SH-V/ZOO-501/C-12/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

ZOOLOGY

Course ID : 52612 **Course Code : SH/ZOO-502/C-12**

Course Title: Principles of Genetics

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate marks.

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

1. Answer *any five* questions: 1×5=5

(a) Define Pleiotropy.

(b) Explain the term 'LINE'.

(c) What do you mean by complete linkage?

(d) Define reciprocal translocation.

(e) What is Testis Determining Factor (TDF)?

(f) Explain the term 'Episome'.

(g) What is Polygenic Inheritance?

(h) What do you mean by Male-Specific-Lethal (MSL) complex?

2. Answer *any two* questions: 5×2=10

(a) Give an account of extrachromosomal inheritance in *Paramoecium* with suitable illustration. 3+2=5

(b) Mention the key structural components of the dosage compensation complex of *Drosophila melanogaster* and briefly explain its role in the dosage compensation. 2+3=5

(c) What is coefficient of coincidence? With the help of a suitable diagram, explain the molecular basis of crossing over in eukaryotes. 1+4=5

(d) Give an account of different types of transposable genetic elements in prokaryotes. 5

3. Answer *any one* of the following: 10×1=10

(a) 'Sex lethal (Sxl) is the master regulator gene for somatic sex determination in *Drosophila melanogaster*' — Explain the statement. Explain the concept of multiple alleles by taking suitable examples. 6+4=10

(b) Explain the role of Sry and other genes in the mammalian sex determination pathway.

Briefly describe different types of chromosomal aberrations with one suitable example of each. 6+4=10

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