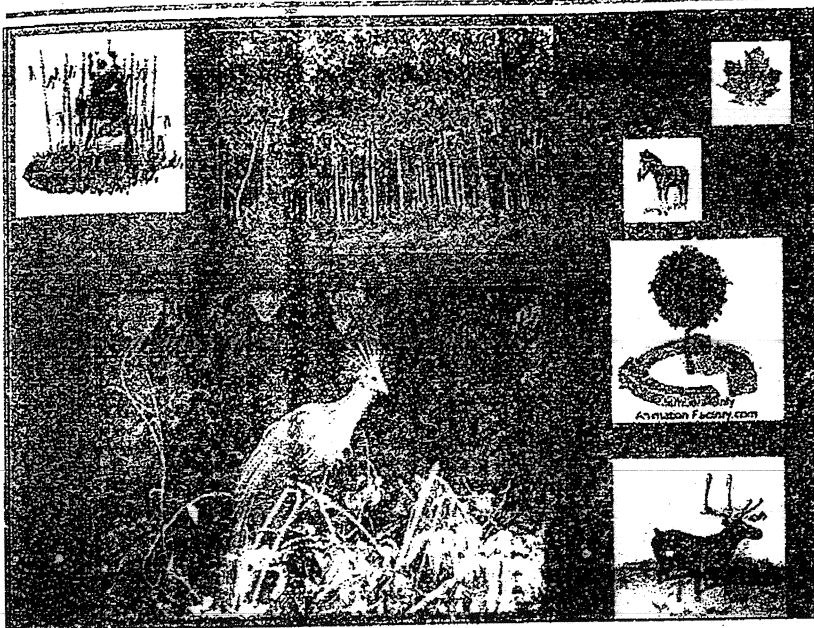


# Natural Vegetation and Wildlife



"Natural vegetation refers to a plant community which has naturally without human aid and has been left undisturbed by humans for a long time. Our country India is one of the twelve mega bio-diversity countries of the world."

## 18.1 Introduction

- With about 47000 plant species India occupies tenth place in the world and fourth in Asia in plant diversity.
- There are about 15,000 flowering plants in India which account for 6 percent in the world's total number of flowering plants.
- The country has many non-flowering plants such as ferns, algae and fungi. India also has 89,000 species of animals as well as rich variety of fish in its fresh and marine waters.
- The term flora is used to denote plants of a particular region or period. Similarly, the species of animals are referred to as fauna.
- This huge diversity in flora and fauna kingdom is due to the following factors.

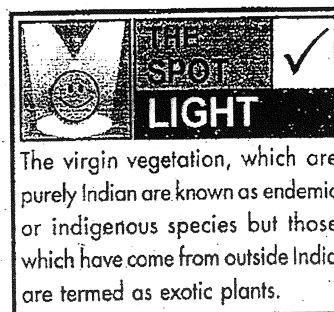
## 18.2 Relief

### (a) Land

- Land affects the natural vegetation directly and indirectly.
- The nature of land influences the type of vegetation.
- The fertile level is generally devoted to agriculture.
- The undulating and rough terrains are areas where grassland and woodlands develop and give shelter to a variety of wild life.

### (b) Soil

- Different types of solids provide basis for different types of vegetation.
- The sandy soil of the desert support cactus and thorny bushes while wet, marshy, deltaic soils support mangroves and deltaic vegetation.
- The hill slopes with some depth of soil have conical trees.



