16
LIFE IN THE HIGH LATITUDES

16.1 INTRODUCTION

In the previous lesson, we have studied about two natural region of Mid-latitudes-Mediterranean region and Mid-latitude grasslands. In this lesson, we will study the environmental conditions and human response in the Taiga and Tundra region of high latitudes.

16.2 OBJECTIVES

After studying this lesson, you will be able to :

- locate the Taiga and the Tundra regions on the world map;
- explain the effects of climate on natural vegetation and animal life in Taiga and Tundra regions;
- establish relationship between the human activities and natural environmental conditions of these regions;
- describe the major human activities pursued by the people living in these regions;
- explain reasons for the variation in human response in different parts of the some natural region.

16.3 HIGH LATITUDE REGIONS

High latitudes regions lie roughly beyond 50^0 latitude in the northern hemisphere. These regions are found only in the northern hemispheres as no large inhabited landmasses lie in the southern hemisphere. We will study about the natural environment and its impact on human activities in the Taiga and the Tundra regions.

16.4 THE TAIGA REGION

The 'Taiga' is a Russian word used for coniferous forests of Siberia. The coniferous forests of Siberia are typical of this region and that is why the name Taiga is used for coniferous forests of both Eurasia and North America.

(i) Location and Areas

This region is confined only to the northern hemisphere in Eurasia and North America (North of about 50^0 north latitude). To the north of this region lies the Tundra region. To the south, it merges with the temperate grasslands of Eurasia and North America. This region is also called 'Sub Arctic Region.' The Taiga region stretches as an almost continuous belt from Alaska to Labrador in North America. In Eurasia, it extends from the Scandinavian highlands across Sweden, Finland, Northern Russia to Kamchatka Peninsula on the Pacific coast. (see fig. 16.1)

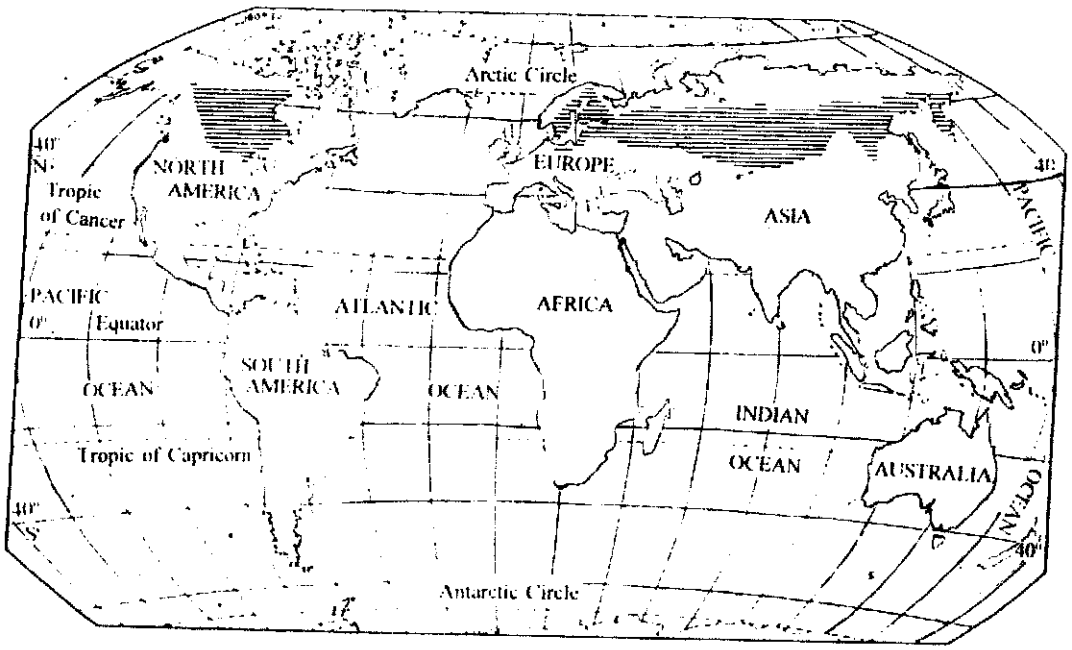
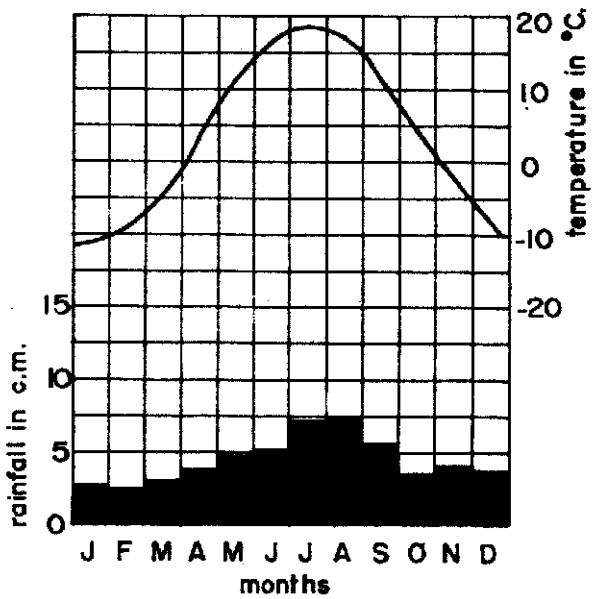


