

# COMBINED COMPETITIVE EXAMINATION (MAIN)

## FORESTRY

### Paper—I

Time : 3 hours

Full Marks : 200

**Note :** (1) The figures in the right-hand margin indicate full marks for the questions.

(2) Attempt **five** questions in all.

(3) Question No. 1 is compulsory.

1. Answer any ten of the following :

4×10=40

- (a) What is quarter-girth formula?
- (b) Why are herbaria and arboreta pre-requisite for dendrology?
- (c) Explain the role of fire in regeneration and seedling establishment of *Shorea robusta*.
- (d) What are the selection criteria for introduction of trees for wasteland afforestation?
- (e) Explain the relationship between CAI and MAI in a forest stand.
- (f) What are the different regeneration categories that are observed and recorded during *Tectona grandis* regeneration survey?
- (g) How do trees help in conserving soil and water?
- (h) What are the major defects found in wood?
- (i) How is remote sensing advantageous as compared to ground survey?
- (j) How is damage due to teak defoliator and stem borer managed in plantation?
- (k) Explain the factors which decide the choice of enumeration in forests.
- (l) What is the importance of estimating form factor of a tree?

2. Differentiate between any *eight* of the following : 5×8=40
- (a) Even-aged and Uneven aged forest stands
  - (b) Keystone species and Indicator species
  - (c) Tending and Cultural operations
  - (d) Selection thinning and Crown thinning
  - (e) Photosynthetic efficiency and Nutrient use efficiency
  - (f) Seedling seed orchard and Clonal seed orchard
  - (g) National Parks and Wildlife Sanctuaries
  - (h) Saline and Alkaline soils
  - (i) Indian Irregular Shelter wood system and Selection system
  - (j) Embryo dormancy and Enforced seed dormancy

3. Answer any *five* of the following : 8×5=40
- (a) Variation in stand density induced by thinning causes very large variation in diameter growth but remarkably little in height growth. Discuss.
  - (b) Describe the techniques for eco-restoration of sand dunes and water-logged wastelands.
  - (c) Discuss the salient features of shelter wood systems of forest management with its merits and demerits.
  - (d) Explain the kind and pattern of felling in selection system of forest management.
  - (e) How do variations in density and quality of a forest influence annual yield estimation?
  - (f) What is GIS? How is GPS used in ground truthing?

4. Answer any *four* of the following : 10×4=40
- (a) Describe the volume method of regulation of cut for sustained yield.
  - (b) What are the sources of soil nitrogen in a forest ecosystem? Give a brief account of nitrogen cycling in forest ecosystem.
  - (c) Explain the role of trees in abatement of air, water and noise pollution.

- (d) Write the practical uses of chain and compass survey in forestry.
- (e) Describe the proper orientation for ideal forest buildings.
5. Answer any *two* of the following : 20×2=40
- (a) Write the simple design and construction of timber bridges across river in the forest.
- (b) What are the relative merits of (i) pure and mixed forest stands, (ii) direct seeding and transplanting, (iii) indigenous species and exotic species, (iv) ordinary thinning and crown thinning?
- (c) What is Integrated Pest Management (IPM)? Describe important components of IPM and its importance in the management of pests. What are the methods of IPM used in nurseries and forests?
6. Answer any *four* of the following : 10×4=40
- (a) Describe the principles of remote sensing. What is an aerial photography? How is the identification of tree species done from aerial photograph?
- (b) Explain in brief the factors that decide the choice of a silvicultural system.
- (c) Explain in brief the chemical composition of acid rain and its impact on forest vegetation.
- (d) What is a working plan? Enumerate various types of maps prepared by a working plan officer.
- (e) Describe biotic influences on forest growth.
7. Why is diameter and height measurement important in forest mensuration? Explain how the height of a tree is determined by Abney's level if the tree is standing at different terrain situations. 40
8. Briefly describe various structural components of a forest ecosystem. Explain in detail the various structural and functional changes occurring in the plant communities during the course of succession. 40

9. What are the different types of forest fire? Give the main causes of forest fire. Explain the effect of fire on soil and vegetation. Briefly explain the method of controlling forest fire. 40
10. Write an essay on the history of forests and forestry in India with special reference to wildlife conservation. 40

\*\*\*