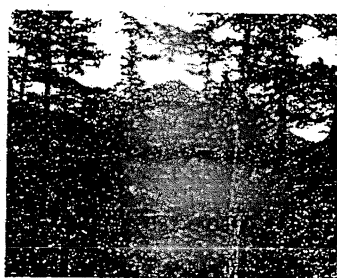
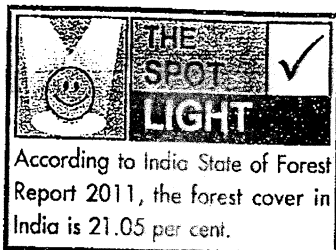
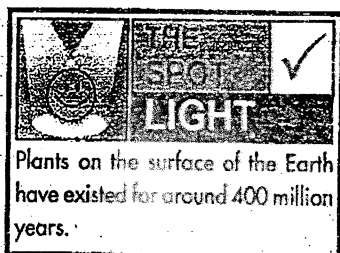


Fig. 1  
Natural Vegetation



### 18.3 Climate

#### (a) Temperature

- The character and extent of vegetation are mainly determined by temperature along with humidity in the air, precipitation and soil.
- On the slopes of the Himalayas and the hills of the Peninsula above the height of 915 metres, the fall in temperature affects the types of vegetation and its growth, and changes it from tropical to subtropical temperature and alpine vegetation.

Table: Temperature Characteristics of Vegetation Zones.

Vegetation Zone	Mean Average Temperature (in °C) (July)	Mean Average Temperature (in °C) (Jan)	Remarks
Tropical	Above 24°C	Above 18°	No frost
Sub-tropical	17°C to 24°C	10°C to 18°C	frost is rare
Temperate	7°C to 17°C	-1°C to (-10)°C	Frost
Alpine	Below 7°C	Below -1°C	Snow

#### (b) Photoperiod (Sunlight)

- The variation in duration of sunlight at different place is due to differences in latitude, altitude, season and duration of the day.
- Due to longer duration of sunlight, trees grow faster in summer.

#### (c) Precipitation

- In India almost the entire rainfall is brought in by the advancing southwest monsoon (June to September) and retreating northeast monsoons.
- Areas of heavy rainfall have more dense vegetation as compared to other areas of less rainfall.

### 18.3 Why forest are important for human being ?

- Forest are renewable resources and play a major role in enhancing the quality of environment.
- They modify local climate, control soil erosion, regulate stream flow, support a variety of industries, provide livelihood for many communities and offer panoramic or scenic view for recreation.
- It control wind force and temperature and causes rainfall.
- It provides humus to the soil and shelter to the wild life.
- India's natural vegetation has undergone many changes due to several factors such as the growing demand for cultivated land.
- The vegetation cover of India in large parts is no more natural in the real sense.
- Except in some inaccessible regions like the Himalayas, the hilly region of central India and the marusthali, the vegetation of most of the areas has been modified at some places or replaced or degraded by human occupancy.

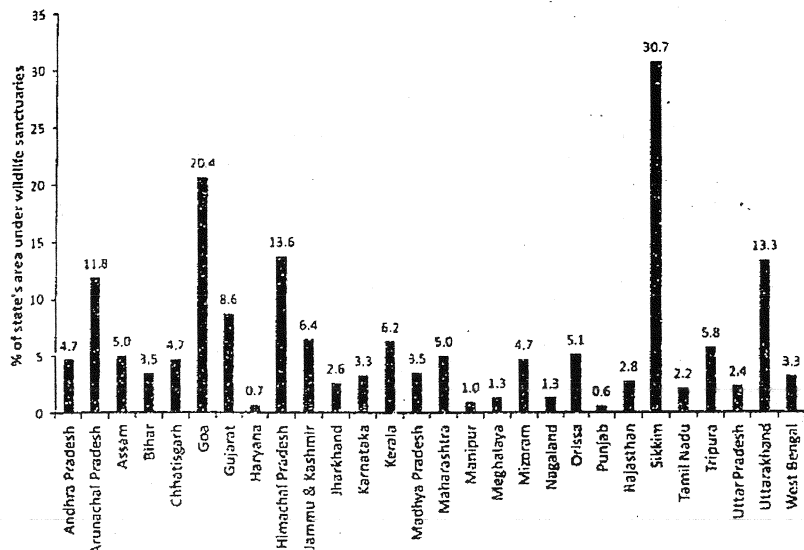


Fig. 2 : State-wise distribution of percent area under wildlife sanctuaries (2006)

