

MASTER OF SCIENCE (BIOTECHNOLOGY) (CBCS-2018 COURSE)
M.Sc.(Biotechnology) Sem - I : WINTER :- 2021
SUBJECT: GENETICS

Day : Monday
Date 7/2/2022

W-19740-2021

Time : 02:00 PM-05:00 PM
Max. Marks: 60

NB.

- 1) All questions are **COMPULSORY**.
- 2) Answer to both the sections should be written in the **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.
- 4) Draw well labeled diagrams **WHEREVER** necessary.

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- Q.1** Attempt any **FIVE** of the following. **(10)**
- a) Define law of segregation
 - b) Define alleles
 - c) Define conditional lethal with an example
 - d) What is antagonistic pleiotropy ?
 - e) Define cytoplasmic segregation
 - f) What is a solenoid tube?
 - g) Define G. banding
- Q.2** Attempt any **TWO** of the following. **(10)**
- a) What are model organisms? Write general characteristics of model organism. Explain why *C. elegance* is considered as an ideal model for studying neurobiology.
 - b) Define epistasis. Explain dominant epistasis with an example.
 - c) Explain penetrance and expressivity with suitable examples.
- Q.3** Attempt any **TWO** of the following. **(10)**
- a) What are sex chromosomes? Explain the sex determination mechanism in human.
 - b) Define structural chromosomal aberration. Enlist different types of structural aberrations. Explain Translocation Down Syndrome.
 - c) What is prenatal testing? Explain any two methods.

SECTION - II

- Q.4** Attempt any **FIVE** of the following. **(10)**
- a) What is meant by demes.
 - b) Define genetic drift
 - c) Write the meaning of founder effect.
 - d) Define positive assortative mating.
 - e) Elaborate the concept of anagenesis
 - f) What is a benign tumor
 - g) What is germline mutation
- Q.5** Attempt any **TWO** of the following. **(10)**
- a) What is migration? Write the effect of migration on allelic frequencies?
 - b) Define speciation. Explain allopatric and prepatric speciation with examples.
 - c) Elaborate on Kin selection.
- Q.6** Attempt any **TWO** of the following. **(10)**
- a) What is an oncogenes? Explain the mechanism of activation of oncogenes.
 - b) What is meant by cancer syndrome? Explain the concept with example.
 - c) Write about different steps involved in IVF.

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