Fig 16.1 The Taiga Regions of the World.

- Taiga is a Russian word used for coniferous forests of Siberia. Hence the regions of coniferous forests of North America and Eurasia are called Taiga regions.
- The Taiga region is located only in the northern hemisphere.
- This region lies between the Tundra regions in the north and temperate grasslands in the south.
- This region extends in the form of a belt running East - West covering the parts of Alaska, Canada, Sweden, Finland, Northern Russia upto Kamchatka peninsula.

(ii) Climate

The Taiga is a region of long and severe winters with short and cool summers. For instance, Moscow at 51° north latitudes has the lowest mean monthly temperature of - 11.1°C in January and 18.9°C in July (see table on page 69). Thus, the mean annual range of temperature is as high as 30°C. (see fig. 16.2). Mean monthly temperatures remain below freezing point for five to six months in a year. Varkhoyansk located in north east Siberia at 68° north latitude is the coldest place in the northern hemisphere. (see fig. 16.2)



For detail about the data please refer to the page no. 69

Fig. 16.2 Temperature & Precipitation Graphs of Moscow

With such low temperatures in the winter season, heavy snowfall is experienced for several months. In some areas, frosts occur as early as August and September. Lakes and ponds become icebound. Siberian rivers remain frozen for nearly seven months in a year. Northerly Polar winds blow at a velocity of about 80 km. an hour causing severe snow storms which are known as ***Blizzards*** of Canada and ***Buran*** of Eurasia.

The Taiga region in Siberia receives precipitation of about 40 to 60cm annually. Maximum amount of precipitation is received in summer. In a region where temperature remain low, evaporation is not rapid, relative humidity is high and the ground remains damp for a long period, even a small amount of precipitation is adequate in the growth of trees.

Siberia is exceptionally marshy because the frozen rivers melt much earlier in their upper reaches while their lower reaches are still frozen. This is because the rivers are flowing from the south to the north. The river water, therefore, spread over large areas making them marshy.

* In Taiga regions, the winters are long and severe whereas the summers are short and cold.
* The mean annual range of temperature in these regions is very high.
* Varkhoyansk is the coldest place in the northern hemisphere.
* The Taiga region of Siberia receive precipitation of about 40 to 60cm.