## 18.4 Ecosystem

- Plants occur in distinct groups of communities in areas having similar climatic conditions.
- The nature of the plant in an area, to a large extent, determines the animal life in that area.
- When the vegetation is altered, the animal life also changes.
- All the plants and animals in an area are interdependent and interrelated to each other in their physical environment, thus, forming an ecosystem.
- Human beings are also an integral part of the ecosystem.
- They utilize the vegetation and wild life.
- The greed of human beings leads to over utilization of these resources.
- They cut the trees and kill the animals creating ecological imbalance.
- As a result some of the plants and animals have reached the verge of extinction.
- A very large ecosystem on land having distinct types of vegetation and animal life is called a biome.

### CHECK YOUR LEARNING 18.1

- Name two animals and plants having habitat in different types of vegetation.

## 18.5 Types of vegetation

### (a) Tropical Evergreen

- They are at their best in areas having more than 200 cm of rainfall with a short dry season.
- In these forest trees grow up to 60 m & above.
- These forest yield hard wood trees.
- These forest are found in rainy parts of western Ghats, Assam, West Bengal, Lakshadweep and Andaman & Nicobar Islands.
- Ebony, Mahogany, Rosewood, Rubber and Cinchona are some of the important trees.
- In these forest large number of plant species are found at one place. It creates difficulty in their commercial exploitation.
- Elephants, Monkey, Lemur and Deer are some common animals found in these forests.

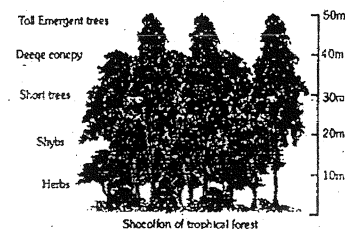
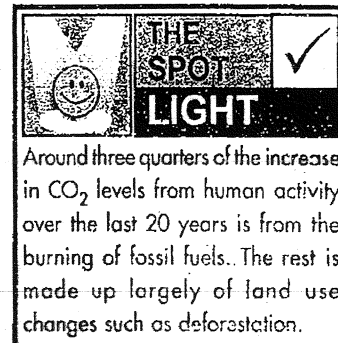
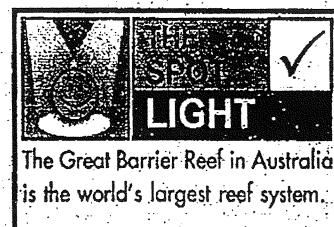


Fig. 3  
Tropical forest





**Thorn and Scrub forests :** They are so called due to the dominance of thorny trees, bushes and scrubs. These trees and bushes have long roots which spread in radial pattern, thick bark, sharp thorns and waxy leaves. These devices help them to preserve water and protect themselves from animals.

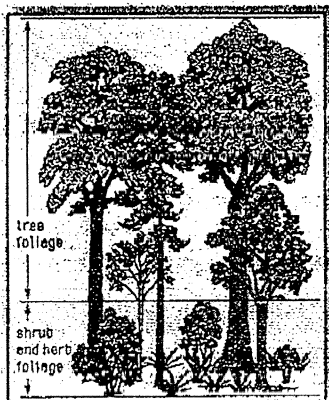


Fig. 4

Thorn & Scrub forests



**Alpine vegetation :** Above coniferous forests, there lies the Alpine vegetation at an altitude of about 3,600 metres and above. This is the tree line in the Himalayas.

## (b) Tropical deciduous forest

### Moist deciduous

- (i) These forests are found in the areas of 100 cm to 200 cm of rainfall.
- (ii) Due to a longer dry season, the trees shed their leaves during the dry season.
- (iii) Shisham, Bamboos, Sandalwood, Khair, Kusum, Arjun, Mulberry and Sal are the common trees found in these forests.
- (iv) These forest cover a vast area of the country. Northeastern States, along the foot hills of the Himalayas, Jharkhand, West Orisa and Chhattisgarh and on the Eastern Slopes of the Western Ghats.

