

FORESTRY

1. PREAMBLE

The Senior High School Forestry Syllabus has been structured to assess candidates' knowledge of forestry and forest conservation. It will also assess candidates' knowledge and skills in forestry practices that will form the basis for sound tertiary education in forestry and also make them employable in the forestry industry and related disciplines.

2. AIMS OF THE SYLLABUS

The syllabus will seek, among others, to assess candidates'

- (1) appreciation of the importance of forests to life;
- (2) knowledge and skills in current forestry practices;
- (3) understanding of the effects of population growth on forests;
- (4) understanding of the causes and effects of forest degradation;
- (5) understanding of the regulations governing the use of the forests and forest resources;
- (6) knowledge of the functions of forestry sector institutions;
- (7) basic skills in establishing and managing forest plantations;
- (8) ability to contribute to the conservation and sustainable use of forests.

3. REQUIREMENTS

- (1) Schools offering Forestry are expected to keep demonstration plots where a variety of both indigenous and exotic forest trees are grown and maintained to develop their skills in the management of forest stands.
- (2) It is recommended that students of the subject should visit forest reserves, national parks, zoos and forest plantations, forestry institutions and industries for experiential learning as part of their course work.
- (3) It is also recommended that they will keep practical notebooks and specimen albums. These should contain records of activities based on laboratory, nursery and field observations to develop their documentation skills.

4. EXAMINATION SCHEME

There will be three papers, Papers 1, 2 and 3 all of which must be taken. Papers 1 and 2 will be a composite paper to be taken at one sitting.

(a) Concept of forest Ecology.

(b) Forest Ecosystem

(c) Ecosystem functions

3. Ecological Zones

(a) Vegetation Zones

(b) Factors Affecting Distribution of Vegetation.

(c) Forest Types

- Comparison of

Forest Types.

(ii) Land use Practices.

(d) Major Forest Types in Relation to Latitudes.

4. Introduction to Wildlife

(a) Concept of Wildlife

(b) Identification of Wildlife species

(c) Importance of Wildlife

(d) Endangered, Rare and Common Wildlife Species

(e) Wildlife Reserves

(f) Wildlife Management

Candidates will be examined on the meaning of forest and forestry. Knowledge of the differences between Forestry and Agriculture in terms of land occupancy, time frame; risk etc. and the business aspects of forestry will be assessed.

The functions of the forest; types of plants in the forest (trees, shrubs, herbs, climbers, special plants); the local and botanical names of timber trees will also be assessed.

Candidates' ability to describe plant habitats i.e. water -logged (aquatic), dry land, valley/slope, hill tops (terrestrial) and on plants (arboreal) and to name the types of plants found in the various habitats will be assessed.

Types of animals found in the forest; (birds, insects, mammals, reptiles, amphibians, snails) and characteristics of the habitats of the animals are required.

Knowledge of the characteristics of the Forest environment; its physical components; and the meaning of forest ecology is required.

The meaning of ecosystem and examples/types of ecosystem in various habitats (aquatic, terrestrial, arboreal); the major components of the ecosystem and their functions are required.

ivmanagement
Practices

Understanding of food chains and food webs and the types of producer – consumer relationships including symbiotic associations eg. rhizobium in the various habitats in the forest environment will be assessed.

Differences between saprophytes and epiphytes are also required.

5. Plant parts and
Tree
Identification

Knowledge of ecosystem functions (Regulation, supporting, cultural) will be assessed. Effects of good and degraded ecosystems on health is also required.

(a) Plant Parts
and
Functions

The characteristics of the major vegetation zones and vegetation types in West Africa will be assessed. Comparisons of the various zones in terms of differences in plant species will be required.

The typical plants and animals and their characteristics and the various plant and animal associations in the zones will be assessed.

The vegetation types are Wet-evergreen, Moist-evergreen, Moist semi-deciduous, Dry semi-deciduous, Mangroves and Savannah.

(b) Identification of
Trees

Factors affecting the distribution of vegetation namely; Climatic (rainfall and temperature), Edaphic (soil factors) and Biotic factors will be assessed.

The Distribution, Composition and Structure of Tropical High Forest (Tropical rain forest, tropical moist semi-deciduous forest), Savannah, Coastal Scrub and Grassland is required. Characteristics of virgin or primeval, secondary, natural and artificial forests are also required.

SECTION B

FOREST ESTATES

Land use practices in the different vegetation zones will be assessed.

1. Concept of Forest
Estates

The characteristics of the following major forest types in relation to latitude i.e. Tropical, Temperate Coniferous and Arctic forest types is required.

