Department of Forestry Wild life and Environmental Sciences

B.Sc. 6th Semester

(Forest Management, Policy and Legislation)

Question Set 3

Maximum Marks: 60 **Duration : 3 hr**

Note : Attempt any 5 questions. Question no. one is compulsory

Q.1 A. Fill in the blanks: (10*1=10)

1. Rotation of highest net return is -------*Financial rotation*----------.
2. All land with canopy density 40%-----*Closed*----------.
3. In first forest policy fourth class forest referred -----*Pasture land*--- ---.
4. The age at CAI culminates MAI is rotation of---*maximum volume production*----------.
5. In IFA 1927 chapter II is about---*Reserve forest*----------.
6. In IFA 1927 chapter IV is about-----*Protected forest*----------.
7. First forest policy was formulated in year----*1894*----------.
8. Third forest policy was formulated in year---*1988*----------.
9. Forest research institute is situated in -------*Dehrdun*----------.
10. Report entitled "Improvement of Indian agriculture" was submitted by ---*Dr. -Voelcker*--

B.Write full name of :

1. IIFM-----*Indian Institute of Forest Management*----------
2. FRI----------*Forest Research Institute*----------
3. ICFRI------*Indian council of forestry research and education*----------
4. AFRI-------*Arid forest research institute*----------
5. CPC--------*Criminal procedure code*----------
6. FSO--------*Forest settlement officer*----------
7. SFM--------*Sustainable forest management*----------
8. JFM---------*Joint forest management*----------
9. IFA-------- *Indian forest act*----------
10. IPC----------*Indian penal code*----------

Q.2 Write the principles of forest management? Discuss the fundamentals peculiarities of forestry?

DEFINITION:

(1) Forest Management is the practical application of the scientific, technical and economic principles of forest.

(2) It is that branch of forestry whose function is the organization of a forest property for management and maintenance, by ordering in time and place the various operations necessary for the conservation, protection and improvement of the forest on the one hand, and the controlled harvesting of the forest on the other hand.

(3) It is the application of business methods and technical forestry principles to the operation of a forest property.

Management of forests broadly involves: -

- Control of composition and structure of the growing stock.
- Harvesting and marketing of forest produce.
- - Administration of forest property and personnel.

It is, unlike any other commercial enterprise, complicated; as forests are managed for a multiplicity of purpose, with one use dominant, viz., most often the production of wood.

- Productive and protective functions of the forests cannot be bifurcated. Scientifically managed forests perform both these, simultaneously. It is, therefore, essential that forest resources are maintained in a state of maximum production for all time, consistent with their subsidiary or even the other main functions.

- PRINCIPLES OF FOREST MANAGEMENT The forest policies of many countries carry the following sentence: "To manage the forest in such a way as to ensure a sustained yield of timber and other forest products in perpetuity." The most celebrated principle of forest management all over the world is the "Principle of Sustained Yield". This being criticized as static one, was replaced by the "Principle of increasing yield" in the recent past. But this new concept covers only those forests which are in the early stages of their development. Yet another concept known as "Principle of Progressive Yield" emerged in Helsinki World Forestry Congress in 1948, but this is applicable to fast growing, short rotation species responding readily to the scientific methods. Thus for long term forest the "Principle of Sustained Yield" remains unchallenged.

  Fundamental Peculiarities of forest management are due to following reasons:

  1.Production in forest is a long time process
  2. Trees are producing units and forest products at the same time
  3. Forest provide multiple benefits
  4.Forests are assigned difficult, inaccessible and low quality lands

  1.Production in forest is a long time process

  It takes trees considerable time to grow and becomes useful. The time for growing forest depends upon the tree species which make the forest. Another important consideration in time involved in growing trees is that the demand of some or all the product from them may change during that period.

  2. Trees are producing units and forest products at the same time. Timber as the product can not be separated from growing tree unless it is served from its stump.

  3. Forest provide multiple benefits .Forest grown for one single purpose like timber or any other purpose forests satisfy many demands. Diverse needs and demands are of people are met by the forests. They give tangible as well as intangible products and services. As timber, fuel, wood, bark, medicines, fruit, flower, gums as tangible products and shade, protection from wind and rain, shelter to wild life as intangible benefits.

4.Forests are assigned difficult, inaccessible and low quality lands. Increasing population and demand for food have removed all the suitable lands from forest for all other uses. It can be said that the land unfit for agriculture and for any other economic use is left under the forest now.

Q.3 Write the important features of forest policy of 1894? Discuss the drawback of the policy?