(iii) Natural Vegetation and Animal Life

Coniferous trees are well adapted to the severe climatic conditions of the Taiga region. A thick bark protects the trees from severe cold. Their sloping and flexible branches allow the snow to slide down quickly, so that the weight of snow does not break them. Their leaves are needle like to prevent excessive transpiration. They are called coniferous trees since they bear cones. These forests are evergreen. There is an absence of undergrowth because the podzol soils of these regions are poor in fertility and acidic in nature.

The major species in the coniferous forests are pine, fir, spruce and larch. The species being few and in pure stands, unlike the equatorial forests, these forests can be commercially exploited easily. The coniferous forests are the richest sources of soft wood and can be used for paper and pulp, synthetic fibres, matches, furniture and building construction.

The taiga region abounds in wild life as the coniferous forest growth provides them with food and seclusion. Caribou, mouse and elk are forest browsers. The beaver, fisher, fox, mink, muskrat, otter, ermine, wolverine etc. are the fur bearing animals. The fur trade of these regions largely depends on these animals. Bear, wolf, lynx, hare and squirrel are other animals. These forests are also the natural habitat of a large number of birds. During winter these birds migrate to warmmer areas in the south.

* The coniferous trees have thick bark and needle like leaves to prevent excessive transpiration.
* Coniferous forests are evergreen.
* There is absence of undergrowth because the soils are poor and acidic.
* Pine, fir, spruce and larch are the major species of trees in coniferous forests
* Commercial utilisation of these forests is easy as they are found in pure stands
* Many fur bearing animals like beaver, fisher, fox, mink, muskrat, otter, ermine, wolverine etc. are found here.

(iv) Resources

The most important resource of the Taiga region is soft wood timber. Coniferous forests also abound in fur bearing animals. Long severe cold winters, short cool growing season and poor soil has restricted farming activities to southern areas. Many metallic and non-metallic minerals are found in these regions. The Laurantian uplands of Canada are rich in mineral such as nickel, gold, copper, cobalt, iron, uranium and silver. High quality iron-ore deposits are found in Sweden. Kola peniusula in Russia is known for the deposits of apatite, a source of phosphate fertilizer and nephaline, important for its use in aluminium and ceramic industry. Coal and petroleum are exploited in Pachora Basin in Russia. Lack of coal and petroleum in some areas of this region has made water an important resource for generating hydro-electric power.

* Nickel, gold, copper, cobalt, iron, uranium, silver, petroleum, apatite and nephaline are the important minerals found in the Taiga region.

(v) Human Response

The harsh and unfavourable climate of the Taiga region has discouraged human habitation. Distance are large and vast expanses of territory are sparsely populated. Most of the people of this region are engaged in lumbering, hunting, fishing and fur trading.

(a) Lumbering : It is the most important economic activity of the people of the Taiga region, particularly in Canada, Scandinavia and European Russia. The word lumbering covers felling of trees, cutting them into logs and hauling them to the rivers for transport by water. Lumbering in Canada is done in a highly organized manner. The people engaged in this activity in Canada are known as lumberjacks. Lumbejacks or woodcutters go to the Taiga for-

ests in large groups during the winter where they set up camps with all kinds of facilities. The lumberjacks cut trees with the help of automatic saws, affterwards, the logs of wood are carried to the frozen streams, when the ice melts, the logs float on water and reach the mills, situated on the banks of the rivers.

The coniferous forests in Canada, Scandinavia and Russia have been utilized very systematically. Afforestation is undertaken on a large scale in the places where the trees have been cut. This ensures continuous supply of soft wood.

(b) Hunting and Fishing : The Lapps, Samoyeds and Yakuts of Eurasia live by hunting, trapping and fishing. Fur bearing animals are a prize catch fetching good returns for their fine fur. Silverfox, squirrel, muskrat, mink and ermine are the main animals trapped or hunted for their valuable fur. Now a days special farms have been set up to rear fur bearing animals.

