

## **B.Sc. III Year**

### **Paper I**

#### **Forest Protection**

1. Definition, role of forests in relation to environment and human welfare, historical evidence of damage, factors affecting forest protection, history of forest protection in India and classification of protection measures.
2. Man as source of injury to forests: deforestation, Shifting Cultivation, encroachment, mining and felling.
3. Forest Fire: Classification of fire, fire damage, control use of fire, preventive and remedial measures, fire control policy and economics of fire protection.
4. Protection against injuries by animals-grazing and browsing, rotational and controlled grazing, effect of wild animal on forest regeneration.
5. Protection against injuries diseases- classification of forest fire diseases and their control by common, diseases in forest trees- root rot, heart rot, wilt, stem canker, stem rust, die back galls, leaf spots, leaf blight, powdery mildew and leaf rust.
6. Protection against injuries by plants: defoliation, sap sucking and mites, shoot twig and root insect, seed and cone insects, wood boring insects and gall makers.
7. Methods of control against insects and pests: silvicultural, biological and chemical.
8. Diseases caused by phanerogemic plant parasite like *Dendrophthoe*, *Acanthobium*, *Loranthus* etc.
9. Protection against adverse climatic factors: temperature, rainfall and winds.

## **Paper II**

### **Forest Utilization, Wood Science and Technology**

1. Felling and felling tools, carpentry wood working tools, season of felling, various methods of felling and precautions.
2. Definition, scope and logging in India and other countries, methods of logging, marketing and sale, important timber species of India.
3. Timber depot, storage of timber, types of depots, their protection and management.
4. Wood Structure: Gross structure of wood, cellular composition of bark, sap wood, heart wood and pith, early wood, late wood, growth rings, grain and texture, other gross features helpful in wood identification.
5. Physical properties of wood; weight, density, reaction of heat, sound, light and electricity on wood, thermal expansion, moisture content, porosity, colour, permeability and wood working qualities.
6. Mechanical properties of wood: standard test, special testing on wood stores and timber products, non destructive testing of wood, factor influencing strength properties-hardiness, flexibility, elasticity, fusibility, strength and combustibility.
7. Defects and abnormalities of wood; natural defects, method of evaluation and measurement, influence of defects on conversion and utilization, defects during processing, manufacturing, seasoning and wood destroying agents.
8. Seasoning of woods: Principles and methods, air, solar and klin seasoning. Classification of timber seasoning, moisture and temperature measuring equipments.
9. Wood preservation; causes and curve, various methods, different preservatives and their properties.
10. Minor Forest Produce: Importance of non-wood forest products, grasses and other products, distillation and extraction of products like grass oil, seed oil, tans and dyes, gum resin, rubber, fiber and flosses, animals and minerals and other miscellaneous products.
11. Medicinal Plants: drugs, spices, edible and poisons important medicinal plants of Uttarakhand.
12. Important Forest Industries: paper and pulp, catch and Katha, lac, turpentine, bidi, furniture, sport goods, pencils, toys, plywood and match.

### **Paper III**

#### **Forestry and Environmental Science**

1. Definition components-atmosphere, hydrosphere, lithosphere and biosphere.
2. Natural Resources: Forest resources and their management, water resources and their management, wild life resources and their management and land resources and their management.
3. Biodiversity and its conservation: definition, hot spots and strategies for biodiversity conservation.
4. Environmental Pollution: Types of pollution, global warming, green house gases, ozone layer depletion, acid rains, control and prevention of air, water and noise pollution.
5. Role of trees and forest in environmental conservation, environmental monitoring and concept of sustainable development.
6. Environmental policy and legislation in India: Wildlife Protection Act 1972 as amended 1991, Water (Prevention and control of Pollution) Act 1974, Forest Conservation Act 1980, The Air (Prevention and control of Pollution) Act 1981, National Wildlife Action plan, Environmental Protection Act 1986 and Biodiversity Conservation Bill.
7. Environmental Impact Assessment.
8. Watershed Development.