First Forest Policy (1894)

After the establishment of a structured forestry set up in 1864, with the appointment of Dr. Dietrich Brandis as the first Inspector General of Forest, the first National Forest Policy was formulated in 1894. This document, which was circular No.22-F dated 19th October 1894, was based on 8th and 9th Chapters of Dr. Voelcker's Report on Improvement of Indian Agriculture and Review of Forest Administration in British India for 1892-93. These documents differed in their approach considerably. While Dr. 27Voelcker attempted to recommend the role of forestry as subservient to agriculture, the Inspector General of Forest adopted a conservative approach and discussed in detail the principles, which should underlie the management of a state forest in India. However,

efforts were made to accommodate both viewpoints and to produce a document, which lays down the general policy regarding management of forests in British India. As per the policy, forests, being state property were broadly classified under four headings namely, Forest for Preservation, Forest for Commercial purposes, Minor Forests and Pasture Lands. Though, the aim of this policy was to manage state forests for public benefit, certain regulation of rights and restriction of privileges for the use of forest by the neighboring populations was provided in this policy. Further, para 6 of the policy clearly mentioned: whenever an effective demand for cultural land exists and can only be supplied from forest, the land should ordinarily be relinquished without hesitation. This Forest Policy of 1894 did not accord proper recognition to forestry which was

called for and in respect of land use, it was placed next to the agriculture.

The first Indian Forestry Act was passed in 1865 to control indisciminate felling and initiate the preparation of working plans that would regulate yield. The first statement of National Forest Policy in 1894 emphasized the need to demarcate, reserve, and conserve forests. While this was excellent from the point of view of genetic resource conservation and wildlife, soil, and water protection, it did not rationalize or maximize yields of forest products nor did it endear forestry officials to local populations, because forest officers carried out a policing function. Even today it is not uncommon to hear foresters talk of forests "burdened with rights" implying that, in their opinion, non-foresters should be excluded from the forests. Yet, even under the 1894 policy, which later served as a model for other countries of the British Commonwealth, if a demand for agricultural land arises that can be met only from a forest, it should be conceded without hesitation (subject to certain reasonable conditions); further, forests that yield only inferior timber, fuelwood, or fodder, or that are used for grazing, should be managed mainly in the interest of the local population.

The Forest Policy of 1894 was the first official move towards regulating the rights and concessions enjoyed by the forest-dependent communities:
Important feature:
1 Rights and Concessions .
The Forest Policy of 1894 was the first official move towards regulating the rights and concessions enjoyed by the forest-dependent communities:
The cardinal principle to be observed is that the rights and privileges of individuals must be limited, otherwise than for their own benefit, only in such degree as is absolutely necessary to secure that advantage (NFP 1894, para 2)
However, the Policy also clarified that every attempt should be made for the full and easy satisfaction of the needs of the forest-dependent people.
Considerations of income should be made secondary to the full satisfaction of local needs…no restrictions should be placed upon reasonable local demands merely in order to increase the state revenue. (NFP 1894, para 8)

2 Grazing
The Forest Policy of 1894 was the most elaborate of all the policies in explaining the modalities of grazing in the various classifications of the forests.
The question whether any particular area can be made to support a greater number of cattle by preserving the grass and cutting it for fodder, or by permitting grazing upon it, is one that must be decided by the local circumstances of each case. (NFP 1894, para 11).

3. Fuelwood
Similar to grazing, supply of fuelwood was not an issue at the time of the Forest Policy of 1894 because the Government was of the view that the demand of fuelwood could be easily met from the margins of forest tracts without causing much harm to the valuable timber species. For the class three forests , the Policy specially mentioned that:
These must be managed mainly in the interests of the population of the tracts which obtained its forest requirements from this source. (NFP 1894, para 9).

4. Shifting Cultivation
Though the Forest Policy of 1894 made it amply cleat that the claims of cultivation are stronger than the claims of forest preservation, it was against the honeycombing of a valuable forest by patches of cultivation and maintained that cultivation must be permanent. On the question of shifting cultivation, it stated that:
A system of shifting cultivation which denudes a large area of forest growth in order to place a small area under crops, costs more to the community than it is worth, and can only be permitted under due regulation, where forest tribes depend on it for their sustenance. (NFP 1894, para 7).

Q.4 What is abnormality in forest ? What are the causes of abnormality? Discuss the management technique in abnormal forest ?

- The abnormalities common in growing stock are of four types:
- (i) Overstocked: A forest may be overstocked on two accounts: - When a forest past the age of maturity have more volume per 9 hectare than the normal. - A forest also becomes overstocked when the rotation already fixed is reduced. In both the cases, there will be surplus growing stock due to excessive distribution of the older age classes. This surplus has to be gradually removed to achieve normalcy.
- (ii) Understocked: Understocking arises in three situations: - due to preponderance of the younger age classes, the volume per ha will be less than the normal, - due to previous mis-management or bad protection, the forest may have poor density than the normal condition, and - through the increase or extension of the rotation period. This is remedied by conservative fellings and building up a proper reserve of growing stock.
- (iii) Volume normal but age classes abnormal: The whole forest may contain of single age class against the normal proper distribution of all age classes. This is the worst form of abnormality and conversion of such forest to normalcy is very difficult. In such situation, suspension of sustained yield may be necessary and sacrifice of material due to decay and unsoundness may be unavoidable.

