

**T. Y. B. SC. (BIOTECHNOLOGY) SEM – V (2010 COURSE) :**  
**WINTER - 2017**  
**SUBJECT: GENETICS**

Day: **Tuesday**  
Date: **07/11/2017**

Time: **2.00 PM TO 05.00 PM**  
Max Marks. 80

**W-2017-0958**

**N.B.**

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

**SECTION - I**

- Q.1 a)** Answers any **ONE** of the following (06)
- i)** With the help of diagram explain the ultra structure of chromosomes.
  - ii)** Explain role of genetics in breeding improved plant varieties with suitable examples
- b)** Attempt any **TWO** of the following (10)
- i)** Explain different types of chromosome banding.
  - ii)** Describe the structure of polytene chromosomes.
  - iii)** Write the nomenclature of human chromosomes.
- Q.2** Write short notes on any **FOUR** of the following (16)
- i)** Multiple alleles
  - ii)** Infective particles
  - iii)** X – linked inheritance
  - iv)** Law of segregation
  - v)** Mitochondrial inheritance

**SECTION - II**

- Q.3 a)** Answers any **ONE** of the following (06)
- i)** What is epistasis? Explain dominant epistasis with an example.
  - ii)** Explain RFLP.
- b)** Attempt any **TWO** of the following (10)
- i)** What is linkage? Explain its importance in genetic mapping.
  - ii)** Explain different types of polyploidy in plants.
  - iii)** Explain the importance of *E.coli* as model organism.
- Q.4** Write short notes on any **FOUR** of the following (16)
- i)** XX – XY sex determination
  - ii)** Sex linked inheritance
  - iii)** Genetic drift
  - iv)** Speciation
  - v)** Sex determination in slipper snail
- Q.5** Solve all **EIGHT** questions. (16)
- i)** What is pedigree analysis?
  - ii)** State Hardy – Weinberg law.
  - iii)** Define evolution.
  - iv)** Write the importance of SRY gene
  - v)** Explain tandem duplication in chromosomes
  - vi)** What is forward mutation?
  - vii)** What are lethal genes?
  - viii)** What are Down's syndromes?