

2023

AGS 2nd Semester Examination

B.Sc. Hons. in Agriculture

Fundamentals of Genetics

PAPER — 201

Full Marks : 50

Time : 2 hours

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers  
in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

Answer **all** questions.

1. Answer **any five** questions from the following :  
2×5=10

*(a)* Define codominance.

*(b)* Distinguish between back cross and test cross with suitable example.

*(c)* What is split gene?

( 2 )

✓(d) Define multiple allele.

✓(e) What do you mean by Kornberg enzyme?

✓(f) Define Okazaki fragment.

(g) What is c-value?

(h) Write down each of a chemical and biological mutagen.

2. Answer *any four* questions from the following :

5×4=20

✓(a) Distinguish between mitosis and meiosis. Describe the different stages of meiotic cell division. 2+3=5

(b) Write note on duplication and translocation of chromosomes. 2+3=5

(c) Describe the different enzymes involved in DNA replication. 5

✓(d) Give a short note on 'Epistatic Interaction'. 5

✓(e) Schematically describe the translation mechanism. 5

(f) Define intron and exon. Give a short note on spliceosome. 1+4=5

( 3 )

3. Answer *any two* questions from the following :

10×2=20

✓(a) Define linkage and crossing over and mention its significance. Describe the molecular mechanism of crossing over.

2+3+5=10

(b) Define promoter. Distinguish between negative and positive regulation of gene with suitable example. Describe the molecular mechanism of Trp operon.

1+3+6=10

✓(c) Mention different types of cytoplasmic inheritance. Why is cytoplasmic inheritance designated as maternal inheritance? Describe the cytoplasmic inheritance with suitable example in plants.

2+2+6=10

✓(d) Why is DNA replication called semi-conservative? Describe the different types of mutation. Describe the CIB technique.

2+4+4=10

★ ★ ★