Causes of abnormality : Fire, excessive logging and pests as well as diseases and insect attacks are the key common factors. Illegal logging is a particular problem which also suffers from grazing pressure like. Erosion and drought are also key problems .Forest also suffers from impacts of mining. Unauthorized land occupation and fuelwood collection are specific key problems.

Management of abnormal forest is possible through different silviculture systems

A silvicultural system is a planned program of silvicultural treatments designed to achieve specific stand structure characteristics to meet site objectives during the whole life of a stand. This program of treatments integrates specific harvesting, regeneration, and stand tending methods to achieve a predictable yield of benefits from the stand over time. Naming the silvicultural system has been based on the principal method of regeneration and desired age structure. Silvicultural systems on most sites have been designed to maximize the production of timber crops. Non-timber objectives, such as avalanche control and wildlife production, have been less common. Recently, ecological considerations and resource objectives have increased. A silvicultural system generally has the following basic goals:

- Provides for the availability of many forest resources (not just timber) through spatial and temporal distribution.
- Produces planned harvests of forest products over the long term.
- Accommodates biological/ecological and economic concerns to ensure sustainability of

resources.

• Provides for regeneration and planned seral stage development.

• Effectively uses growing space and productivity to produce desired goods, services, and conditions.

• Meets the landscape- and stand-level goals and objectives of the landowner (including allowing for a variety of future management options).

• Considers and attempts to minimize risks from stand-damaging agents such as insects, disease, and windthrow.

Silvicultural systems have been classified in a variety of ways. The most commonly used classification is based primarily on the mode of regeneration. It is further classified according to the pattern of felling carried out in the forest crop. According to the method of regeneration, silvicultural systems are of following two types: high forest systems and coppice systems.

1. **High forest systems:** High forest systems are those silvicultural systems in which the regeneration is normally of seedling origin, either natural or artificial or a combination of both and the rotation is generally long. The high forest systems are further classified on the basis of pattern of felling and mode of regeneration as well. A schematic classification of these systems is given here.
    - High forest systems
        - Systems of concentrated regeneration
            - Clear felling system
                1. Clear felling
                2. Clear strip
                3. Alternate strip
                4. Patch clear cut
            - Shelterwood system
                1. Uniform system
                2. Group system
                3. Strip system
                4. Irregular system
                5. Indian Irregular system
            - Seed tree system
                1. Uniform seed tree
                2. Group seed tree
        - Systems of diffused regeneration
            - Selection system
                1. Single tree selection
                2. Group selection
        - Accessory systems
            1. Two storied high forest
            2. High forest with reserve

Coppice systems: That silvicultural system in which the crop originates mainly from coppice and the rotation is short is called coppice system. Classfication of coppice system (Low Forest System):

0. Simple Coppice System

1. Coppice of Two Rotation System
2. Shelterwood Coppice System
3. Coppice with Standard System
4. Coppice with Reserve System
5. Coppice Selection System
6. The Pollard System

Q.5 Write the features of forest right act 2006? With its object?

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is a result of the protracted struggle by the marginal and tribal communities of our country to assert their rights over the forestland over which they were traditionally dependent. This Act is crucial to the rights of millions of tribals and other forest dwellers in different parts of our country as it provides for the restitution of deprived forest rights across India, including both individual rights to cultivated land in forestland and community rights over common property resources.

Forest Rights Act : Millions of people live in and near India's forest lands, but have no legal right to their homes,lands or livelihoods. A few government officials have all power over forests and forest dwellers. The result? Both forests and people die. This Act recognises forest dwellers' rights and makes conservation more accountable.

Why is this law necessary?

What are called "forests" in Indian law often have nothing to do with actual forests. Under the Indian Forest Act, areas were often declared to be "government forests" without recording who lived in these areas, what land they were using, what uses they made of the forest and soon.82% of Madhya forest blocks and 40% of Orissa's reserved forests were never surveyed;similarly 60% of India's national parks have till today (sometimes after 25 years, as in Sariska) not completed their process of enquiry and settlement of rights. As the Tiger Task Force of the Government of India put it, "in the name of conservation, what has been carried out is a completely illegal and unconstitutional land acquisition programme." What areconditions like in the forest areas? Because of this situation, millions of people are subject to harassment, evictions, etc, on the pretext of being encroachers in their own homes. Torture, bonded labour, extortion of money and sexual assault are all extremely common. In the latest national eviction drive from 2002 onwards, more than 3,00,000 families were driven into destitution and starvation. In Madhya Pradesh alone, more than 125 villages have been burned to the ground.

The Indian Forest Act, 1927, India's main forest law, had nothing to do with conservation. It was created to serve the British need for timber. It sought to override customary rights and forest management systems by declaring forests state property and exploiting their timber. The law says that, at the time a "forest" is declared, a single official (the Forest Settlement Officer) is to enquire into and "settle" the land and forest rights people had in that area. These all-powerful officials unsurprisingly either did nothing or recorded only the rights of powerful communities.