### Dry deciduous

- (i) These are found in areas having rainfall between 70 cm to 100 cm.
- (ii) These are found in the rainier part of peninsular plateau and the plains of Bihar and U.P.
- (iii) These are open stretches in which Teak, Sal, Peepal, Neem grow.
- (iv) Most of these forests have been cleared for cultivation.
- (v) In these forests, the common animals found are lion, tiger, pig, Deer and elephant. A huge variety of birds, lizards, snakes, and tortoises are also found here.

## (c) The Thorn forest and Shrubs

- Tropical thorn forests occur in the areas which receive rainfall less than 70 cm.
- These consist of a variety of grasses and shrubs.
- It includes semi-arid areas of south west Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh and Uttar Pradesh.
- In these forests, plants remain leafless for most part of the year and give an expression of shrub vegetation.
- Important species found are babul, Kher and Wild Date Palm, Kikar, Neem, Khejri, Palas, etc.

## (d) Mountain forests

- In mountainous area, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation.
- (i) The wet temperate type of forest are found between a height of 1000 and 2000 meters. Evergreen broad-leaf trees such as oaks and chestnuts predominate.
  - (ii) Between 1500 and 3000 meters, temperate forests containing coniferous trees like pine, deodar, silver fir, spruce and cedar, are found. These forests cover mostly the southern slopes of the Himalayas. Places having high altitude in southern and north-east India. At higher elevations, temperate grasslands are common.
  - (iii) At high altitudes, generally more than 3600 meters above sea-level, temperate forests and grasslands give way to the Alpine vegetation. Silver fir, junipers, pines and birches are the common trees of these forest.
  - (iv) Above Alpine vegetation Alpine grasslands are found. These are used extensively for grazing by nomadic tribes like the Gujjars and the Bakarwals. At higher altitudes, mosses and lichens form part of tundra vegetation.
  - (v) The common animals found in these forests are Kashmir stag, spotted deer, wild sheep, jack rabbit, Tibetan antelope, yak, snow leopard, squirrels, Shaggy horn wild index, bear and rare red panda, sheep and goats with thick hair.

## CHECK YOUR ANSWERS 18.1

1.	Type of vegetation	Plants	Animals
	Tropical Rainforests	Rosewood, Ebony	Elephants, Monkeys
	Tropical Deciduous Forests	Teak, Sal	Lion, Tiger
	Thorn Forests	Palms, Acacia	Rats, Rabbits
	Temperate Forests	Oak, Chestnut	Yak, Wild sheep
	Alpine and Tundra Vegetation	Pines, Silver fir	Snow Leopard, Yak

### (e) Mangrove forests

- These are found in the areas which are under the influences of tides having accumulated mud and silt.
- Dense mangroove are the common varieties with roots of plants submerged under water.
- These forests are found in the deltas of Ganga, Mahanadi, Godavari and Kaveri.
- The most important tree is the Sundari tree after which the Sunderbans are named.
- The tree provides hard, durable and strong wood which is used for building boats and boxes. Royal Bengal Tiger is the famous animal in these forests.
- Turtles, crocodiles gharials and snake are also found in these forests.