Understanding of the relationship between temperature and latitude in the determination of the forest types, and the knowledge of the characteristics and distribution of angiosperms and gymnosperms are required.

2. Management of
Forest
Estates

Understanding of the term wildlife and knowledge of wildlife resources in Ghana will be assessed.

Knowledge of the common and scientific names of wildlife species is required.

The importance of wildlife to the Socio-economy; Environment, Forestry, Tourism and Scientific research will be assessed.

3. Current State of the Forest

Examples of the wildlife species that are Endangered (e.g. Elephants), Rare (e.g. Porcupine) and Common (e.g. grasscutter); and the reasons why the wildlife species are in those states will be assessed.

Types and examples of wildlife reserves in Ghana will be assessed.

The types of wildlife reserves are as follows:

- (i) National Parks e.g. Mole, Kakum, Bui.
- (ii) Game Production Reserves e.g. Shai Hills
- (iii) Wildlife Sanctuaries e.g. Buabeng-Fiema, Owabi
- (iv) Strict Nature Reserves e.g. Digya

4. Protective Measures

The features and location of the various wildlife reserves is also required.

Management practices associated with the various wildlife reserves and zoos; and protection of game reserves against poachers will be examined.

5. Deforestation
(a) Forms and Causes

The morphological and anatomical features of plants and their functions will be assessed. Anatomy of the leaf, stem and roots; covering tissues such as xylem, phloem, cambium, epidermis, cortex and pith is required.

(b) Effects of deforestation

Ability to identify trees using the observable features of tree parts such as leaves, bark, buttress and stem is required.

Knowledge of local/trade names and scientific names and application of rubrics of scientific nomenclature are required.

(c) Control of

Deforestation

The processes for Reservation and Constitution of a forest estate; the role of a Reserve Settlement Commissioner; Internal and External Pillaring and Admitted Rights. Differences between Protected forest and Non-protected forest is required.

6. Reforestation, Afforestation and

Systems of Management and Development of Public and Private Estates will be examined.

Forest estate management problems such as Bushfires, Illegal farming, Illegal felling, Chain-sawing and Illegal mining and their solutions will be assessed.

<p>Reafforestation.</p>	<p>Understanding of bushfires as</p> <ul style="list-style-type: none"> (i) management problem, and (ii) management tool is required.
<p>7. Natural Regeneration</p>	<p>Knowledge of historical facts of Ghana's forest: area, composition of forest resources, and population growth showing the trend of forest depletion from the past to present; i.e. from the beginning of the century through independence to the current estimate of closed forest is required.</p>
<p>(a) Concept of natural regeneration</p>	<p>Forest resources threatened by over-exploitation and measures introduced by the Forest Services Division to stop over-exploitation and protect the forest resources; including</p> <ul style="list-style-type: none"> - Ban on log exports, - Star rating of species, - Differential stumpage fees, - Participatory forestry, - Yield selection and approval, - Acquisition of permits and felling rights is required.
<p>(b) Factors influencing the choice of natural regeneration</p>	<p>Forest Services Division to stop over-exploitation and protect the forest resources; including</p> <ul style="list-style-type: none"> - Ban on log exports, - Star rating of species, - Differential stumpage fees, - Participatory forestry, - Yield selection and approval, - Acquisition of permits and felling rights is required.
<p>(c) Succession in natural regeneration</p>	<p>Understanding of the term deforestation; the indicators or manifestations of deforestation in the environment and the causes of deforestation through human activity; bushfires, farming activities, felling of trees for various purposes, settlement and urbanization, etc. is required.</p>
<p>(d) Intervention methods during natural regeneration</p>	<p>The effects of deforestation on</p> <ul style="list-style-type: none"> (i) Soil fertility (ii) Animal habitat/population (iii) Economy (iv) Environment <p>are required.</p>
<p>(e) Other intervention measures</p>	<p>Control measures such as appropriate farm practices, education, control of indiscriminate tree felling, enforcement of forest laws and regulations, appropriate harvesting and milling equipment; and Intervention programmes such as education, rehabilitation, afforestation and reforestation are required.</p>
<ul style="list-style-type: none"> ● Agro-forestry 	<p>The meanings of reforestation, afforestation and reafforestation and the differences between them</p>

are required.'

Understanding of silvicultural terminologies such as silvics, silviculture, soil seed bank, shade-demanding plants, light-demanding plants, plant succession and forest gaps is also required.