The same model was subsequently built into the Wild Life Protection Act, passed in 1972, with similar consequences.
To destroy a forest today requires nothing more than either a bribe to the local forest officer or an application to a committee in Delhi. The results include:
The loss of more than 90% of India's grasslands to commercial Forest Department plantations.
The destruction of five lakh hectares of forest in the past five years alone for mines, dams and industrial projects; The clearing of millions of hectares of forest for monoculture plantations by the Forest Department; Recent proposals to privatise "degraded" forest lands for private companies' timber plantations.
Moreover, the forest laws destroyed all the community management and regulation systems that had existed before, forcing people to choose between either abandoning the forest entirely or living as 'criminals' within or near it. To this day it is a criminal offence for you or I to plant a tree in a reserved forest; but it is legal for the Department to fell the entire forest so long as it has Central government permission.

The Act basically does two things:
- Grants legal recognition to the rights of traditional forest dwelling communities, partially correcting the injustice caused by the forest laws.
- Makes a beginning towards giving communities and the public a voice in forest and Forest Rights Act is about wildlife conservation.

There are two stages to be eligible under this Act. First, everyone has to satisfy two conditions:
1. Primarily residing in forests or forest lands;
2. Depends on forests and forest land for a livelihood (namely "bona fide livelihood needs")
Second, you have to prove:
- That the above conditions have been true for 75 years, in which case you are an Other Traditional Forest Dweller(s. (o));
OR
- That you are a member of a Scheduled Tribe (s. 2(c)); and
- That you are residing in the area where they are Scheduled (s. 4(1)).
In the latter case you are a Forest Dwelling Scheduled Tribe.
The law recognizes three types of rights to forest dwellers:

Land Rights:
No one gets rights to any land that they have not been cultivating prior to December 13, 2005 (see section 4(3)) and that they are not cultivating right now. Those who are cultivating land butdon't have document can claim up to 4 hectares, as long as they are cultivating the land themselves for a livelihood (section 3(1) (a) and 4(6)). Those who have a patta or a government lease, but whose land has been illegally taken by the Forest Department or whose land is the

subject of a dispute between Forest and Revenue Departments, can claim those lands (see section 3(1)(f) and (g)).

There is no question of granting 4 hectares of land to every family. If I am cultivating half a hectare on December 13, 2005, I receive title to that half a hectare alone; and if I am cultivating nothing, I receive nothing. If I am cultivating more than 4 hectares without documents or a dispute, I receive title to only 4 hectares.

The land cannot be sold or transferred to anyone except by inheritance (see section 4(4)).

Use Rights

The law secondly provides for rights to use and/or collect the following:

a. Minor forest produce things like tendu patta, herbs, medicinal plants etc "that has been traditionally collected (see section 3(1) (c)). This does not include timber.

b. Grazing grounds and water bodies (sections 3

c. Traditional areas of use by nomadic or pastoralist communities i.e. communities that move with their herds, as opposed to practicing settled agriculture.

Right to Protect and Conserve though the forest is supposed to belong to all of us, till date no one except the Forest Department had a right to protect it. If the Forest Department should decide to destroy it, or to hand it over to someone who would, stopping them was a criminal offence.

Forest Rights Act is about :

Law which gives the community the right to protect and manage the forest. Section 3(1) (i) provide a right and a power to conserve community forest resources, while section 5 gives the community a general power to protect wildlife, forests, etc. This is vital for the thousands of village communities who are protecting their forests and wildlife against threats from forest mafias, industries and land grabbers, most of whom operate in connivance with the Forest Department.

Section 6 of the Act provides a transparent three step procedure for deciding on who gets rights. First, the gram sabha (full village assembly, NOT the gram panchayat) makes a recommendation - i.e who has been cultivating land for how long, which minor forest produce is collected, etc. The gram sabha plays this role because it is a public body where all people participate, and hence is fully democratic and transparent. The gram sabha's recommendation goes through two stages of screening committees at the taluka and district levels. The district level committee makes the final decision (see section 6(6)). The Committees have six members - three government officers and three elected persons. At both the taluka and the district levels, any person who believes a claim is false can appeal to the Committees, and if they prove their case the right is denied (sections 6(2) and 6(4)). Finally, land recognised under this Act cannot be sold or transferred.

Q.6 Explain following : a. Methods of yield regulation in irregular forest

Yield regulation in irregular forest

A.Yield based on GS alone

1. Von mantel's formuls
2. French method

Von mantel's formula

This formula is known as formula of glorious simplicity due to easiness in application inside forest. According to von mantel, the volume of NGS is equal to the multiplication of MAI with half rotation.

Volume of NGS = I*r/2

Annual yield (I) = 2 NGS/r where I is the volume of oldest gradation

He derived based on the principle : Actual Yield/ Actual GS =Normal Yield/Normal GS

Or Ya/Va=Yn/Vn

I*r = 2GS

I*r = GS+GS

I*r = GS + I* r/2 GS = I*r/2

Therefore in a normal forest the total yield at harvest (rotation) is equal to double the volume of GS at present.