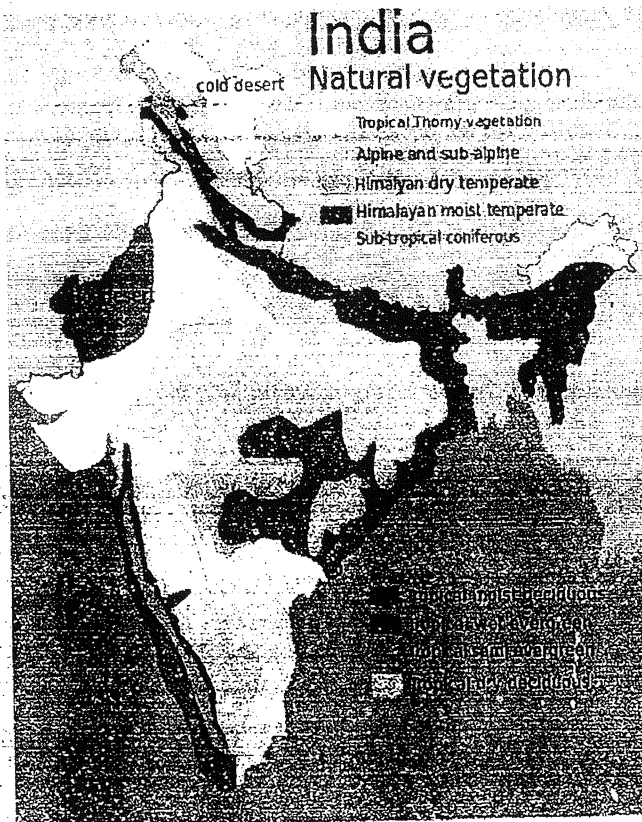


Fig. 5  
Distribution of forests in India



Fig. 6  
Mangrove forest



Fig. 7  
Desert vegetation

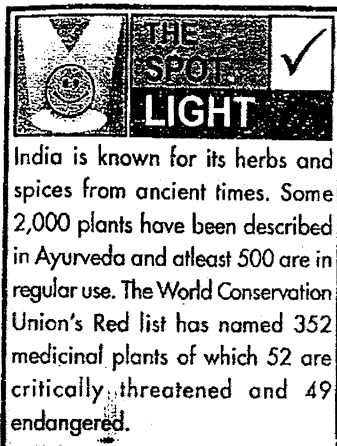
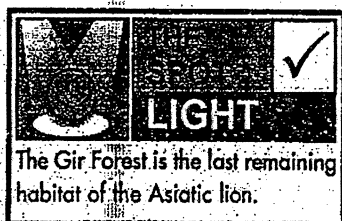


Fig. 9  
Indian Wild Ass



## 18.5 Wild life

- Like its flora, India is also rich in its fauna.
- It has more than 89,000 of animals species.
- The country has more than 1200 species of birds.
- They constitute 13% of the world's total.
- There are 2500 species of fish, which account for nearly 12% of the worlds stock.
- It also shares between 5 and 8 per cent of the world's amphibians, reptiles and mammals. The elephants are the most majestic animals among the mammals. These are found in the hot wet forests of Assam, Karnataka and Kerala.
- One-horned rhinoceroses are the other animals, which live in swampy and marshy lands of Assam and West Bengal.
- Arid areas of the Rann of Kachchh and the Thar Desert are the habitat for wild ass and camels respectively. Indian bison, nilgai (blue dull), chousingha (four horned antelope), gazel and different species of deer are some other animals found in India. It also has several species of monkeys.



Fig. 8

## 18.6 Conservation measures

Due to excessive exploitation of the plants and animal resources by human beings, the ecosystem has been disturbed. About 1,300 plant species are endangered and 20 species are extinct. Quite a few animal species are also endangered and some have become extinct.

The main causes for this major threat to nature are hunting by greedy hunters for commercial purposes. Pollution due to chemical and industrial waste, acid deposits, introduction of alien species and reckless cutting of the forests to bring land under cultivation and inhabitation, are also responsible for the imbalance. To protect the flora and fauna of the country, the government has taken many steps.

- Fourteen biosphere reserves have been set up in the country to protect flora and fauna. Four out of these, the Sunderbans in the West Bengal, Nanda Devi in Uttaranchal, the Gulf of Mannar in Tamil Nadu and the Nilgiris (Kerala, Karnataka and Tamil Nadu) have been included in the world network of Biosphere reserves.
- Financial and technical assistance is provided to many Botanical Gardens by the government since 1992.
- Project Tiger, Project Rhino, Project Great Indian Bustard and many other eco-developmental projects have been introduced.
- 89 National Parks, 490 Wildlife sanctuaries and Zoological gardens are set up to take care of Natural heritage.

