

TEACHER'S HANDBOOK



STELLAR LEARNING

Geography

9

On
Board!

BOOKS

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India – Size and Location

Milestone

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Multiple-Choice Questions

- The latitudinal extent of India is between
 - 8°4' North and 37°6' North.
 - 8°2' North and 37°4' North.
 - 6°45' North and 37°6' North.
 - 8°6' North and 37°8' North.

Ans. (a) 8°4' North and 37°6' N

- How much of the total geographical area of the world does India occupy?
 - 32.8 per cent
 - 2.5 per cent
 - 2.4 per cent
 - 10.0 per cent

Ans. (c) 2.4 per cent

Very Short Answer Type Questions

- What is the size of India ranked among the countries of the world?

Ans. India is ranked seventh, as per the size, among the countries of the world.

- What is the name given to the group of islands situated in the Bay of Bengal?

Ans. The group of islands lying in the Bay of Bengal are Andaman and Nicobar Islands.

- Identify the two water bodies that separate India from Sri Lanka.

Ans. The two water bodies that separate India from Sri Lanka are:

- Gulf of Mannar
- Palk Strait

- What is the time difference between Gujarat and Arunachal Pradesh?

Ans. From Gujarat to Arunachal Pradesh, there is a time difference of two hours.

- Name the two island countries which are India's neighbours.

Ans. The two island countries which are India's neighbours are:

- Sri Lanka
- Maldives

Short Answer Type Questions

- State the latitudinal extent of India. What does it imply?

Ans. The latitudinal extent of India is 8°4' N to 37°6' N. This latitudinal extent tends to influence the duration of day and night. The duration of day and night changes as one moves from north to south. The latitudinal and longitudinal extent of our country is almost same in degrees, i.e. about 30°.

- Why was 82°30' east selected to be the Standard Meridian of India?

Ans. We know that the sun rises in the east and sets in the west. In this way, the sun rises two hours earlier in Gujarat as compared to Arunachal Pradesh. It means that sun takes approximately 4 minutes to move across one longitude. There is a time difference of minutes in every longitude. As a result, the eastern most point of India would be 2 hours ahead of the western most point ($30 \times 4 = 120$ minutes), in accordance with the local time. Therefore, each country has selected a central meridian. The local time of this meridian is the standard time of that country. In India, a longitude passing through the midpoint of 68°7' East (western most longitude) and 97°25' East (eastern most longitude) is taken as the standard prime meridian of India (i.e., 82°30'). If this standard meridian wouldn't have been there, all the regions of India would have different time zones. This would have created problems in bringing a uniform time zone in our country.

- The tropic of cancer cuts half-way through India. State its implications.

Ans. The tropic of cancer cuts India into two equal parts, Northern India and Southern India. Northern India experiences continental climate. This means that summers in Northern India are very hot and winters are very cold. Southern India experiences maritime climate that is moderate. Also, the day and night difference exists because of this divide.

Long Answer Type Question

11. Highlight the strategic importance of the geographical location of India. Write in points.

Ans. India's central location has helped the country in a number of ways, namely:

- India is located between East and West Asia. Because of India's location it has a strategic advantage over both water and land.
- Since India stands at the head of the Indian Ocean, it commands trade routes running in all directions.
- Sea routes and the land routes have proved to be a huge passage between India and the world to exchange ideas and commodities.
- Since the location of India is central, it has a moderate temperature which is neither too hot nor too cold.
- Tropic of Cancer passes through India. As a result, India is divided into two equal parts. While in the southern part, i.e. the peninsular India falls in the tropical zone, the northern half lies in the sub-tropical zone or warm temperate zone.

Self-Assessment

Multiple-Choice Questions

1. Which of these island groups do not form a part of India?

- Daman and Diu
- Andaman and Nicobar
- Maldives
- Lakshadweep

Ans. (c) Maldives

2. Name the place situated at the meeting point of on the three seas.

- Kolkata
- Lakshadweep
- Kanniyakumari
- Mumbai

Ans. (c) Kanniyakumari

3. In which of the following Union Territories does Kavaratti lie?

- Puducherry
- Lakshadweep
- Andaman and Nicobar
- Daman and Diu

Ans. (b) Lakshadweep

Assertion-Reason Type Questions

For question numbers 4 to 6, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

- Both A and R are true and R is the correct explanation of A.
- Both A and R are true but R is not the correct explanation of A.
- A is true but R is false.
- A is false but R is true.

