CSM – 30/19

Forestry

Paper – I

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

*Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and any **three** of the remaining questions, selecting at least **one** from each Section.*

SECTION – A

1. Answer any **three** of the following :

   (a) (i) What are the general rules governing feeling of Bamboos in forest ? What precautions are to be taken to address the issue of gregarious flowering of Bamboos ? 5+5 = 10

   (ii) Describe the natural distribution (with the help of map) of : 5+5 = 10

   - Shorea robusta
   - Tectona grandis

(b) Define thinning operations. What are the objectives of thinning ? What are the different kinds of thinning undertaken in a regular Teak plantation ? 5+10+5 = 20

(c) Define the following : 5

(i) Current Annual Increment (CAI)

Mean Annual Increment (MAI)

(ii) What is the relation between CAI and MAI ? 5

(iii) Prove mathematically the curves CAI/Age and MAI/Age intersects at a point where MAI is maximum. 10

(d) (i) Enlist different subgroups under Tropical Dry Deciduous Forests as per Champion and Seth classification delineating geographically the areas of occurrence of each subgroup and the species found therein. 10

(ii) Describe the unique characteristics of mangrove vegetation. Name the different States and Union territories where (c)

mangrove forests are found with a comparative statement of the extent of mangroves found therein. 10

2. (a) Describe the distribution, phenology, silvicultural characteristics, artificial regeneration and uses of the following tree species : 10+10 = 20

   (i) Santalum album

   (ii) Cedrus deodara

   (b) Critically analyse the statements : 10+10 = 20

   (i) Forests substantially check soil erosion and control runoff

   (ii) Forests has moderating influences on soil and air temperature

   (c) Explain the classification of forest types in India by Champion and Seth. Enlist major forest types and their groups. Discuss its significance in forest management. 5+10+5 = 20

3. (a) What are the seed production areas ? What steps are involved in its establishment ? Discuss the advantages and disadvantages of SPA. 10+10 = 20

(b) What is the phenomenon of dying back of Sal seedlings ? What factors are responsible for it and how it is to be addressed ? 10+10 = 20

(c) What are the distinguishing features of Saline and Alkaline soil ? What species are suitable for afforestation in these type of soil ? 10+10 = 20

4. (a) What factors influence the choice of species in artificial regeneration ? Discuss with suitable examples. 20

(b) Discuss the reasons for widespread use of exotics for afforestation and advantages of exotics over native species. 20

(c) List ten bamboo species of commercial importance with their scientific names and states of origin. 20

SECTION – B

5. Answer any **three** of the following :

(a) (i) Describe the linkage among 'Green House Effect', 'Ozone depletion' and 'Global Climate Change'. 10

(ii) Write short notes on the following :

- Coastal shelter belts and wind break 5
- Controlled grazing and rotational grazing 5

(b) (i) Discuss the different types of rotation used in forestry. 10

(ii) Principle of sustained yield, its scope and limitation. 10

(c) (i) How the encroachment in forest land can be regularized as per the provision of Forest Right Act ? 10

(ii) Describe the clear felling system. How is Saranda Sal forest managed under clear felling followed by natural regeneration. 10

(d) (i) Explain the various types of succession. Describe the major theories explaining succession. 5+5 = 10

(ii) Describe the extent and method of shifting cultivation and its effect on forest. Suggest suitable alternative to shifting cultivation. 10

6. (a) Discuss the principle of Smythie's safeguarding formula for sustained yield. Calculate the number of selection trees to be felled in a coupe from the following data :

No. of II class trees = 16,677

No. of I trees = 7,804

Felling cycle = 25 years

Time taken for an average II class tree to reach I class = 50 years

The mortality = 33.33% 10+10 = 20

(b) Explain the genesis of introduction of Joint Forest Management System. Discuss one success story and the lessons learnt. 10+10 = 20

Describe the silvicultural system which is introduced to manage Sal forest after the failure of uniform system. 20

7. (a) Briefly describe the merits and demerits of 'high density and short rotation' forestry. Enlist suitable species with their productivity potential. 10+10 = 20

(b) What are the pathogens in important diseases of Poplar and Gamhar ? How can they be controlled ? 10+10 = 20

(c) Forest fire constitutes a major threat to forest ecosystem across the globe. Please illustrate with the example of recent occurrence of forest fire in Australia and its consequential damage. Suggest management intervention to contain forest fire. 5+10+5 = 20

8. (a) How diversion of forest land for non forestry activities are regulated by the provisions of Forest Conservation Act, 1980 ? Critically analyse in the context of mining in forest land in Odisha. 10+10 = 20

(b) What provisions of OFA, 1972 can be evoked to arrest the illicit felling and encroachment in Reserved and Protected Forest. Whether the same provisions are applicable in Revenue Forest ? 10+10 = 20

(c) How remote sensing is useful in preparation of the working plan ? 20