatric mode of speciation. 1+7=8

Or

Write short notes on any *two* of the following : 4×2=8

(a) Genetic drift

(b) Endemism

(c) Biogenetic law

(d) Pangenesis

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