Masson's ratio or exploitation percent:

Masson considers actual growing stock as 100 and accordingly he derived this ratio from

Von montel formula: Y = 2 GS /r = 200/r = 2/r%

It gives general idea for harvesting each year from if no other information is available.

B.Yield based on increment alone

Increment method

This method is based on the assumption that yild is correlable with the increment directly. The annual yield isarrived as follows:

$$\text{Annual Yiled } Y = \frac{V+a-Vn}{n}$$

V = present volume

Vn =Volume n years ago

a. = Volume removed during the previous n years

This method is applicable to smaller area of irregular forest.

Biolley's check mehod

This concept originate from Guraud which has later modified by Biolly. Method is basedo measurement of increment. This method is emphasized more on silviclture and age class distribution inside the forest.

5 cm diameter classes down to 17.5 cm diameter at 6-10 yr interval. These are formed in three groups. And from these groups increment is calculated by using the formulae:

Total increment I= V2+N – V1

Where V1= Volume of GS at initial

V2= Volume of GS at final

N=Volume of wood removed during this period

In this calculation there may be excess calculation of increment due to the presence of new recruitment during the period. Hense it should be subtracted to get actual increment as follows:

Increment Z=V2-V1 +N-P where P is the volume new recruitment.

Annual Increment = Z/n = V2+N-(V1+P) / n

Where n is the interval period for enumeration.

In order to adjust the deficit or excess of GS in a forest further modification is introduced as follows:

Annual Increment Z/n= V2+n – (V1+P)/n +- (Ga-Gn/A)

Where Ga is actual GS Gn is Normal GS and A is period of adjustment.

C. Yield determination based on increment and GS

This method was designed by Brandis for teak forest felling where no prior data was available during 19 th century. It is also reffered as Indian method. It consider tree as a unit and accounts number of trees in various dia/ girth classes and time taken to pass from one class to the next class with or without considering the volume.

Annual yield = average number of trees reaching exploitable diameter annually+ fraction of surplus number of above the exploitable diameter

b. <u>Utilization of yield table data for assessment of growing</u>

Yield table is the tabular statement which summarize on per unit area basis all essential data relating to the development of fully stocked and regularly thinned even aged crop at periodic intervals covering the grater part of life. The yield table contsains the following information.

<u>Primary data</u>

It includes volume of main crop, thinning yield and accumulated yield through thinning.

<u>Secondary data</u>

It includes crop average diam, height, number of stem per unit area, crop basal area from MAI and CAI.

Preparation of yield table :

1. Construction of top ht/ top age curve by site quality sample plots areassigned
2. Crop age and mean crop age is grouped separately
3. For each quality class the main crop data is grouped and following avg are calculated : as basal area, number of tree/ ha, Avg crop diam, avg crop ht, stem timber and stem small wood volume/ ha, stem timber and small wood volume form factor, top age top ht.
4. The avg for each age class are plotted against the avg crop age.
5. The avg value against each age decades is read from the curve and tabulated
6. The data for subsidiary crop is similarly curved and tabulated.

<u>Utilization of yield table data</u>

7. It supports in determination of site quality and fractional site quality
8. It is used in estimation of total yield or growing stock
9. Helpful in determination of increment
10. Helpful in determination of rotation
11. It enhances the preparation of stock map by site qualities
12. It acts as guide to silvicultural thinning by giving required information

<u>Q.7</u> Write the different provision of chapter IV of IFA 1927.

Different provisions of or CHAPTER IV of IFA is for **PROTECTED FORESTS**

29. Protected forests

30. Power to issue notification reserving trees, etc.

31. Publication of translation of such notification in neighbourhood

32. Power to make rules for protected forests

33. Penalties for acts in contravention of notification under section 30 or of rules under section 32

34. Nothing in this Chapter to prohibit acts done in certain cases

29. Protected forests.–(1) The State Government may, by notification in the Official Gazette, declare the provisions of this Chapter applicable to any forest-land or waste-land which,, is not included in a reserved forest but which is the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest produce of which the Government is entitled.

(2) The forest-land and waste-lands comprised in any such notification shall be called a "protected forest".

(3) No such notification shall be made unless the nature and extent of the rights of Government and of private persons in or over the forest-land or waste-land comprised therein have been inquired into and recorded at a survey or settlement, or in such other manner as the State Government thinks sufficient. Every such record shall be presumed to be correct until the contrary is proved: Provided that, if, in the case of any forest-land or waste land, the State Government thinks that such inquiry and record are necessary, but that they will occupy such length of time as in the meantime to endanger the rights of Government, the State Government may, pending such inquiry and record, declare such land to be a protected forest, but so as not to abridge or affect any existing rights of individuals or communities.