4. Assertion (A): India is a vast country.

Reason (R): The main land extends between latitudes 8°4' N and 37°6' N and longitudes 68°7' E and 97°25' E.

Ans. (a) The main land extent of India is between latitudes 8°4'N and 37°6'N and longitudes 68°7'E and 97°25'E, so it is true to say that India is a vast country.

5. Assertion (A): The land mass of India has an area of 3.28 million square km.

Reason (R): India's total area accounts for about 4.2 per cent of the total geographical area of the world.

Ans. (c) Reason (R) is wrong because, India's total area accounts for about 2.4 per cent of the total geographical area of the world.

6. Assertion (A): From Gujarat to Arunachal Pradesh, there is a time lag of three hours.

Reason (R): The time along the Standard Meridian of India (82°30' E) passing through Mirzapur (in Uttar Pradesh) is taken as the standard time for the whole country.

Ans. (d) Assertion (A) is wrong, because from Gujarat to Arunachal Pradesh, there is a time lag of two hours.

Match the Following

7. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A	Column B
A East-West Extent	1 15,200 km
B North-South Extent	2 7,516.6 km
C Length of the Coastline	3 3,214 km
D Land boundary of India	4 2,933 km

Codes:

- | | | | |
|-------|---|---|---|
| A | B | C | D |
| (a) 3 | 4 | 2 | 1 |
| (b) 2 | 4 | 1 | 3 |

- | | | | |
|-------|---|---|---|
| (c) 4 | 3 | 2 | 1 |
| (d) 1 | 3 | 2 | 4 |

Ans. (c)

Find the Incorrect Option

8. (a) Before 1947, there were two types of states in India – the provinces and the princely states.
 (b) India has 28 states and 8 Union Territories.
 (c) The latitudinal and longitudinal extent of the Indian mainland is about 25°.
 (d) The total length of the coastline of the mainland, including Andaman and Nicobar and Lakshadweep, is 7,516.6 km.

Ans. (c)

Find the Correct Sequence

9. Arrange the following countries in ascending order of their areas.
 (a) Brazil, India, USA, Russia
 (b) India, Brazil, USA, Russia
 (c) Russia, Brazil, India, USA
 (d) Russia, USA, Brazil, India

Ans. (b)

Fill in the Blanks

10. India's neighbours with common land boundaries are **Pakistan** and **Afghanistan** in the north west.
 11. The ancient travellers took the **land** routes which were through the mountain passes.
 12. The Indian landmass is centrally located between the east and the **West** Asia.

Very Short Answer Type Questions

13. Name the northernmost latitude of India.

Ans. 37°6' North is the northernmost latitude of India.

14. What is the total latitudinal and longitudinal extent of India's mainland?

Ans. The geographical extents of India are:

- (a) Latitude - 8°4' N to 37°6' N
 (b) Longitude - 68°7' E to 98°25' N

Short Answer Type Questions

15. Explain how a long coastline is beneficial for India.

Ans. Advantages of having a long coastline are as follows:

- (a) Since India has a long coastline, it means it has more ports for its ships. This helps in an easier connectivity with the neighbouring countries. Also, the trade with other countries become easy.
 (b) The longer coastline provides more water for fisheries. This helps in the development and growth of marine industry of the country.
 (c) Indian fisheries in turn benefits ancillary activities such as boat building, plant processing, etc.

- (d) Such a large water resource helps in moderating the climate of the country. It helps to moderate the temperature range of coastal areas through the phenomena like land breeze and sea breeze.

16. Write three main points about how India has contributed in the making of world history.

Ans. India has contributed towards world history in a number of ways. These have been discussed below:

- (a) India had trade relations with other countries through land routes. These land routes are older than the maritime ones.
 (d) Through these routes, the ideas of Ramayana and Upanishads reached various parts of the world.
 (c) India gave the decimal system to the world.

17. 'India is a vast country'. Support the statement with suitable examples.

Ans. India lies entirely in the Northern hemisphere. The main land extends between latitudes 8°4'N and 37°6'N and longitudes 68°7'E and 97°25'E. The Tropic of Cancer divides India into almost two equal parts. To the southwest and southeast of the mainland, lie the Lakshadweep islands and Andaman and Nicobar Islands in Arabian Sea and Bay of Bengal respectively. The total land area of India is 3.28 million square km. India's total area accounts for about 2.4 per cent of the total geographical area of the world.

18. 'India has had strong geographical and historical links with her neighbours'. Support the statement with suitable examples.