(c) Agriculture : Agricultural development has not taken place in Taiga region. Long and cold winters, a short growing season, thin and infertile soils discourage agricultural activity. Agriculture is therefore, confined to only a few pockets where soils are fertile and climatic conditions are favourable, potatoes, turnips, radishes, peas and cabbage are grown for local consumption.

(d) Manufacturing industry : In the Taiga region it is based on forest products. Availability of soft wood and abundance of hydro-electric power have made these regions the leading producers of pulp and paper in the world. The southern edge of the Taiga forest in Canada is dotted with saw mills. Sweden and Finland are also famous for their forest based industry. The manufacturing industry in Russia is located along the Trans Siberian railway.

* The Taiga region is sparsely populated.
* Most of the people of this region are engaged in lumbering, fur trading, hunting and fishing.
* Manufacturing industry in the Taiga region is based on forest products.

INTEXT QUESTIONS 16.1

1. Answer the following questions very briefly:

(i) Name the natural regions to the north and south of Taiga region?

(a) _____ (b) _____.

(ii) Which is the coldest place in the northern hemisphere?

_____.

(iii)Name four major species of trees found in the Taiga forest.

(1)_____(2)_____(3)_____

(4)_____

(iv)Name any four fur bearing animals found in the Taiga region.

(1)_____(2)_____(3)_____

(4)_____

(v) What is the most important economic activity in the Taiga region?

_____.

(vi)Name the region known for the deposits of apatite and nephaline.

_____.

(2) Fill in the blanks with suitable words given in the bracket.

(lumbering, forest and soft)

(a) Manufacturing industry in the Taiga region is based on _____ products.

(b) The Taiga forests are known for their _____wood.

(c) The occupation related to cutting, logging and hauling of lumber is called _____.

16.5 TUNDRA REGION

(I) Location and Areas

The vast lowlands bordering the Arctic Ocean are called Tundra Region. These are situated between the regions of permanent snow and ice in the north and the coniferous forests in the south. These lands include the coastal strip of Greenland, the barren grounds of North Canada and Alaska in North America and the Arctic coast of Eurasia. Thus, these regions are confined

only to Northern Hemisphere. (see fig. 16.3)