All of us must realise the importance of the natural ecosystem for our own survival. If it is possible the indiscriminate destruction of natural environment is put to an immediate end.

## EXERCISE # 1

## FORMATIVE ASSESSMENT

### Multiple choice questions

1. Plants which have grown naturally without human effort.  
(1) Exotic plant      ~~(2) Virgin vegetation~~  
(3) Endemic plants      (4) All of these
2. Narrow belt of living organism is  
~~(1) Biosphere~~      (2) Atmosphere  
(3) Lithosphere      (4) Troposphere
3. Trees grow faster in which of the following seasons.  
(1) Winter      ~~(2) Summer~~  
(3) Rainy season      (4) Autumn
4. Which of the following types of vegetation grows in the sandy soil of the deserts?  
(1) Coniferous trees  
(2) Grass lands  
(3) Mangroves  
~~(4) Cactus & thorny bushes~~
5. Which of the following terms is used to denote plants of a particular region or period?  
(1) Ferns      ~~(2) Flora~~  
(3) Fauna      (4) None of these
6. Which of the following types of vegetation grows in areas with mean annual average temperature of above 24°C?  
~~(1) Tropical~~      (2) Subtropical  
(3) Temperate      (4) Alpine
7. The character and extent of vegetation are mainly determined by which of the climatic factors?  
(1) Temperature      (2) Humidity  
(3) Precipitation      ~~(4) All of the above~~
8. Which of the following types of vegetation grows in wet, marshy soil?  
(1) Grasslands      ~~(2) Mangroves~~  
(3) Cactus      (4) Alpine vegetation
9. At which of the following places are Royal Bengal Tigers found?  
(1) Mahanadi delta  
(2) Godawari delta  
(3) Kaveri delta  
~~(4) Sunderban delta~~
10. Which of the following term is used for plants which are at present part of natural vegetation but have originally come to India from abroad?  
(1) Indigenous plants      (2) Endemic species  
(3) Endangered plants      (4) Exotic plants
11. Which of the following types of vegetation does not belong to the category of natural vegetation?  
(1) Forests      (2) Mangroves  
(3) Grasslands      (4) Horticulture
12. Which of the following positions does India occupy in the world with regards to plant diversity?  
(1) Fourth      (2) Sixth  
(3) Tenth      (4) Twelfth
13. Which among the following natural vegetations is most predominant in India?  
(1) Tropical deciduous forest  
(2) Alpine forest  
(3) Thorny bushes  
(4) Mangrove forest
14. Which one of the following is the Biosphere Reserve of India?  
(1) Gir      (2) Nilgiri  
(3) Kanheri      (4) None of these
15. The wet temperate type of forests are found between a height of  
(1) 1000 - 2000 mts      (2) 3000 - 4000 mts  
(3) 8000 - 9000 mts      (4) 800 - 900 mts
16. Which of the following forest is the last remaining habitat of the Asiatic lion.  
(1) The Gir forest      (2) The Evergreen forest  
(3) The Sundarban forest      (4) The Madhuvan forest
17. In which of the following state is the simlipal bio-reserve located?  
(1) Punjab      (2) Delhi  
(3) Orissa      (4) West Bengal
18. Dachigam in Jammu and Kashmir is a  
(1) National Park      (2) Wildlife Sanctuary  
(3) Bird Sanctuary      (4) Reserve forest



19. The Yak, Shaggy-horned wild ox and the Tibetan antelope are found in which one of the following  
 (1) Tibet (2) Uttarakhand  
 (3) Himachal Pradesh (4) Ladakh

20. How do forests influence the climate of a place ?  
 (1) Modify local climate  
 (2) Control wind force and temperature  
 (3) Cause rainfall  
 (4) All of these

#### True or false

- The mangrove tidal forests are found in the areas of coasts influenced by tides.
- The natural vegetation consists of only thorny trees and bushes having the rainfall 200 cm.
- Tropical deciduous forests area also known as monsoon forests.
- India has more than 1200 species of birds, 2500 species of fish.
- Temperate forest plants are Palms, Acacia.
- Photo period is the duration of sunlight.
- Narrow belt of living organisms is biosphere.
- Thorn and scrub forests are covered with snow and ice.

