Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination: Mar/Apr 2025
Faculty: Science and Technology

Program: B.Sc. Biotech (04) **Semester: VI** **SET: - A**
Program (Specific): Biotechnology **Course Type: Core**
Class: T. Y. B. Sc. **Max. Marks: 35**
Name of the Course: Applied Biotechnology II
Course Code: 24 BBT-603 **Time: 2 Hrs**

Instructions to the candidate:

1) ***There are 4 sections in the question paper. Write each section on separate page.***
2) ***All Sections are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***Draw a well labelled diagram wherever necessary.***

SECTION: A

Q1) Answer any <u>FIVE</u> of the following (5/6) **5**

1. Define- Systems Biology.
2. What are pluripotent stem cells?
3. Name any two Databases used in Forensic Science.
4. Define- Biochar.
5. Name the two methods used for sequencing the Human Genome.
6. What are synthetic microbial consortia?

SECTION: B

Q2) Answer any <u>FIVE</u> of the following (5/6) **10**

1. Enlist any four ecological roles of microbes.
2. State any four types of Stem Cells.
3. Assembling the Human Genome sequence was a major challenge? Explain.
4. Give any two ethical considerations for application of stem cells.
5. What is Model in systems biology? Enlist the steps involved in model building.
6. What is FISH technique? State its use in Forensic Science.

[P.T.O]

SECTION: C

Q3) Answer any <u>TWO</u> of the following (2/4) 8

1. Describe the Nitrogen cycle for cycling of nutrients in the ecosystem.
2. Explain the application of DNA profiling in Forensic Science for solving crimes and paternity disputes.
3. Write a short note on Cord Blood Banking.
4. Discuss in detail the applications of Systems Biology in Biotechnology.

SECTION: D

Q4) Answer any <u>TWO</u> of the following (2/4) 12

1. Discuss in detail the types and different phases involved in biotransformation of recalcitrant organic compounds.
2. Discuss in detail the therapeutic applications of stem cells in Alzheimer's disease.
3. Describe the different genetic modifications in crops with suitable examples and comment on the health concerns on use of genetically modified crops and food.
4. Summarize the principles and applications of synthetic biology for production of bioactive compounds.