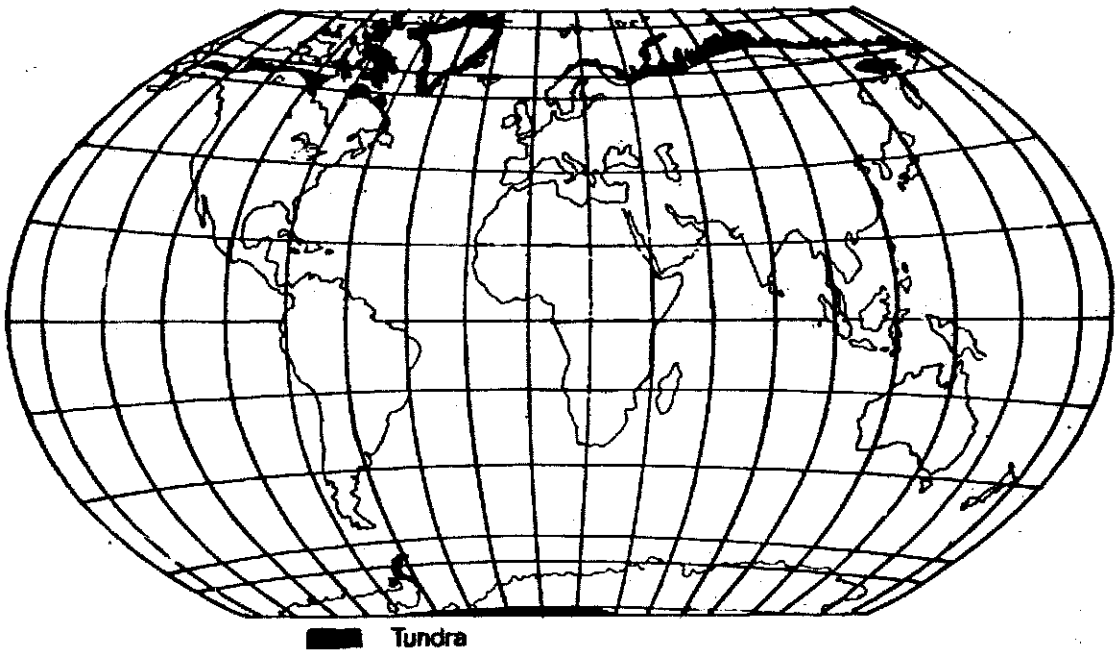


Fig 16.3 The Tundra Regions of the world

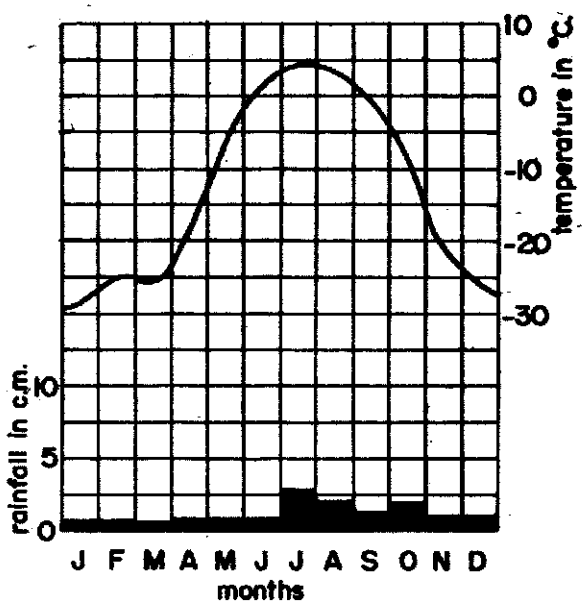
* Low lying areas located between the permanent ice covered areas in the North and Taiga forests in the South are called Tundra region.
* Tundra region include coastal strips of Greenland, the barren grounds of Canada and Alaska in North America and the Arctic Coast of Eursia.

(ii) Climate

The Tundra climate is characterised by a very low mean annual temperature. Even in the warmest month the temperatures seldom rise above 10°C. Winters are long and very cold. The ground remains covered with snow and ice for most parts of the year. Water in the soil is frozen to great depths and the summer heat can thaw only the upper 15 cm of the soil. Below this layer, the soil remains permanently frozen. Frost is common over the whole year and blizzards of high velocity are very frequent. Summers are short and cold.

Annual precipitation is bout 25 cm or less and most of it is received as snowfall due to extremely low temperature and the fact that most of the precipitation is received as snowfall, tree growth is not favourable. Hence

this region is called cold desert.



For detail about the data please refer to the page no. 69

Fig 16.4 Temperature and Precipitation Graph of Barrow Point

- Tundra climate is characterised by a very low mean annual temperature.
- Winter are long and very cold while summers are short and cold. The ground remain covered with snow and ice for a major part of the year.
- Snow blizzards are very frequent in Tundra region.
- Annual precipitation is very low and that to is received mainly in the form of snowfall.

(iii) Natural Vegetation and Animal Life

In the adverse environment of Tundra, only a few plants can survive. The greatest inhibiting factor is the deficiency of heat in this region. The short growing season of less than three months and the low annual mean temperature do not allow the growth of trees except some stunted tree such as dwarf willow and the lowest forms of vegetation such as mosses, lichens and sedges. Drainage in the tundra is usually poor. In the brief summer, when the snow melts and the days are warmer and longer, the small vegetation bursts into life and the whole region looks like a carpet of flowering plants and grasses. These provide pastures for reindeer. Ponds, marshes and

water logged areas are found in low lying region. During the short summer, the tundra is full of life. Birds migrate northwards to prey on numerous insects which emerge when the snow melts. Besides, the reindeer, wolves, foxes, musk-ox, artic hare, seal and lemmings also live in this region.

