ATN – 40

B.Sc. (Semester – V) Examination, October/November 2018
BOTANY
Paper – XII (Plant Biotechnology and Genetic Engineering)

Duration : 2 Hours Total Marks : 80

Instructions : *i) All questions are **compulsory**, however internal choice is available.*
*ii) Briefly answer sub-questions in Question **1** and Question **2**.*
*iii) Figures to the **right** indicate maximum marks to the questions/sub-question.*
*iv) Draw appropriate labeled diagrams **wherever** necessary.*

1. Answer **any four** of the following : **16**
   i) Describe in brief the organization of a plant tissue culture laboratory.
   ii) Explain briefly embryo culture.
   iii) Write a note on Arabidopsis genome.
   iv) Explain Bacterial Artificial Chromosome vectors.
   v) Write a short on synthetic seeds.
   vi) Give a brief account on the basic composition of plant tissue culture medium.

2. Answer **any four** of the following : **16**
   i) Comment on Agrobacterium as a tool for gene transfer.
   ii) What is polymerase chain reaction ? State its applications.
   iii) What are transgenic plants ? Add a brief note on transgenic plants for crop improvement.
   iv) Write a short account on rice genome.
   v) State the applications of bioinformatics in plant genomics.
   vi) Write a short note on biodiesel.

3. A) Discuss the morphology and internal structure of callus. **6**

   OR

   A) What is cell suspension culture ? State the principle and applications of suspension culture.
   B) What is protoplast fusion ? Describe any one method for inducing protoplast fusion. **6**

P.T.O.

4. A) What is Northern blotting ? Explain briefly the technique of Northern blotting. 6

OR

A) Describe the methodology for construction of a c-DNA library.

B) Elaborate on the use of restriction endonucleases and ligases in recombinant DNA technology. 6

5. A) Explain in brief the principle, advantages and applications of RAPD. 6

OR

A) Give an account of hairy root culture.

B) What are reporter genes ? Discuss any two examples. 6

6. A) Explain bioethanol production. 6

OR

A) Explain briefly the different methods used for energy production.

B) What is bioremediation ? Explain briefly how plants are used in bioremediation. 6