(ii) Taungya Practices

Understanding of the concept of natural regeneration, soil seed bank, gaps (natural) is required.

8. Artificial Regeneration

Factors leading to the choice of natural regeneration i.e. topography and slope, type of forest, level and extent of deforestation, occurrence of seed bearing (mother) trees will be assessed.

The stages of Succession (primary, secondary and climatic climax) and examples of light and shade tolerant trees are required.

9. Invasive Alien species

When to use intervention methods such as line and spot planting to supplement natural regeneration potential of forest is required. Advantages of natural regeneration over artificial regeneration are also required.

SECTION C

PLANTATION ESTABLISHMENT AND FOREST MENSURATION

1. Plantation Development

The meaning of the term agro-forestry; Knowledge and skills in carrying out agro-forestry practices such as Agro-silviculture, alley cropping, mulching, pruning etc. are required.

Characteristics of plants suitable for agro-forestry; the benefits derived from practising agro-forestry such as providing mulch (green manure), pruning material for fodder, companion food, fire wood from the same piece of land area; and its role in plant nutrient recycling is required.

Knowledge of Silvo-pastoral and Agro-silvo-pastoral practices is also required.

(a) Factors influencing plantation development

Understanding of the concept of Taungya, historical background, the factors/conditions that influence the choice of taungya in forest estate and the advantages and disadvantages of the practice are required.

Understanding of the concept of artificial regeneration (forest plantations) with regard to the

use of indigenous species or exotic species in pure or mixed stands; and the advantages and disadvantages of the use of exotic species in plantation development are required.

Knowledge of invasive alien plants

e.g.

Aquatic: *Eichloriacrassipes* (water hyacinth); *Salviniamolesta* (Kariba weed), *Pistiastratoites* (water lettuce), *Mimosa pigra*(large sensitive plant)

Terrestrial:*Chromolaenaodorata* (Acheampong weed), *Broussonetiapapyrifera* (Pulp mulberry – York), *Leucaenaleucocephala*

(b) Plantation
Planning
and Design

2. Nursery
Establishment

(a) Cultural
Practices

The purpose of plantation establishment and and natural forest is required.

differences between plantation

(b) Nursery
Tools and
Equipment

Understanding of factors such as the following that influence plantation development will be assessed:

- Deficit of wood for industrial and domestic use.

(ii) Level of environmental degradation.

(iii) Need to improve upon the stocking of

existing tree species.

(c) Nursery
Pests and
Diseases

(iv) Need for specific tree type for industrial purposes.

Ability to plan and design a plantation considering its objectives, site selection and preparation, species selection, cost etc. is required.

(d) Costing
Nursery
Establishment

The functions and importance of a nursery as a supply source of seedlings of high quality is required. Knowledge of types of nurseries (permanent and flying or temporary nurseries) is also required.

Bed preparation and other cultural practices such as pricking out; stumping; stripling; hardening-off; transplanting; seed collection; storage; treatment

and sowing; watering; weeding and shading will be assessed.

3. Planting and Tending

Knowledge of types of nursery tools and equipment such as pick-axe, shovel, rake, hoe, wheel barrow, cutlass, watering can and their uses will also be assessed.

(a) Land Preparation

Knowledge of nursery pests such as slugs/snails and termites; the nature of damage caused by the pests and their control is required.

(b) Seedling Planting

Knowledge of nursery diseases, such as damping off and rust, their symptoms and control is also required.

(c) Tending Operations

Knowledge of various sources of cost in establishing a nursery grouped into:

- (i) Direct costs: raw materials, labour and expenses for tools etc, and
- (ii) Indirect costs: cost of work-related materials e.g. stationery and other consumables; maintenance costs, rent of nursery plot, will be assessed.

Ways of controlling nursery cost and record keeping will also be assessed.

(d) Operational Costs

Site clearing and pegging at required spacing is required.

Use of appropriate methods of planting seedlings is required.

4. Forest Mensuration

Tending operations and the importance of each tending operation is required.

The operations required include Weeding (complete, spot and line), Beating up, Pruning and Thinning.

(a) Meaning, Importance and Purpose

The effects of improper tending such as poor height and diameter growth, early branching and poor wood quality will also be required.

(b) Measuring Instruments and Equipment

Knowledge of sources of operational costs (direct and indirect costs) and their significance in management is required.

Knowledge of kinds of records to be kept on a plantation and the Importance of Record Keeping is also required.

Understanding of the term forest mensuration and its importance; and the purpose of mensuration in Forestry including the comparison of current and future states of the forest, determination of quantity of trees, costing and pricing, management, etc. are required.