30. Power to issue notification reserving trees, etc.–The State Government may, by notification in the Official Gazette,

(a) declare any trees or class of trees in a protected forest to be reserved from a date fixed by, the notification;

(b) declare that any portion of such forest specified in the notification shall be closed for such term, rot exceeding thirty years, as the State Government thinks fit, and that the rights of private persons, if any, over such portion shall be suspended during such terms, provided that the remainder of such forest be sufficient, and in a locality reasonably convenient, for the due exercise of the right suspended in the portion so closed; or

(c) prohibit, from a date fixed as aforesaid, the quarrying of stone, or the burning of lime or charcoal, or the collection or subjection to any manufacturing process, or removal of, any forest-produce in any such forest, and the breaking up or clearing for cultivation, for building, for herding cattle or for any other purpose, of any land in any such forest.

31. Publication of translation of such notification in neighbourhood.–The Collector shall causea translation into the local vernacular of every notification issued under section 30 to be affixed in aconspicuous place in every town and village in the neighbourhood of the forest comprised in the notification.

32. Power to make rules for protected forests.–The State Government may make rules to regulate the following matters, namely:

(a) the cutting, sawing, conversion and removal of trees and timber, and the collection,

manufacture and removal of forest-produce, from protected forests;
(b) the granting of licences to the inhabitants of towns and villages in the vicinity of protected forests to take trees, timber or other forest-produce for their own use, and the production and return of such licences by such persons;

(c) the granting of licences to persons felling or removing trees or timber or other forest-produce from such forests for the purposes of trade, and the production

d) the payments, if any, to be made by the persons mentioned in clauses (b) and (c) for permission to cut such trees, or to collect and remove such timber or other forest-produce;

(e) the other payments, if any, to be made by them in respect of such trees, timber and produce,and the places where such payment shall be made;
(f) the examination of forest-produce passing out of such forests;
(g) the clearing and breaking up of land for cultivation or other purposes in such forests;
(h) the protection from fire of timber lying in such forests and of trees reserved under section 30;
(i) the cutting of grass and pasturing of cattle in such forests;
(j) hunting, shooting, fishing, poisoning water and setting traps or snares in such forests and the killing or catching of elephants in such forests in areas in which the Elephants' Preservation Act, 1879 (6 of 1879), is not in force;
(k) the protection and management of any portion of a forest closed under section 30; and
(l) the exercise of rights referred to in section 29.

33. Penalties for acts in contravention of notification under section 30 or of rules under section 32.--(1) Any person who commits any of the following offences, namely:–
(a) fells, girdles, lops, taps or bums any tree reserved under section 30, or strips off the bark or leaves from, or otherwise damages, any such tree;
(b) contrary to any prohibition under section 30, quarries any stone, or bums any lime or charcoal or collects, subjects to any manufacturing process, or removes any forest-produce;
(c) contrary to any prohibition under section 30, breaks up or clears for cultivation or any other purpose any land in any protected forest;
(d) sets fire to such forest, or kindles a fire without taking all reasonable precautions to prevent its spreading to any tree reserved under section 30, whether standing fallen or felled, or to say closed portion of such forest;
(e) leaves burning any fire kindled by him in the vicinity of any such tree or closed portion;
(f) fells any tree or drags any timber so as to damage any tree reserved as aforesaid;
(g) permits cattle to damage any such tree;
(h) infringes any rule made under section 32, shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

(2) Whenever fire is caused wilfully or by gross negligence in a protected forest, the State Government may, notwithstanding that any penalty has been inflicted under this section, direct that in such forest or any portion thereof the exercise of any right of pasture or to forest-produce shall be suspended for such period as it thinks fit.34. Nothing in this Chapter to prohibit acts done in certain cases.–Nothing in this Chapter shall be deemed to prohibit any act done with the permission in writing of the Forest-officer, or in accordance with rules made under section

32, or, except as regards any portion of a forest closed under section 30, or as regards any rights the exercise of which has been suspended under section 33, in the exercise of any right recorded under section 29.

Q.8 What is working plan? How working plans are prepared? Write the object and necessity of working plan preparation?

Forestry management in India as well as in Gujarat has passed through various phases. The National Forest Policy of 1988 has recognized the importance of managing our forests on silvicultural principles commensurate with the societal and environmental concerns. It also mentions that no forest be permitted to work without the government approved management plan in a prescribed format. Para 4.3.2 of the National Forest Policy clearly states :

"No forest should be permitted to be worked without the Government having approved the management plan, which should be in a prescribed format and in keeping with the National Forest Policy. The Central Government should issue necessary guidelines to the State Governments in this regard and monitor compliance."

According to **National Working Plan Code**, Working Plan is a tool for scientific forest management. It is very useful for evaluating the status of forest resource of a division, assessing the impact of past management practices and deciding about suitable management interventions for future. Periodical up-dating and revision of Working Plans is essential to keep pace with the trends emerging out of forest–people interface and to address other national and international obligations. The preparation of Working Plan is a highly technical and time-framed scheduled operation. The preparation of the Working Plan is based on stock maps which is prepared through ground surveys. Recently, the use of modern tools like remote sensing, GIS & GPS is being done for preparing the forest cover maps of divisions. Every Working Plan includes the area-specific scientific prescriptions for proper management of forests of a particular forest division. Accordingly, the working circles, felling series, and annual coupe area computations are done for the plan period for implementation of the Working Plan prescriptions.

