 PG/IIIS/BOT/301.1 & 301.2/23 (New)

M.Sc. 3rd Semester Examination, 2023

BOTANY

PAPER – BOT-301.1 & 301.2 (New)

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

PAPER – BOT-301.1

[*Marks* : 20]

(*Cell Biology and Genetics*)

GROUP – A

Answer any **two** of the following : 2×2

1. What is 'Fibrous Lamina' of nucleus ? State its function.

2. Mention two measures to identify a character of extranuclear nature.

3. Define multiple alleles by ABO blood groups.

4. What are the factors responsible for disturbing genetic frequency in any population ?

GROUP – B

Answer any **two** of the following : 4×2

5. Illustrate the varieties of dosage compensation of sex linked characters.

6. Explain the role of check points to control cell cycle.

7. Explain how crossing overs help in mapping a chromosome.

8. Relate population bottleneck, genetic drift and founder effect.

GROUP – C

Answer any **one** of the following : 8×1

9. Give a comprehensive account of nuclear ultrastructure. Illustrate the nuclear pore structure and the functions of different parts of it. $4 + 4$

10. Explain maternal inheritance with a suitable example. Why do most of the extranuclear inheritance show maternal influence ? $7 + 1$

PAPER – BOT-301.2

[*Marks* : 20]

(*Biotechnology*)

GROUP – A

Answer any **two** of the following : 2×2

1. Differentiate between propeller twist and twist angle of DNA.

2. Which type of restriction endonuclease, staggered cut or blunt cut, is more useful in genetic engineering and why ?

3. What is cDNA library ?

4. Why is pure line selection named so ?

GROUP -- B

Answer any **two** of the following : 4×2

5. Contrast the features of A, B and Z forms of DNA.

6. Which breeding method is practiced for introducing any one desirable character in a local variety without changing its all basic characters and how ?

7. Give a schematic account of the DNA finger-printing procedure and its uses.

8. How does shoot tip culture differ from shoot apex culture and how does the shoot apex culture help eradicate virus in micropropagated plants from infected source plant ?

GROUP – C

Answer any **one** of the following : 8×1

9. What are the most necessary DNA elements required for constructing an artificial chromosome ? Describe the structure and use of bacterial artificial chromosome. $2 + 6$

10. Briefly describe the procedure of callus culture and other different cultural procedures initiated from that. $7 + 1$

[Internal Assessment – 10 Marks]