

2017

M.Sc.

3rd Semester Examination

BOTANY

PAPER—BOT-301

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

(Use separate answer scripts for each unit)

Unit—I

[Marks : 20]

1. Answer any four of the following : 4×1
- (a) Define linkage group.
- (b) Write the full form of GISH.

(Turn Over)

- (c) Why does organeller inheritance show maternal influence ?
- (d) What is the product rule of Mendelism ?
- (e) Define 'founder effect' in population biology.
- (f) Why *three point test cross* is required to map genes on chromosome ?
- (g) What is frame shift mutation ?

2. Answer any *two* of the following : 2×3

- (a) Write briefly on genetic drift and its impact on population biology.
- (b) Explain infectious heredity with a suitable example.
- (c) Compare deletion and inversion.

3. Answer any *one* question of the following : 10×2

- (a) State two measures to prove a trait having extranuclear inheritance.

Describe maternal inheritance with the aid of one example of a character of transient nature and another example of a character of permanent expression.

Cite an example of mitochondrial inheritance in human being mentioning its impact. 2+6+2

- (b) Write the physical structure of DNA. How is the DNA of eukaryotic cell organized in chromosome ? 4+6

UNIT—II

[Marks : 20]

4. Answer any *four* of the following : 4×1
- (a) What is meant by BAC ?
 - (b) How is cosmid different from a general plasmid ?
 - (c) What range of concentration of agarose is used in agarose gel for DNA analysis ?
 - (d) What is ITS ?
 - (e) What is directional selection in a breeding program ?
 - (f) Mention a reason for using shoot apex culture to raise diseasefree plant.
 - (g) What is DNA finger printing ?
5. Answer any *two* of the following : 2×3
- (a) Give a brief account of YAC.
 - (b) Describe the characteristic features of phagemid.
 - (c) Write a short note on micropropagation.

6. Answer any *one* of the following :

- (a) Describe Northern blot hybridization using suitable sketches.

How does Northern blotting differ from Southern blot hybridization ?

What are molecular markers ? 6+2+2

- (b) Define plant introduction.

How can it be a part of breeding program ?

Mention its merits and demerits. 2+5+3
