PG/IIIS/BOT-301/18

M.Sc. 3rd Semester Examination, 2018

BOTANY

PAPER – BOT-301

Full Marks : 40

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

UNIT – I

[*Marks* : 20]

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

(*a*) What is recessive epistasis ? Cite an example of sex linked inheritance.

(*b*) Name the proteins involved to form nucleosome. Which protein amongst them is of most diverse nature ?

(*c*) What is population bottleneck ? State its impact on the population of future generation.

(*d*) Mention the role played by MAR of chromatin ? State the function of SRY gene.

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

(*a*) Write briefly on structural uniqueness of telomere and its replication.

(*b*) Compare broad sense heritability and narrow sense heritability.

(*c*) Discuss the extranuclear inheritance in *Mirabilis jalapa*.

(*d*) Explain the degeneracy and non-ambiguity of genetic code.

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

(*a*) State the different types of sex determination. Mention the types of dosage compensation with respective examples. What is Barr body ? 4+2+2

(*Continued*)

(*b*) Explain allelic frequency in the light of Hardy-Weinberg theory. Mention the impact of different factors in violating Hardy-Weinberg equilibrium. 5 + 3

UNIT – II

[*Marks* : 20]

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

(*a*) Give full form of VNTR. What is concatamer ?

(*b*) What is a recalcitrant callus ? Define ITS.

(*c*) Define transgressive inheritance.

(*d*) Why 'pure line variety' is named so ? Which breeding method help in transferring a new allele to an established variety ?

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

(*a*) Illustrate Western blotting. Contrast it with Northern blotting.

(*b*) Write salient features of ideal vector for genetic engineering. What is marker gene ?

(*c*) Write a short note on plant introduction.

(*d*) Illustrate cosmid structure.

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

(*a*) Define genomic library and give a brief account of its construction. Describe the structure of BAC. $5 + 3$

(*b*) Illustrate the process of protoplast isolation. Give a comprehensive account of protoplast fusion. $5 + 3$
