

NCERT SOLUTIONS

CLASS - 11th



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Subject : Geography

Chapter : 12

Chapter Name : World Climate and Climate Change

Q1 Multiple choice questions.

(i) Which one of the following is suitable for Koeppen's "A" type of climate?

- (a) High rainfall in all the months
- (b) Mean monthly temperature of the coldest month more than freezing point
- (c) Mean monthly temperature of all the months more than 18o C
- (d) Average temperature for all the months below 10° C

(ii) Koeppen's system of classification of climates can be termed as :

- (a) Applied
- (b) Systematic
- (c) Genetic
- (d) Empirical

(iii) Most of the Indian Peninsula will be grouped according to Koeppen's system under:

- (a) "Af"
- (b) "BSh"
- (c) "Cfb"

(d) “Am”

(iv) Which one of the following years is supposed to have recorded the warmest temperature the world over?

(a) 1990

(b) 1998

(c) 1885

(d) 1950

(v) Which one of the following groups of four climates represents humid conditions?

(a) A—B—C—E

(b) A—C—D—E

(c) B—C—D—E

(d) A—C—D—F

Answer.

(i) (a) High rainfall in all the months

(ii) (d) Empirical

(iii) (d) “Am”

(iv) (b) 1998

(v) (b) A—C—D—E

Page : 106 , Block Name : Multiple Choice Questions

Q2 Answer the following questions in about 30 words.

- (i) Which two climatic variables are used by Koeppen for classification of the climate?
- (ii) How is the “genetic” system of classification different from the “empirical one”?
- (iii) Which types of climates have very low range of temperature?
- (iv) What type of climatic conditions would prevail if the sunspots increase?

Answer.

(i) The two climatic variables used by Koeppen for classification of the climate are temperature and precipitation. He selected certain sets of temperature and precipitation and studies them in relation to the distribution of vegetation and further used these values for classifying the climate.

(ii) The genetic classification tries to classify climates according to their causes whereas empirical classification to classify the climate based on observed data of temperature and precipitation.

(iii) The following types of climates have very low range of temperature.

→ Tropical Wet Climate

→ Tropical Monsoon

→ Tropical Wet and Dry

(iv) Sunspots are dark and cooler patches on the sun which increase and decrease in a cyclical manner. According to some meteorologists, when the number of sunspots increase, cooler and wetter weather and greater storminess occur. A decrease in sunspot numbers is associated with warmer and drier conditions.

Page : 106 , Block Name : Short Answer Question

Q3 Answer the following questions in about 150 words.

- (i) Make a comparison of the climatic conditions between the “A” and “B” types of climate.
- (ii) What type of vegetation would you find in the “C” and “A” type(s) of climate?
- (iii) What do you understand by the term “Greenhouse Gases”? Make a list of greenhouse gases.

Answer.

(i) Group A : Tropical Humid Climates

Tropical humid climates exist between the Tropic of Cancer and Tropic of Capricorn. The sun being overhead throughout the year and the presence of Inter Tropical Convergence Zone (ITCZ) make the climate hot and humid. Annual range of temperature is very low and annual rainfall is high. The tropical group is divided into three types :-

- Af- Tropical wet climate
- Am - Tropical monsoon climate
- Aw- Tropical wet and dry climate

Type	Letter code	Characteristics
Tropical wet climate	Af	Tropical wet climate is found near the equator. Significant amount of rainfall occurs in every month of the year as thunder showers in the afternoon. The temperature is uniformly high and the annual range of temperature is negligible. The maximum temperature on any day is around 30°C while the minimum temperature is around 20°C. Tropical evergreen forests with dense canopy cover and large biodiversity are found in this climate.

Tropical monsoon climate	Am	It is found over the Indian sub-continent, North Eastern part of South America and Northern Australia. Heavy rainfall occurs mostly in summer. Winter is dry
Tropical wet and dry climate	Aw	It occurs north and south of Af type climate regions. It borders with dry climate on the western part of the continent and Cf or Cw on the eastern part. The annual rainfall in this climate is considerably less than that in Af and Am climate types and is variable also. The wet season is shorter and the dry season is longer with the drought being more severe. Temperature is high throughout the year and diurnal ranges of temperature are the greatest in the dry season. Deciduous forest and tree-shredded grasslands occur in this climate.

Group B : Dry Climates

Dry climates are characterised by very low rainfall that is not adequate for the growth of plants. These climates cover a very large area of the planet extending over large latitudes from 15° - 60° north and south of the equator. Dry climates are divided into steppe or semi-arid climate (BS) and desert climate (BW). They are further subdivided as subtropical steppe (BSh) and subtropical desert (BWh) at latitudes from 15° - 35° and mid-latitude steppe (BSk) and mid-latitude desert (BWk) at latitudes between 35° - 60°.

Type	Letter Code	Characteristics
Subtropical steppe	BSh	Evaporation exceeds precipitation on average but is less than potential evaporation. Average temperature is more than. These climates tend to have hot, sometimes extremely hot summers and warm to cool winters, with some to minimal precipitation

Subtropical desert	BWh	Evaporation exceeds precipitation on average but is less than half of potential evaporation. Average temperature is more than 18°. Frost is absent or infrequent. Also known as an arid climate, is a climate that does not meet the criteria to be classified as a polar climate, and in which precipitation is too low to sustain any vegetation at all, or at most a very scanty shrub.
Mid-latitude steppe	BSk	Evaporation exceeds precipitation on average but is less than potential evaporation. Average temperature is less than 18°C.
Mid-latitude desert	BWk	Evaporation exceeds precipitation on average but is less than half potential evaporation. Average temperature is less than 18°C. Winter has below freezing temperatures.

(ii)

Group	Type	Letter Code	Type of vegetation
	Tropical Wet	Af	Tropical evergreen rain forests with dense canopy cover and large biodiversity are found in this climate.
A-Tropical Humid Climate	Tropical Monsoon	Am	Tropical Evergreen Forest
	Tropical Wet and dry	Aw	Deciduous forest and tree-shredded grasslands occur in this climate.

	Humid Subtropical	Cfa	Broadleaf Forest
C-Warm temperate (Mid-latitude) Climate	Mediterranean	Cs	Evergreen Broadleaf forest
	Marine west coast	Cfb	Broadleaf forest

(iii) The atmosphere transmits the incoming solar radiation but absorbs the vast majority of long wave radiation emitted upwards by the earth’s surface. The gases that absorb long wave radiation are called greenhouse gases.

The primary GHGs are :-

- Carbon dioxide (CO₂)
- Chlorofluorocarbons (CFCs)
- Methane (CH₄)
- Nitrous oxide (N₂O)
- Ozone (O₃)

Some other gases such as nitric oxide (NO) and carbon monoxide (CO) easily react with GHGs and affect their concentration in the atmosphere.