



Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2019
(Career Related First Degree Programme under CBCSS)
Common for Group 2(a) : Botany and Biotechnology and
Group 2(b) : Biotechnology (Multimajor)
BB 1641/BV 1641.1 : GENETICS
(2015 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

I. **One word.** Answer **all** questions in a **word** or **one** or **two** sentences.

Each question carries **1** mark.

(1×10=10 Marks)

- 1) Define linkage.
- 2) What is Klinefelter's syndrome ?
- 3) What is Y-linked inheritance ?
- 4) What is the salient feature of satellite DNA ?
- 5) What is repetitive DNA ?
- 6) Give two examples of naturally existing circular DNAs.
- 7) What are non-coding RNAs ? Give any two examples.
- 8) What is an helicase ?
- 9) Define the term 'muton'.
- 10) What are oncogenes ?

P.T.O.



SECTION – B

II. Answer **any 8** questions. **Each** question carries **2** marks. Answer **not** to exceed **one** paragraph. **(2×8=16 Marks)**

- 11) Briefly explain the terminologies – monohybrid cross, dihybrid cross, back cross and test cross.
- 12) Differentiate the mode of inheritance in ABO blood group in man and skin colour in man.
- 13) Compare the mode of inheritance in the flower colors in *Lathyrus* and *Mirabilis*.
- 14) Differentiate the function and mode of action of DNA ligase and DNA polymerase.
- 15) Explain extra nuclear inheritance with suitable example.
- 16) Distinguish the features of A, B and Z forms of DNA.
- 17) What are the major DNA repair mechanisms ?
- 18) Briefly explain the structure of t-RNA.
- 19) Differentiate between gene frequency and genotype frequency.
- 20) What are jumping genes ? Why are they called so ?
- 21) What is reverse transcription ? Give an example of reverse transcription in eukaryotic cells.
- 22) Briefly explain the role of rRNA in translation.

SECTION – C

III. Answer **any 6** of the following. Answer **not** to exceed **120** words. **Each** question carries **4** marks. **(4×6=24 Marks)**

- 23) Compare polygenic traits and epistasis with suitable examples.
- 24) Explain two point and three point test cross.
- 25) Briefly explain chromosomal basis of sex determination with suitable examples.



- 26) Describe the cytoplasmic inheritance seen in *Mirabilis*.
- 27) Explain Meselson and Stahl's experiment and its significance.
- 28) Explain central dogma and its exceptions.
- 29) Give the details of Hardy-Weinberg law and describe the factors affecting Hardy Weinberg's equilibrium.
- 30) Distinguish the features of split genes, over-lapping genes, constructive genes and luxury genes.
- 31) Define a transcription unit. Explain transcription.

SECTION – D

IV. Answer **any 2** questions. **Not** more than **three** pages. **Each** question carries **15** marks. **(15×2=30 Marks)**

- 32) Describe in detail, Mendel's three important principles. Point out the reasons for his success.
 - 33) Explain how incomplete dominance, codominance, multiple alleles and epistasis deviate from Mendelian inheritance.
 - 34) Compare and contrast the following patterns of inheritance – sex-linked, sex-influence and sex-limited, with appropriate examples.
 - 35) Explain in detail semiconservative replication of DNA, with appropriate diagrams.
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