Ans. India has a strong geographical and historical link with neighbours because Indian subcontinent is centrally located between east and west Asia. Asian continent connects India through mountain passes and different land routes. India shares its land boundaries with Pakistan and Afghanistan in the north-west, China, Nepal and Bhutan in the north, Bangladesh and Myanmar in the east and Sri Lanka and Maldives in the south.

Paragraph Based Questions

19. Read the sources given below and answer the questions that follow:

Source A – Size

India is the seventh largest country of the world. India has a land boundary of about 15,200 km and the total length of the coastline of the mainland, including Andaman and Nicobar and Lakshadweep, is 7,516.6 km.

- (a) What is the total length of the coastline of the mainland of India?

Source B – India's Neighbours

India shares its land boundaries with Pakistan and Afghanistan in the northwest, China (Tibet), Nepal and Bhutan in the north and Myanmar and Bangladesh in the east.

- (b) Name the country that shares the longest border with India.

Source C – Location

To the southeast and southwest of the mainland, lie the Andaman and Nicobar islands and the Lakshadweep islands in Bay of Bengal and Arabian Sea respectively.

- (c) In which of these Islands India's southernmost point is located?

- Ans.** (a) The total length of the coastline of the mainland, including Andaman and Nicobar and Lakshadweep, is 7,516.6 km.
(b) Bangladesh shares the longest border with India.
(c) Indira Point is the southernmost point of India. It is located in the Andaman and Nicobar islands.

Case Based Questions

- 20.** The Indian landmass has a central location between the East and the West Asia. India is a southward extension of the Asian continent. The trans Indian Ocean routes, which connect the countries of Europe in the West and the countries of East Asia, provide a strategic central location to India. The Deccan Peninsula protrudes into the Indian Ocean, thus helping India to establish close contact with West Asia, Africa and Europe from the western coast and with Southeast and East Asia from the eastern coast. No other country has a long coastline on the Indian Ocean as India has and indeed, it is India's eminent position in the Indian Ocean, which justifies the naming of an Ocean after it. India's relationships with the rest of the world through the land routes are much older than her maritime contacts. The various passes across the mountains in the north have provided passages to the ancient travellers, while the oceans restricted such interaction for a long time. These routes have contributed in the exchange of ideas and commodities since ancient times. The ideas of the Upanishads and the Ramayana, the stories of Panchtantra, the Indian numerals and the decimal system thus could reach many parts of the world. The spices, muslin and other merchandise were taken from India to different countries. On the other hand, the influence of Greek sculpture, and the architectural styles of dome and minarets from West Asia can be seen in different parts of our country.

- 20.1** How can India's position be identified geographically?
- (a) as a south-west extension of the Eurasian continent
(b) as a centrally located landmass between North and South Asia
(c) as a southward extension of the Asian continent
(d) as a strategically blessed landmass with oceans in South and East directions

Ans. (c) as a southward extension of the Asian continent

- 20.2** What makes India a strategically blessed country?
- (a) a long coastline
(b) a long trade route
(c) possible exchange of Indian numerals
(d) access to Northern mountains

Ans. (a) a long coastline

- 20.3** How have the land routes to India contributed to world enlightenment?
- (a) by allowing ancient travellers to trade in the country
(b) by sharing of decimal system
(c) through India's eminent position in the Indian Ocean
(d) through exchange of architectural style

Ans. (b) by sharing of decimal system

- 20.4** What is the dominant idea given in the passage?
- (a) India's relations with the world
(b) India's position in comparison with the world
(c) India's contribution to world's economy
(d) India's importance in Asian continent

Ans. (a) India's relations with the world

- 21.** India occupies an important strategic position in South Asia. India has 28 states and 8 Union Territories. India shares its land boundaries with Pakistan and Afghanistan in the northwest, China (Tibet), Nepal and Bhutan in the north and Myanmar and Bangladesh in the east. Our southern neighbours across the sea consist of the two island countries, namely Sri Lanka and Maldives. Sri Lanka is separated from India by a narrow channel of sea formed by the Palk Strait and the Gulf of Mannar, while Maldives Islands are situated to the south of the Lakshadweep Islands. India has had strong geographical and historical links with her neighbours.

