Reg. No. | | | | | | | | | |

BSCBOC 381

Choice Based Credit System Sixth Semester B.Sc. Examination, September 2022
(2021-22 Batch Onwards)
BOTANY
Cytology, Molecular Biology and Genetics

Time : 3 Hours Max. Marks : 80

Instructions : *1) Answer Part – **A** and Part – **B**.*
*2) Answer **four full** questions from Part – **B**, choosing **one full** question from **each** Unit.*
*3) **All** questions in Part – **B** carry **equal** marks.*
*4) Draw diagrams **wherever** necessary.*

PART – A

1. Answer **any ten** of the following questions : **(10×2=20)**

a) Draw a labelled diagram of a starch grain. Mention any two types of starch grains.

b) What are peroxisomes ? Mention its functions.

c) Define cell cycle. List the stages.

d) Draw the structure of mRNA in eukaryotes.

e) What are Okazaki fragments ?

f) What is transcription with respect to protein synthesis ?

g) Why Mendel was successful in his pea-plant based genetic experiments ?

h) Which type of interaction results in
   a) 12 : 3 : 1 and
   b) 9 : 3 : 4 phenotypic ratio ?

i) What is test cross ? Give one example.

j) Write the difference between spontaneous and induced mutation.

k) What is chromosomal aberration ? Mention the types.

l) What is the function of mitochondrial DNA ?

P.T.O.

PART – B

Unit – I

2. a) Explain briefly about different types of excretory products in plants. **4**

   b) Write a note on nucleosome model. **4**

   c) Describe the structure of mitochondria with a neat labelled diagram. Add a note on its functions. **7**

OR

3. a) Write about nuclear pore complex. **3**

   b) Describe the structure and function of ribosome. **5**

   c) Write a short note on mitosis in plant cells and its significance. **7**

Unit – II

4. a) Describe gene splicing process. **4**

   b) Describe clover-leaf model of tRNA. **4**

   c) Explain the salient features of Watson-Crick model of DNA. **7**

OR

5. a) List any 3 functions of rRNA. **3**

   b) List the properties of genetic code. **5**

   c) Write a note on Griffith Experiment and Avery MacLeod Experiments to prove that DNA is the genetic material. **7**

Unit – III

6. a) State the :

      i) Law of segregation and

      ii) Law of independent assortment **4**

   b) Define type of linkages. **4**

   c) Explain multiple allelism with suitable plant example. **7**

OR

7. a) Write a short note on sex determination mechanism in *Coccinea indica*. **3**

   b) Explain supplementary gene interaction with an example. **5**

   c) Describe Mendel's dihybrid ratio with an example. **7**

Unit – IV

8. a) What is frame shift mutation ? **4**

   b) Write a note on euploidy and its types. **4**

   c) Give an account on deletion and duplication with their significance. **7**

OR

9. a) What is ploidy ? Mention its significance. **3**

   b) Write a note on chemical mutagens. **5**

   c) What is extra-nuclear genome ? What are the features and functions of plasmid DNA ? **7**