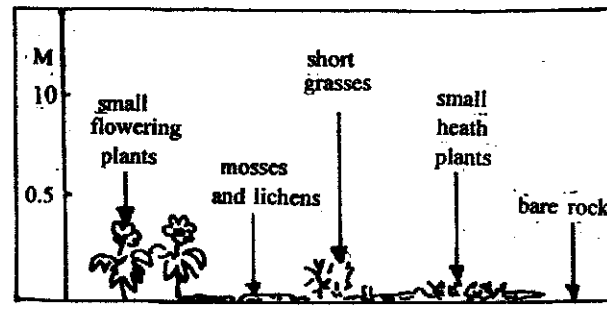


Fig 16.5 Tundra Vegetation

* The harsh environment of the Tundra desert do not favour the growth of trees. Only moses, lichens and sedges grow here,
* During the brief summer when the snow melts and days are relatively warmer and longer, the small plants burst into life and whole of this region is covered by small flowering plants.
* Raindeer, wolves, foxes, muskox, arctic hare are the important animals of this region.

(iv) Resources

The Tundra region may be described as the great expanse of waste land devoid of any useful vegetation for the most part of the year. Animals are fairly abundant and they provide most of the necessities of the people living there. As the natural environment is very harsh, the people lead nomadic life. But the discovery of some useful minerals has played a very important role in the lives of the people. Gold and petroleum in Alaska, nickle near Petsamo in Russia and copper at the Rankin Inlet, Canada are mined. Coal has been mined at Spitsbergan for a long time. Labrador has iron ore depostis.

* The Tundra region has abundant animal life which provide most of the necessities of the people living there.
* Minerals such as gold, petroleum, nickle, copper, coal and iron are found in this region.

(v) Human Response

The harsh environment of these regions supports extremely low population

density. The tribes of Samoyeds, Lapps, Finns and Yakuts in Eurasian Tundra and Eskimos of Canada and Alaska lead nomadic life. They constantly struggle against the nature for their survival. Reindeer in Eurasia and Caribou in Canada are very important animals. Reindeer is used as a beast of burden and also provides milk. When killed, its flesh is used as food and skin is used for clothing and tent covers. Horns and bones are used for utensils and weapons and for thread. The primary occupations of the people of these regions are hunting and fishing. They wander about with their skin tents in summer, hunting for animals and fishing in rivers along the coasts. During winter, they migrate to the southern edge of their regions, where they live in tents, whereas in the interior parts, they live in igloos. Sledges drawn by dogs on the snow covered grounds are the chief means of transport. Furs and skins are the chief products of regions and the principal articles of trade of these regions.

External contacts have led to changes in the life styles of these people. Some of them now live in permanent settlements in wooden houses. They use modern boats for fishing. Farms have been established in the Russia for rearing reindeer and fur bearing animals.

The recent discoveries of minerals such as gold and mineral oil in Alaska, iron ore in Labrador, nickle in Siberia have encouraged the growth of mining settlements and development of transport facilities. Sledges are now being replaced by automachines.Vegetables are being cultivated in green houses during summer. Ports have been established along the coast of Siberia and the seas route is kept open by the use of ice-breakers. Arctic region has also become important for trans-continental flight. The development in the field of science and technology have made economic progress of this region possible despite harsh environmental conditions.

- The tribes of Samoyeds Lapps, Finns and yakuts in Eurasian Tundra and Eskimos of Canada and Alaska lead nomadic life.
- Reindeer and caribou are very useful animals for the people living in these regions.
- Furs and skins are the chief articles of trade.
- Discovery of various minerals has encouraged the growth of mining setlements and transport facilities.

INTEXT QUESTIONS 16.2

1. Fill in the blanks

   (a) The annual precipitation in Tundra region is about _____ or less.

   (b) The greatest inhibiting factor in the growth of plant life in this region is _____ temperature.