- 21.1** Which are the two new union territories of India?
- (a) Chandigarh and Amritsar
(b) Daman and Diu
(c) Jammu and Kashmir and Ladakh

(d) Andaman and Nicobar

Ans. (c) Jammu and Kashmir and Ladakh

21.2 What was the confirmed number of states as of 2019 in India?

- (a) 29 (b) 28
(c) 24 (d) 31

Ans. (b) 28

21.3 Which of the following countries does not share a border with India?

- (a) Bhutan
(b) Afghanistan
(c) Myanmar
(d) none of these

Ans. (d) none of these

21.4 Complete the statement: Sri Lanka is separated from India by a narrow channel of sea formed by the Palk Strait and the

- (a) Gulf of Mannar
(b) Gulf of Aden
(c) Gulf of Aqaba
(d) Gulf of Kutch

Ans. (a) Gulf of Mannar

Long Answer Type Questions

22. With reference to the Prime Meridian, in which hemisphere does India lie? Mention the value of the Prime Meridian in relation to India.

Ans. Prime Meridian is an imaginary line that divides the earth into eastern and western hemispheres. As per this divide India lies in the Eastern hemisphere. The 82° 30' East Longitude is taken as the Prime Meridian of India. This is the Standard Time Meridian of India which passes through the middle of India. This imaginary line passes through Mirzapur which is based out of Uttar Pradesh. The local time at this meridian is taken as the standard time for the whole country. The value of prime meridian with respect to India is 82.58° E longitude.

23. The Deccan Peninsula is jutting into the Indian Ocean. Explain how it is beneficial to India.

Ans. The Deccan Peninsula is jutting into the Indian Ocean. It is beneficial in the following ways:

(a) It has helped India to establish close contact with West Asia, Africa and Europe from the western coast and with Southeast and East Asia from the eastern coast.

(b) India has a long coastline which is beneficial in a number of ways. This has given India an eminent position in the Indian Ocean.

24. Where do you think the Sun's rays would be direct, on Jammu and Kashmir or on the Great Nicobar island? Give reasons to justify your answer.

Ans. The Great Nicobar lies in the tropical zone. This means that the Andaman and Nicobar islands are closer to the equator as compared to Jammu and Kashmir. Jammu and Kashmir lies in the sub-tropical zone. Now the sun shines vertically on the equator. As a result, places closer to equator get more sunshine and become hotter. Sun rays would be direct on the Great Nicobar as compared to Jammu and Kashmir. On the other hand, the sun's rays would be more oblique or slanting on the northern frontiers of India. Jammu and Kashmir is considered as a part of Indian Northern frontier. Therefore, there would be lesser amount of heat to these areas. Thus, it may be noted that the Great Nicobar Islands lie quite nearer to the equator where the sun's rays are always vertically overhead while Jammu and Kashmir is situated much beyond the Tropic of Cancer where the sun's rays are never vertically overhead.

25. Read the extract and answer the questions that follow:

India's contacts with the world have continued through ages but her relationships through the land routes are much older than her maritime contacts. The various passes across the mountains in the north have provided passages to the ancient travellers, while the oceans restricted such interaction for a long time. These routes have contributed in the exchange of ideas and commodities since ancient times. The ideas of the *Upanishads* and the *Ramayana*, the stories of *Panchtantra*, the Indian numerals and the decimal system thus could reach many parts of the world. The spices, muslin and other merchandise were taken from India to different countries. On the other hand, the influence of Greek sculpture, and the architectural styles of dome and minarets from West Asia can be seen in different parts of our country.

- (a) In context to this passage, write about the importance of land routes in ancient times.
- (b) Land routes helped in the propagation of which ideas throughout the world? Explain.
- (c) Do you think that land routes were easy to travel in ancient times?

Ans. (a) Land routes were helpful in establishing and maintaining trade relationships across the world. In ancient times it was easier to establish contacts with foreign countries

through land routes in comparison to sea routes. These routes have contributed in the exchange of ideas and commodities since ancient times.

- (b) The ideas of the Upanishads and the Ramayana, the stories of Panchtantra, the Indian numerals and the decimal system reached many parts of the world through land routes. The influence of Greek sculpture, and the architectural styles of dome and minarets from West Asia can be seen in different parts of our country. Land routes have played an important role in exchange of ideas throughout the world.
- (c) No, land routes were not easy to travel in ancient times because there were no proper roads and means of transportation.