Knowledge of and skills in the use of tools,

(c)
Enumeration of
Growing
Stock and
Sampling
Methods.

instruments and equipment for forest mensuration are required. The tools, instruments and equipment include Haga altimeter, tape, clinometer, compass, measuring chain, ranging poles and arrows.

Knowledge of the parameters measured and the units of measurement in the metric system is required. Ability to determine height, diameter, girth and volume of trees is also required.

(d) Surveys

Kinds of enumeration (100%, 5%, 2%) of growing stock; sampling and sampling methods adopted in forest mensuration (selective, systematic and random sampling) is required.

SECTION D

HARVESTING AND MARKETING OF FOREST RESOURCES

Understanding of survey, kinds of survey (stock survey, strip survey and land survey) and its significance will be assessed. Knowledge of and use of conventional keys/symbols in recording botanical names of trees is required.

1. Harvesting of
Timber

(a) Factors to
con-
sider/Pre-
harvesting
activities.

Factors to consider before harvesting timber; and the pre-harvesting activities carried out will be assessed. These include stock survey, reconnaissance and field inspections, pre-felling inspection and selection of trees to fell.

(b) Procedures to
follow

The procedures to follow in harvesting timber in natural Forests and Plantations is required. These include permit acquisition, yield approval (for natural forest); felling, extraction and measurement.

(c) Log Markings

Knowledge of how logs are marked and interpretation of log markings; namely, property mark, locality mark, compartment number, stock survey number, tree number, reserve code and log number will be assessed.

(d) Harvesting,
Extraction and
Transportation
Processes

The following processes will be assessed:
Felling and cross-cutting, Hauling, Marking,
Loading and Transportation.

(e) Harvesting

Equipment
and
Safety
Measures

Knowledge of the various equipment for harvesting timber including chain-saw, hand saw, axe and cutlass and their advantages and disadvantages is required. Safety measures taken when harvesting timber such as use of safety gear, directional felling, staff training will also be assessed.

2. Harvesting of Non-Timber Forest Products (NTFPs)

Examples of non-timber forest products including Marantaceae leaves, chewing sticks, plant medicines, canes, rafters, bush meat is required. Knowledge of methods of harvesting NTFPs. ie. Hunting (bushmeat), Gathering (Leaves, food, snails, medicine, mushroom), Trapping (birds, bushmeat) considering the safety and sustainability of each method is required.

Common uses of forest products e.g. shelter, furniture, household utilities, artefacts, food, and medicine is required.

3. Uses of Harvested Forest Products

Knowledge of wildlife harvesting techniques namely; hunting, trapping, baiting and gathering; and the sustainability of the harvesting techniques will be assessed. Knowledge of endangered, rare and common species and reasons for them being endangered, rare or common will be assessed

Harmful wildlife harvesting practices such as use of chemicals, fire, gin-trap and measures to control them will be assessed.

4. Harvesting of Wildlife

Measures aimed at reducing wildlife harvesting including training and education, sanctions and confiscation of harmful equipment, close and open hunting seasons, hunting permits and ban on night hunting required.

5. Harmful Wildlife Harvesting Practices.

Classification of forest products into direct and indirect benefits are required.

- (i) Direct benefits: Timber and Non-timber forest products
- (ii) Indirect benefits: Non-tangible products

Contribution of forest products to income and employment generation will be assessed.

6. Marketing of Forest Products
(a) Classification of forest products

Factors which affect demand for forest products, including

- Demand spectrum of selected forest products
- Local and external markets for products
- Role of forest-based industries
- Current use is required.

