K26FY0440 Pages: 2 Reg No:.....
Name:.....

Fourth Semester FYUGP Degree (Reg) Examination April 2026

KU4DSCFOR208 - FOREST GENETICS AND TREE IMPROVEMENT

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. What is meant by seed orchard improvement?
2. State two objectives of tree improvement.
3. What is additive gene action?
4. What is pollination?
5. List the common problems associated with in-vitro propagation of forest species.
6. What is ex-situ conservation?
7. What is hardening of tissue culture plants?
8. What is protoplast culture?

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Section B

Answer any 4 questions. Each carry 6 marks.

9. Illustrate how in-vitro propagation techniques can be applied for mass multiplication of elite forest tree species.
10. Explain the role of biotechnology in tree improvement.
11. Apply ethical principles to evaluate the use of genetically modified forest trees in natural ecosystems.
12. Develop a concept map showing the historical development and major milestones in plant tissue culture.
13. Explain how protoplast isolation and culture can be applied to develop novel plant varieties.
14. Apply the principles of somatic hybridization to combine desirable traits from two incompatible plant species.

Section C

Answer any 1 questions. Each carry 14 marks.

15. Critically analyze the methods of selection, hybridization, and introduction in tree breeding.
How can these methods be effectively applied to improve forest productivity?

16. a) Apply reproductive biology principles to justify the predominance of outcrossing in forest trees.
b) A plantation shows large phenotypic variation despite uniform planting material. Apply environmental influence concepts to explain this observation.

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