Let's Compete

Multiple-Choice Questions

1. The latitude which divides India into two equal parts is
- (a) equator (b) Standard Meridian
(c) the tropic of Cancer (d) the tropic of Capricorn

Ans. (c) the tropic of Cancer

2. The Lakshadweep Islands lie in the
- (a) Indian Ocean (b) Bay of Bengal
(c) Arabian Sea (d) Tethys Sea

Ans. (c) Arabian Sea

3. The narrow channel of water which separates India from Sri Lanka is
- (a) Gulf of Mannar (b) Palk Strait
(c) Gulf of Kachchh (d) Bay of Bengal

Ans. (b) Palk Strait

4. The longitude which is taken as the Standard Meridian of India is
- (a) 82°50' E (b) 82°40' E
(c) 82°30' E (d) 82°55' E

Ans. (c) 82°30' E

5. The neighbouring countries of India on the western side are
- (a) Afghanistan and Pakistan
(b) Sri Lanka and Maldives
(c) Nepal and Bhutan
(d) Myanmar and Bangladesh

Ans. (a) Afghanistan and Pakistan

6. A narrow gap found in the mountain ranges is called
- (a) pass (b) valley
(c) island (d) strait

Ans. (a) pass

7. Which of the following states does not share its border with Bhutan?
- (a) Assam (b) Sikkim
(c) Meghalaya (d) Arunachal Pradesh

Ans. (c) Meghalaya

8. Name of the southernmost tip of the Indian mainland.
- (a) Kanniyakumari (b) Kavaratti
(c) Indira Point (d) Palk Strait

Ans. (a) Kanniyakumari

9. Name the latitude from which India starts tapering towards the south.
- (a) 68°7' E (b) 8°4' N
(c) 22° N (d) 23°30' N

Ans. (c) 22° N

10. The tropic of Cancer passes through
- (a) Gujarat (b) Uttar Pradesh
(c) Uttarakhand (d) Maharashtra

Ans. (a) Gujarat

Value-based Questions (Optional)

1. 'India has progressed in a multi-fold socio-economic manner during the last five decades'. Write any three points in favour of this statement.

Ans. In the last five decades, India has undergone a number of socioeconomic developmental processes. In this geographically diverse subcontinent of India, studies from *Upanishads* and *Vedas* have led to the development of various indigenous knowledge systems. After independence, geography acquired new functions in the context of national development, expansion of the educational system and strengthening of planning projects.

- (a) Farming practices have changed in India since independence. There has been an increase in the farming area now which has also led to an introduction of high-yielding varieties of crops. These were the major factors of growth in agricultural production. The agricultural sector thereby ended its dependency on imported products. The food grains are now being produced in the various parts of India with the help of improved facilities. It has progressed both in terms of yield and structural changes. There has been a consistent investment in research, land reforms, expansion of scope for credit facilities, and improvement in rural infrastructure. This has brought an agricultural revolution in India. The agri-biotech industry has grown in India.

(b) India has managed to create a platform where all the children are required to gain education from the age of six till fourteen years. India has managed to bring its education system at par with the global standard. There has been a dramatic increase in the number of schools post-independence. The Parliament of India has made elementary education a fundamental right for children in the age group of 6–14 years.

(c) Independent India has paved a path for its scientific developments over the years. India now takes pride in its space programmes. These programmes began in 1975 with the launch of its first satellite, Aryabhata. Ever since the launch of first satellite, India has never looked back. Gradually it has emerged as a space power that can successfully launch foreign satellites. Its first mission to Mars was launched in November 2013 which successfully reached the planet's orbit on 24 September 2014.

2. 'The Suez Canal has been a great boon for India'. Give three points.

Ans. Suez Canal is an artificial waterway. It is located in Egypt that connects the Red Sea to the

Mediterranean Sea. Suez Canal has helped ships in avoiding their travel to the southern tip of Africa. The Suez Canal separates Africa and Asia into two distinct land masses by cutting across the Isthmus of Suez. The Suez Canal was opened in 1869. As a result of this canal, continents namely, Pacific, Asia, and Europe have been benefitted a lot. The distance between India and Europe also got reduced by 7000 km. There are a number of reasons why India considers the Suez Canal to be of great importance. They are as follows:

- (a) Due to the construction of this canal, the distance between India and Europe reduced considerably. When the Suez Canal was not there, the Indian ships would travel around the Cape of Good Hope – Southern tip of Africa and all the way up the west coast of Africa – a much longer and expensive route. Due to less travelling distance, transportation of Indian products has become easier.
- (b) The largest importers of Suez southbound oil flows through China, India and Singapore.
- (c) One of the major benefits of Suez Canal is that it is a secure route.