Forest Management Plan Formulation

Guidelines for formulating and drafting a management plan are:

· A plan should be prepared in conformity with a country's forest policy, legislation and regulations.

· The planning process must overcome past managerial problems and should provide workable, positive and affordable solutions to these problems.

· Nomination by a government forestry office, a concession holding company or other agency having management responsibility that one person, or a group of people, will be responsible for plan preparation. It should be the primary task of that person, or planning group, and should not be undertaken in conjunction with other duties.

· Once a start is made on plan preparation every effort should be made to continue the process until it is completed.

· Summarise managerially significant resources information. Only information that is directly relevant to implementation of management objectives should be included. Be conservative when resources information is being assembled for the first time and where it is known that information is incomplete, or its quality is uncertain. In practice, conservative resources statements tend to be closer to future reality than do optimistic estimates. Technical details should be placed in an appendix, not in the text of a plan.

· Assemble base maps, aerial photographs and satellite imagery and use these to compile forest maps needed to provide graphical support for management requirements. Subdivide the forest management unit into permanently defined compartments.

· The planning team must visit and acquire a good visual knowledge of all parts of a forest, villages and dependent industries.

· Summarise the managerial implications of specific features of basic information that has been presented in each section of Part I of a plan, for example, climate, topography and social issues. The summary should be a succinct statement of the decisive issues that are expected to influence the management of a forest. Assessments of the managerial implications of each specific feature of basic information become the link between the objectives and prescriptions in a plan.

· A plan should be no longer than is needed to present relevant information - the goal, preferably no more than five objectives and the supporting prescriptions that are related to those objectives.

· One or more people can contribute towards drafting different chapters of a plan but only one person should have responsibility for coordination and final assembly.

· Avoid identifying and specifying too many priorities for action. There should only be one priority on any one subject.

· Plans must be affordable and should be able to support the implementation of realistic budgets; it is unwise to prescribe action if it is unlikely that implementation can be funded.

· Plans must include provision for review at pre-determined intervals.

· Plans incorporate implementation of departmental technical instructions, guidelines and standards.

· Monitoring and reporting requirements should be expressed in the form of prescriptions. A plan should not be approved without having monitoring and reporting requirements included.

· Frequent dialogue with all people having an interest in the formulation of a plan and in its implementation is to be encouraged.

· A plan should have a readable "user friendly" style and must be easily understood by all who will use it in practice.

Formulating Management Plan Prescriptions

The following guidelines for formulating management plan prescriptions are suggested:

· Prescriptions should be concisely written, specific to the issue being addressed and should be related to specific management objectives. They should not be vague or ambiguous.

· Prescriptions should not be too long or too technical. Lengthy or excessively technical prescriptions are likely to be misunderstood or simply ignored. Only include material that is directly relevant to support the implementation of forest management objectives.

· Prescriptions must be measurable, or capable of being monitored easily, so that progress can periodically be reported.

· Although a need for precisely written prescriptions should be recognised, it also needs to be acknowledged that there may be occasions where a manager should be allowed some discretion in the implementation of a prescription if local conditions or common sense indicate that a degree of flexibility is desirable. Losses of forest through fire, additions or losses of forest area, changes in the definition of forest resources or changes in community interests in a forest are cases of unforeseen events which may influence the progress of the management plan.

Examples of text for management plan prescriptions are shown in Annex 5.

Management Plan Approval

The basic requirements for gaining approval of a forest management plan are as follows:

· When completed, an executive summary of a management plan should be assembled setting out the primary features of it, including the goal, objectives, the allowable cut and its location, operational features of the silvicultural system, community participation and forest protection arrangements.

· The principal features of the plan should be explained and discussed with senior staff in an oral presentation.

· The plan should be passed to the office of the approving officer with the support of a covering letter.

· Plans prepared for forests on private land should be approved by the government forestry authority to ensure that plan quality is acceptable, to strengthen the basis of the national forest policy and to ensure that the rights of third parties are protected.

Harvest planning

Harvest planning provides a balanced and comprehensive foundation for sustainable harvesting practices to enable good technical control during harvesting to be reconciled with the need for

reducing harvesting costs. Harvest plans are of two types, strategic and tactical, and both are an integral part of the forest management planning process. A map and a written plan are the basic components for both strategic and tactical harvest planning.

Recommended practices for strategic harvest planning

A **Strategic Harvest Plan** explains why, where, when and what type of harvesting is proposed. Strategic harvest, planning cannot be undertaken without considering the issues which affect the management of the forest more widely. It is an integral part of a forest management plan, prepared by the planning team, and should never be a separate planning statement that is independent of it. Strategic harvest planning should rely upon a knowledge of:

· The area of forest that has been zoned for wood, bamboo or other production objectives; it should exclude all areas zoned as protected or protection forest and for settlement purposes, including buffer zones.