(c) _____ in Eurasia and _____ in Canada are very important animals of Tundra region.

2. Answer very briefly

(i) Name four animals of Tundra region

(1)_____(2)_____(3)_____

(4)_____

(ii) Which is the principal article of trade of this region?

_____

(iii)In which country have the farms been established to rear the reindeer and fur bearing animals?

_____

(iv)Which are the four important minerals found in these regions?

(1)_____(2)_____(3)_____

(4)_____

(v) What are the main climatic characteristics of Tundra regions?

_____

WHAT YOU HAVE LEARNT

We have studied about the life of people living in Taiga and Tundra regions of high latitudes. As we move from Taiga region to the Tundra region, the climate becomes more severe and harsh. The growing period also goes on decreasing, as a result coniferous forests are replaced by mosses, lichens and sedges in the Tundra region where ground remains frozen for most part of the year. The harshness of the natural environment of these regions has made the people very hardworking for there survival. Lumbering is an important economic activity in Taiga region whereas hunting trapping and fishing are the main economic activities of Tundra region. The development of science and technology has brought about changes in the lifestyle of people in the Tundra regions.

TERMINAL QUESTIONS

1. Describe the climate and natural vegetation of the Taiga region.
2. Why is lumbering a predominant activity in the Taiga regions?
3. Why is there little undergrowth in evergreen coniferous forests of the Taiga region?
4. How has the climate affected the growth of vegetation in Tundra region?
5. Describe human activities in relation to climatic condition found in Tundra region.
6. Who are lumberjacks? When do they go to cut the trees and why?

CLIMATIC DATA OF TWO STATIONS OF HIGH LATITUDES
T for Temperature in °C (degree celsius); P for Precipitation in Centimetres

Station	Natural Region	Location	Altitude in in Metres	T/P	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Moscow	Taiga Region	51 °N	146	T	-11.1	-9.4	-4.4	3.3	11.7	16.7	18.9	17.2	11.1	4.4	-2.2	-8.3
		37 °E		P	2.8	2.3	3.0	3.8	4.8	5.1	7.1	7.4	5.6	3.6	4.1	3.8
Barrow	Tundra Region	71 °N	6	T	-28.3	-25.0	-25.6	-18.9	-6.1	1.7	4.4	3.9	-0.6	-8.9	-21.7	-26.1
Point		156 °W		P	0.8	0.5	0.5	0.8	0.8	0.8	2.8	2.0	1.3	2.0	1.0	1.0

7. Study the above climatic data and answer the following question.

   (i) Which place records temperatures below freezing point for longer duration?

   (ii) which place experience summer for a longer duration?

   (iii)Which place receives higher precepitation?

CHECK YOUE ANSWER

INTEXT QUESTION

16.1

(i) (a) Tundra (b) Mid-latitude grasslands

(ii) Varkhyoansk (iii) 1. Pine, 2. Fir 3. spruce 4. larch

(iv) beaver, fox, mink, fisher, musk rat, otter, ermine, wolverine (any four) (v) Lumbering (vi) Kola peninsula

2. (a) forest (b) soft (c) Lumbering

16.2

1. (a) 25 cm (b) low (c) Reindeer, Caribou
2. (i) Reindeer, Caribou, Polar beer, Arctic hare, Fox, Musk-ox(ii) fur

   (iii) Russia (iv) gold, mineral oil, iron ore, nickle

   (v) Brief and cold summer and long and severly cold winter, frozen ground for most part of the year.

TERMINAL QUESTIONS

1. Refer to section 16.4(ii) and (iii)
2. Refer to section 16.4 (v)
3. Refer to section 16.4 (ii) and (iii)
4. Refer to section 16.5 (ii) and (iii)
5. Refer to section 16.5 (ii) and (v)
6. Refer to section 16.4 (v) (a)
7. (i) Barrow Point; (ii) Moscow and (iii) Moscow.