

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

Day : Monday  
Date 7/2/2022

W-20218-2021

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

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**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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