#### Fill in the blanks

- \_\_\_\_\_ plants which have come from outside India.

- All forms of animals found on the earth in natural environment are called \_\_\_\_\_.
- The \_\_\_\_\_ forest are found in the deltas of Ganga, Mahanadi, Godavari and Kaveri.
- \_\_\_\_\_ plant is used to cure cough and cold.
- Tropical thorn forests occurs in the areas which receives rainfall less than \_\_\_\_\_.
- Plants occurs in distinct groups of communities in areas having similar climatic conditions are known as \_\_\_\_\_.
- \_\_\_\_\_ plants are purely Indian plant species.
- Financial and Technical assistance is provided to many \_\_\_\_\_ by the Government since 1992.

#### Match the column

Column-I	Column-II
(1) Tropical deciduous forest	(a) Implemented in 1972 in India.
(2) Wildlife Protection Act	(b) Monsoon forest
(3) Kachnar plant	(c) Uttaranchal
(4) Nanda Devi	(d) Used to cure asthma & ulcers
(5) Gulf of Mannar	(e) Has high antibiotic and antibacterial properties.
(6) Neem	(f) Tamil Nadu

### EXERCISE # 1

### ANSWER KEY FORMATIVE ASSESSMENT

#### Multiple choice questions

Q. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	2	1	2	4	2	1	4	2	4	4	4	3	1	2	1	1	3	2	4	4

#### True or false

1. True 2. False 3. True 4. True 5. False 6. False 7. True 8. False

#### Fill in the blanks

1. Exotic plants 2. Fauna 3. Mangrove forests 4. Tulsi plant 5. 70 cm 6. Ecosystem  
 7. Endemic 8. Botanical gardens

#### Match the column

1. (1) → b ; (2) → a ; (3) → d ; (4) → c ; (5) → f ; (6) → e



## EXERCISE # 2

## SUMMATIVE ASSESSMENT

### Very short answer type questions

1. Distinguish between 'Natural Vegetation' and 'Vegetation'. Give examples.
2. Why has India a rich heritage of flora & fauna ?
3. Why there is a need to conserve bio-diversity?
4. Distinguish between dry deciduous and moist deciduous forests.
5. Give a brief description of temperate forests.
6. Discuss the type of vegetation found in a thorn forest.
7. Write a short note on the flora and fauna of India.
8. What is an Ecosystem ? How do the human beings influence the ecology of a region ?
9. What are the principle features of the Wildlife Protection Act, 1972 ?
10. What do you mean by natural resources ? What is their importance ?

### Long answer type questions

1. Name the different types of vegetations found in India and describe the vegetation of high altitudes.
2. What are the main characteristics of tropical rain forest ?
3. Give a brief account about the wildlife of India.
4. Why are some of the animals and plants endangered in India ? How can they be protected ?
5. Why forests are important for human beings ? Explain.
6. Distinguish between the Tropical Evergreen forest and Tropical Deciduous forest.
7. Write a note on the formation and distribution of mangrove forest in India.
8. What type of dangers does the wildlife sanctuaries of India face ? How can they be protected better ? Write a brief note on each.

## NCERT QUESTIONS WITH ANSWERS

1. Choose the right answer from the four alternatives given below :-

(i) To which one of the following types of vegetation does rubber belong to ?

- (a) Tundra                      (b) Himalayan                      (c) Tidal                      (d) Tropical Evergreen

**Ans.** Tropical Evergreen

(ii) Cinchona trees are found in the areas of rainfall more than :

- (a) 100 cm                      (b) 70 cm                      (c) 50 cm                      (d) Less than 50 cm

**Ans.** More than 100 cm

(iii) In which of the following states is the simplipal bioreserve located ?

