

I Semester B.Sc. Examination, November/December 2015
 (Semester Scheme) (F + R / CBCS)
BIOTECHNOLOGY – I
Cell Biology and Genetics

Time : 3 Hours

Max. Marks : (70/60/CBCS)

- Instructions:** 1) **70 Marks** for students **2011 – 12 & Onwards/CBCS.**
 2) **60 Marks** for **Repeater** students **prior to 2011 – 12.**
 3) **Section A, B, C** common to **all.**
 4) **Section D** for students of **2011 – 12 & Onwards/CBCS.**
 5) Draw **neat** labelled diagrams **wherever** necessary.

SECTION – A

I. Write short notes on the following :

(5×2=10)

- 1) Lysosome
- 2) Karyotype
- 3) Cri-du-chat syndrome
- 4) Pyrimidine
- 5) Centrioles.

SECTION – B

II. Answer **any four** of the following :

(4×5=20)

- 6) Give the structure and function of mitochondria.
- 7) What is cell senescence ? Name the DNA damage theories of aging.
- 8) What is Heterochromatin and Euchromatin ?
- 9) Explain Mendel's Law's of inheritance.
- 10) What is colour blindness ? Explain its pattern of inheritance.

SECTION – C

III. Answer **any three** of the following :

(3×10=30)

- 11) a) In cat's, gene for short hair is dominant over gene for long hair. A short haired Tom Cat is mated with an Augora female. She bears 8 kittens, 6 short haired and 2 long haired. Compare with the expected ratio.
- b) What are complementary genes ?



- 12) Explain cytoplasmic inheritance. Give the importance of Kappa particles in paramecium.
- 13) Explain the ultrastructure of chromosome.
- 14) Give the chemical composition of nucleus and its ultrastructure.
- 15) Write in detail of the different mechanisms of aging.

SECTION - D

(For 2011 - 12 Students Only)

IV. Answer the following :

(10x1=10)

- 16) Mitochondria was discovered by _____
- 17) What is two point test cross ?
- 18) The difference between nucleoside and nucleotide is a
 - a) pentose sugar
 - b) oxygen molecule
 - c) phosphate group
 - d) hydroxyl group.
- 19) Base analogous and Acridine dyes can be grouped under _____ mutagens.
- 20) Which cell organelle is also called as 'food factory' ?
- 21) rER (rough Endoplasmic Reticulum) is studded with
 - a) Chloroplasts
 - b) Mitochondria
 - c) Ribosomes
 - d) All the above
- 22) What are acrocentric chromosomes ?
- 23) Colour blindness is a result of inheritance of _____ linked genes in humans.
- 24) What are peptidoglycans ?
- 25) _____ is not a stage of prophase I.
 - a) Diplotene
 - b) Pachytene
 - c) Diakinesis
 - d) Telomere