Forest products demanded locally including

<p>(b) Contribution of forest products to national economy</p>	<p>bushmeat, pestles, wrappers, chewing stick, timber, mushroom, medicinal plants etc. and those demanded by foreign market including processed timber, medicinal plants, rattan, live animals, animal trophies etc. will be assessed.</p>
<p>(c) Demand for forest products</p>	<p>Reasons for differences in demand for products on both local and foreign markets will be assessed. These include</p> <ul style="list-style-type: none"> - differences in taste - differences in lifestyle
<p>(i) Factors affecting demand for forest products</p>	<ul style="list-style-type: none"> - differences in the level of economics development - quality of produce - availability of produce
<p>(ii) Types of forest products demanded by the local market and foreign market</p>	<p>Socio-economic benefits and effects of demand for forest products such as increased revenue, employment opportunities and depletion of resources will also be assessed.</p> <p>The various agencies involved in the marketing of forest products and their functions is required. The agencies include the following: Wood products-GEPC, TIDD Other products like medicinal plants, wood carving, rattan productsetc.- GEPC and other private companies.</p>
<p>● Differences in demand for products</p>	<p>Different types of forest industries e.g. sawmills, plywood mills, chipboard mills, their locations and sources of raw materials will be assessed.</p> <p>The contribution of the forest industries to the economy with emphasis on timber processing, range of products; marketing, employment opportunities, and export earnings will be required.</p>
<p>(iv) Socio-economic benefits and effects of demand for product</p>	<p>Processes involved in timber processing and the products obtained namely sawn boards; (2 x 4, 2 x 6, 1 x 8, 1 x 12 etc.) veneer and plywood will be required. Sawmilling equipment used in processing the timber into the products eg. bandmill, slice veneer equipment, rotary veneer equipment will also be assessed.</p> <p>Forestry training institutions in Ghana and job opportunities in Forestry and forestry-related careers such as carpentry and furniture, wood carving, wood marketing and export, wood</p>
<p>7. Marketing Agencies and their functions</p>	<p>Knowledge of the factors and resources for establishing forest enterprises is required. Factors - e.g. Identification of business opportunities in forestry, identification of a forestry product or service needed.</p> <p>Resources:- land, capital, materials and structures etc.</p>

Procedures for establishing enterprises in forestry

8. Forest Industries
(a) Timber Industries

and Timber
Products.

Functions of the Ministry responsible for forestry (Ministry of Land, Forestry and Mines) and the structures and functions of the Forestry Commission (FC) will be assessed.

Functions of the following implementing agencies will also be assessed:

Forest Services Division (FSD), Wildlife

Division (WD) and Timber Industry

Development Division (TIDD).

Roles of the following training and research institutions for improving the forest industry will be assessed : FORIG, FRNR, FFRT and WITC.

● Career and
Training

Opportunities

Existing rights governing the use of forest resources in Ghana will be assessed. These include Timber Utilization Contract (TUC), Timber Utilization Permit (TUP) and Salvage Permits for timber resources and Permits for non-timber forest products.

Differences between the rights will also be assessed.

Procedure for acquiring TUC, TUP and other permits is required.

Activities that violate rights (illegal activities) such as illegal felling, poaching of wildlife, encroachment (illegal farming, illegal mining) is required.

9. Establishing
enterprises
in forestry

Stakeholders of forest resources and the roles they play in sustaining the forest is required.

Stakeholders include:

(i) Government Sector Institutions - Forestry
Commission (WD, FSD, TIDD)

(ii) Traditional Authorities and Communities.

(iii) Non-Governmental Organisations

(iv) Forest-based industries.

Understanding of the terms; and ability to distinguish between alienation rights and also required.

SECTION E
FORESTRY SECTOR
STRUCTURES

The major land tenure systems in Ghana: Communal, individual, leasehold etc; and

- policy-making,

Implementation,
Monitoring and
Evaluation.

the advantages and disadvantages of the systems will be assessed.

Role of stools and skins and central government in land ownership will be assessed.

The importance and the procedure for land registration will be assessed.

2. Training and Research

Effects of land tenure on land use systems e.g. fragmentation, litigation etc. and ways to improve the land tenure system in Ghana are required.

3. Rights to Forest Resources

(a) Types of Rights

Forest and Wildlife policy and its importance e.g. Management of forest estate, production of forest industries, manpower training and research, stakeholders interest will be assessed.

(b) Acquisition of Rights

Forest and Wildlife laws and their importance are also required.

(c) Violation of Rights

4. Role of Stakeholders

Importance of mushroom i.e. economic, nutritional, medicinal and agricultural uses of by-products will be assessed.

5. Land Tenure Systems

Classes of fungi and their characteristics with special emphasis on Basidiomycetes will be assessed.

(a) Types of Land Tenure Systems

Features of poisonous and non-poisonous mushrooms; commercial and non-commercial mushroom will be assessed.

(b) Role of Stools, Skins and Central Govern- ment in Land Ownership

Names of; and ability to identify mushrooms that are commonly-cultivated in West Africa are required.

(c) Land Registration

How mushroom obtains its nutrients or subsists on substrates/media will be assessed.

(d) Impact of Land Tenure on Land use.

The life cycle of mushroom showing the reproduction and production cycles in mushroom is required.

6.Forest Policy and Law

The different methods used for cultivating mushroom indicating in particular the stages/steps that are followed in each of the following methods:

- local/pit method
- high bed method
- low bed method
- indoor/commercial/plastic bag method

will be assessed.