- (a) Punjab                      (b) Delhi                      (c) Orissa                      (d) West Bengal

**Ans.** Orissa

(iv) Which one of the following bio-reserves of India is not included in the world network of bioreserve ?

- (a) Manas                      (b) Gulf of Mannar                      (c) Sunderbans                      (d) Nanda Devi

**Ans.** Manas

2. Answer the following questions briefly.

(i) Define an ecosystem.

**Ans.** An ecosystem comprises plants and animals existing interdependently and inter-related to each other in their physical environment.

(ii) What factors are responsible for the distribution of plants and animals in India ?

**Ans.** The distribution of plant and animal life in India is determined by the following :

- (a) Temperature along with humidity in the air, precipitation and the nature of the soil.
  - (b) Variation in sunlight due to variations in latitude, height above sea level, season and duration of the day in any specific region.
  - (c) Amount of rainfall.
  - (d) Soil conditions
  - (e) Relief -- mountains, plateaus or plains.
- (iii) What is a bio-reserve ? Give two examples.

**OR**

What is a biosphere reserve ? What is their importance ?

**Ans.** Bio-reserves are intended to protect and conserve the diverse flora and fauna found within the country. In these reserves every plant and animal species is protected in its natural form. The first bio-reserve camp up at the trijunction of the state of Kerala, Tamil Nadu and Karnataka in 1986. Two years later another bioreserve was set up at Nanda Devi.

(iv) Name two animals having habitat in different types of vegetation.

**Ans.** Type of vegetation

Plants

Animals

Tropical Rainforests

Rosewood, Ebony

Elephants, Monkeys

Tropical Deciduous Forests

Teak, Sal

Lion, Tiger

Thorn Forests

Palms, Acacia

Rats, Rabbits

Temperature forests

Oak, Chestnut

Yak, wild sheep

Alpine and Tundra Vegetation

Pines, Silver fir

Snow Leopard, Yak

3. Distinguish between :

- (i) Flora and Fauna
- (ii) Tropical evergreen and deciduous forests

**Ans.** (i) Fauna refers to species of animals found in an region. Flora denotes plants of particular region.  
(ii) Tropical evergreen forests are found in areas with rainfall exceeding 200 cm in a year. Trees reach heights up to 60 m in these forests. The vegetation is luxuriant. There is no definite time for the trees to shed leaves. A large number of species exist together in such forests. Important trees are ebony, mahogany, rosewood, rubber and cinchona. Deciduous forests are spread over the region where the rainfall ranges between 70-200 cm annually. In dry summer, the trees shed their leaves for six to eight weeks. Commercially important wood is found in these forests. Important trees are teak, sal, shisham. etc.

4. Name different types of vegetation found in India and describe the vegetation of high altitudes.

**Ans.** The different types of vegetation found in India are :

Tropical rainforests, Tropical Deciduous forests, Thorn forests, Temperate forests, Alpine and Tundra vegetation.  
Alpine vegetation is found at places over 3,600 m in height. The trees common to these are silver fir, junipers, pines and birches.

The trees get stunted as they reach the snow line. There are shrubs and scrubs that ultimately merge into Alpine grasslands. Tundra vegetation is limited to lichens and mosses.

5. Quite a few species of plants and animals are endangered. Why ?

**Ans.** The main reason for extinction of certain species of plants is excessive commercialization. Plant species are endangered as more lands are being cleared for factories, housing colonies and roads. Pollution of air, water and soil adds to the danger to natural vegetation. Animal species are getting extinct due to hunting and poaching. Commercial exploitation of forestlands has also reduced space for animal habitats.

6. Why has India a rich heritage of flora and fauna ?

**Ans.** India has a rich heritage of fauna and flora as geographically the country has a very wide range of physical, climatic and soil conditions. Our tradition of respecting all forms of life has also contributed to the preservation of plant and animal species over the centuries.

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