· The annual or periodic cut for woody produce.

· The silvicultural system, or systems, to be applied.

A strategic harvest plan map (or maps), at a scale of between 1:10,000 and 1:20,000, should show the following features which should also be identified in an approved forest management plan:

· Forest types, topography, existing and planned infrastructure.

· Forest land which is to be protected for watershed or biodiversity conservation or for community development reasons.

· Areas where harvesting is proposed, divided into annual felling areas that can be conveniently defined on the ground.

· Areas where major problems exist, such as rock outcrops, river crossings or swamps, that must be overcome when developing a transport system, or in carrying out forest operations.

· Areas of non-forest land uses.

· Locations of communities or indigenous populations that could be affected by harvesting or transport operations.

A written strategic harvest plan should briefly describe the items shown on the harvest plan map and include the following topics:

· The silvicultural system to be applied, and why.

· An explanation of how harvesting is expected to achieve silvicultural objectives, especially its effect on the next crop, and the extent to which this is expected to be achieved.

· A brief description of the types of harvesting equipment to be used in specific felling areas and why these are selected.. A tabular summary, derived from a general forest inventory, of the species, volumes and log size classes that are expected to be cut in each compartment.

· A schedule showing the year when each felling area is to be harvested.. A summary of special problem areas shown on the strategic harvest plan map, such as river crossings and difficult roading areas, with notes on how these might be overcome.. Information concerning the forest transportation system, such as road design requirements for different topographical conditions (valley bottoms, ridges, slopes), stream crossings and the design specifications for drainage structures.

· Annual labour requirements for harvesting and roading.. Arrangements for accommodation, health, safety and recreation of the workforce.

· The estimated cost of harvesting within each felling area and annual maintenance of the transportation system.

Recommended practices for tactical harvest planning

A **Tactical Harvest Plan** is a short-term plan, prepared by a team directly responsible for supervision of harvesting operations, that explains how and who will carry out the operations and when cutting will be undertaken in each annual cutting area. It should be linked through the **Annual Plan of Operations** with an approved forest management plan and should not be a separate planning statement. A Tactical Harvest Plan is formulated for the operational part of a year, for example, a dry season. It can apply to a single felling area or to a group of separate felling areas. The following basic steps are involved in tactical harvest planning:

· A pre-harvest inventory should be conducted to identify tree species, to estimate the size and volume of trees present and their position throughout a felling area. The pre-harvest inventory should extend over the whole area where harvesting is proposed. In the case of selection harvesting, trees to be cut should be identified, marked and numbered.

· A topographic survey, either on the ground or using remote sensing imagery, should be conducted during a pre-harvest forest inventory to provide information for mapping.

· Using field survey information, a detailed topographic map should be drawn at a scale of between 1:10,000 and 1:2,000 showing all topographic features that will influence logging, and also the boundaries of the harvest area. Streamside protection strips, scientific, wildlife and cultural zones and any other special reservations specified in a management plan should be mapped. Contour mapping can be prepared either by manual drafting methods or through the use of GIS technology. It is the experience of many companies who are managing tropical forests that an investment in good quality mapping can lead to reduced harvesting, reading and other infrastructure costs.

· A felling area should be divided into administrative units, termed **cutting units,** that can be identified on the ground and used to control a harvesting operation. A cutting unit should be limited to a single extraction method because cable, tractor, draught animal and helicopter systems each have different characteristics.

Specific planning requirements are:

- Tactical harvest planning should be based on harvesting prescriptions set out in a forest management plan. The volume and/or number of trees per hectare to be extracted and the number of seed trees per hectare that are to remain should be specified.

- A cutting and log extraction plan should comprise a part of the harvest plan and should be undertaken using the topographical and tree position map. It can also be generated using vertical and oblique GIS imagery. The plan should be prepared jointly by forest planners and loggers and must be practical and realistic. The location of landings, skid trails (if ground skidding is to be used), cableways (if cable extraction systems are to be used), haul roads and feeder roads should be shown. Where possible, directional felling should be indicated.

· Harvesting equipment should be specified and a general operations schedule formulated, using actual or estimated production rates. Work studies may be necessary to determine appropriate production rates.

· A harvesting schedule should be prepared setting out the anticipated timing of harvesting in different felling areas. It should be flexible and able to be quickly modified, when necessary. For example, it should anticipate the onset of a rainy season, irregular wet season conditions, severe storms, roading problems, protection of specific endangered animals during breeding, fire hazard conditions (and wildfires) and periodic heavy seedfalls.

· Preparation of a harvesting schedule should, where appropriate, be prepared in consultation with local communities who might be affected by harvesting. The harvest of NWFPs and the dependency of local communities upon these for subsistence, employment and income generation should be considered. Examples are collection of rattan, fruit, resins and medicinal plants.

· Any legal requirements, such as right-of-way easements or specific local authority consents concerning roading, rivers, or aviation permits (for helicopter logging) should be obtained and listed.