Practices involved in the production of mushroom, especially by the bag method namely;

- composting the substrate
- bagging the substrate
- sterilizing the bagged compost
- inoculation
- cropping is required.

SECTION F

INCOME GENERATION VENTURES

- Cultivation of

Skills in the processing and packaging of mushroom and methods of preservation such as roasting, freezing and canning are required.

Mushroom

(a)

Importance and uses of mushroom

Importance of beekeeping will be assessed.

(b) Biology of mushroom

Skills in the establishment of an apiary i.e. siting beehives, baiting and capturing will be assessed.

(i)

Classification of fungi

Characteristics and roles of the members of honey bee colony namely; queens, drones and workers is required.

(ii) Poisonous and

Routine management practices and precautions to avoid harm to farmers will be assessed.

Non-

Ability to control pests and diseases of honey bees will also be assessed.

poisonous

mushroom/
Commercial

Detection signs of maturity, methods of harvesting and processing of honey, wax and other products will be assessed

Commercial and Non- commercial Mushroom	Strategies for marketing honey and other products is required.
(iii) Commonly cultivated mushroom in West Africa	Methods and skills in identification and classification of plants and animals i.e. <u>Wildlife:</u> <u>Fauna</u> Using observation skills to recognize wildlife through footprints, tracks, droppings, size, form, external features and prominent organs.
(iv) Nutrition of mushroom	<u>Plants:</u> Using observation skills to recognize plant parts: stem form, crown shape, size, texture and arrangement of vegetative parts, colour of flower, fruit, etc.
(v) Life cycle of mushroom	Application of conventional keys. Knowledge of habitats of wildlife is required. The anatomy of leaves, stems and roots is also required.
(vi) Methods of mushroom cultivation	Ability to identify, use and maintain tools, equipment and machinery used in forestry and wildlife management is required. Advantages and disadvantages of using the tools are required. Soil treatment methods, seed collection and storage, seed testing and treatment; methods of sowing and planting; and practices such as pricking-out, hardening-off and transplanting; Nursery pests and diseases and their control are required. Ability to design a calendar for tree nursery development is also required.
(vii) Production practices	Plantation design and planning, surveying and site clearing, pegging, methods of planting and cultural practices such as Thinning, Pruning, Weeding, Beating up and Record Keeping are required. Methods and ability to determine height, diameter, girth and volume of trees and NTFPs, and angles of slopes are required. Knowledge of units of measurement, and use of conventional symbols are also required.
(viii) Harvesting of mushroom	Felling operations and safety measures, procedure for harvesting will be assessed.
(ix) Post-harvest handling	Log markings: property mark, locality marks, compartment number, stock survey number, tree number, reserve code, log number etc. is required. Existing harvesting practices; hunting wildlife (bushmeat), collection (snails, mushroom) Gathering (leaves, food, medicine) Trapping (wildlife); and harmful harvesting practices are required.

2. Beekeeping

- (a) Importance of beekeeping
- (b) Apiary establishment
- (c) Members of honey bee colony and their roles
- Management of an apiary-routine practices and precautions
- Maturity of colony, harvesting and processing.
- (e) Marketing of honey and other products

Ability to identify types of processed forest products e.g. samples of veneer, plywood, particle board, artefacts (wood carvings) etc. is required.

Knowledge and understanding of methods of processing timber into the aforementioned products are also required.

Ability to identify products such as rattan, bamboo, mushrooms, snails, bush meat, medicinal plants etc. and knowledge of their processing and preservation methods and their uses will be assessed.

Ability to identify kinds of mushroom, and knowledge of the uses, methods of cultivation, production, harvesting, processing and preservation practices are required.

Ability to identify various members of bee colony and knowledge of their roles and uses of products are required.

Knowledge and understanding of management, harvesting, processing and marketing activities are also required.

G. PRACTICAL SYLLABUS

1. Introduction to Wildlife and Plant Identification.

2. Tools, Equipment
and
Machinery

3. Nursery practices

4. Plantation
Establishment:

Land preparation

5. Forest Mensuration

6. Harvesting of
Forest
Resources

- Methods of
Harvesting

Timber

- Methods of

Harvesting
Non-timber

Forest

Products
(Plants
and Animals)

7. Processing of Forest

Resources

(1) Timber

(2) Non-
Timber Forest
Products

8. Income
Generating
Ventures

(1) Mushroom

Cultivation

(2) Beekeeping