2

Physical Features of India

Milestone

Multiple-Choice Questions

1. The only large river in Rajasthan is
(a) Kosi. (b) Chenab.
(c) Luni. (d) Ken.

Ans. (c) Luni.

2. The island having a bird sanctuary is
(a) Minicoy. (b) Pitti.
(c) Kavaratti. (d) Laccadive.

Ans. (b) Pitti.

3. The highest peak in Western Ghats is
(a) Doda Betta. (b) Mahendragiri.
(c) Anai Mudi. (d) Makalu.

Ans. (c) Anai Mudi.

Very Short Answer Type Questions

4. Define *Bhangar*.

Ans. A major portion of northern plains in India is formed of older alluvium. *Bhangar* is the part that lies above the floodplains of the rivers. This also presents a terrace-like feature. The soil in this region comprises calcareous deposits.

5. Name the two eastward extensions of the Central Highlands.

Ans. The eastward extensions of Central Highlands are known as *Bundelkhand* and *Baghelkhand*.

6. Identify the soil found in the Deccan Trap region.

Ans. Black soil is found in the Deccan Trap region. Deccan Traps are of volcanic origin. Therefore, they have igneous rocks.

7. Why do the streams of Rajasthan disappear into the sand?

Ans. A number of streams appear in Rajasthan post rainy season. These streams soon disappear into the sand because there isn't enough water in the

stream to reach the sea. The water eventually dries up and is soaked by the sand present in the area.

8. Which island has the administrative headquarters of the Lakshadweep?

Ans. Kavaratti is the island where administrative headquarters of Lakshadweep are situated.

Short Answer Type Questions

9. Write a short note on the Lakshadweep islands group of India.

Ans. Lakshadweep Islands are located in the Arabian Sea which is to the West of Kerala. These islands were formed by combining 36 smaller islands. In Lakshadweep, very few islands are inhabited. Some islands are very small in size and have no population. Only ten islands have some population. These islands are one of the Union Territories of India. Most of the islands in Lakshadweep have back-waters or lagoons. People and tourists move here in boats. Minicoy is the biggest of these islands. Farming and fishing are the main occupation of this area.

10. Why are the island groups are of great strategic importance for the country?

Ans. Andaman and Nicobar Island and Lakshadweep Islands are considered as the extended arms of India. Both these island groups serve as the gateways for entry into the resource rich region of the Indian Ocean. The lagoons around Lakshadweep Islands have significant fishery and mineral resources. Another rapidly flourishing and economically viable industry is of tourism and hospitality.

Andaman and Nicobar lies in the Bay of Bengal. It acts like the gatekeeper to keep a watch over the Bay of Bengal. More than 60,000 commercial vessels travel in the areas close to the islands.

Long Answer Type Questions

11. Describe briefly the three ranges of the Himalayas.

Ans. The Himalayas consist of three parallel ranges. These three ranges are:

- (a) Himadri
- (b) Himachal
- (c) Shivalik

(a) HIMADRI

- (i) Himadri is also known as the Inner Himalayas or the greater Himalayas. This mountain range also has a Vedic name, *Bahirgiri*.
- (ii) It is the most continuous range in the world with an average height of 6000 m.
- (iii) The core of these mountains is mainly made up of granite rocks. Along with the granite rock some elements of sedimentary and metamorphic rocks can also be found in these mountains.
- (iv) Some of the world's highest mountain peaks are located in this range.
- (v) These mountains are covered with snow through the year.

(b) HIMACHAL

- (i) This is the second most important mountain range and is also known as middle Himalayas or the lesser Himalayas.
- (ii) They are located southwards of Himadri.
- (iii) Lesser Himalayan range is 60–80 km wide and is 3700–4500 m high.
- (iv) Some peaks which are more than 5,050 m above sea level are covered with snow throughout the year.
- (v) Hills stations such as Dalhousie, Manali, Shimla, Nanital, etc., are located in this range.
- (vi) The most important mountain range of Himachal is the *Pir Panjal*. The *Dhauladhar* and the *Mahabharat* ranges are also prominent ones.
- (vii) The range consists of some well-known valleys of Kashmir, the Kangra and Kullu valley.

(c) SHIVALIK

- (i) Shivalik range also known as the Outer Himalayas is the youngest and the lowest range of Himalayas.
- (ii) These are located between the Great Plains and the Lesser Himalayas.
- (iii) Its height varies between 900 and 1,100 metres.
- (iv) Fault scraps, anticlinal crests, and synclinal hills are some features of Shivaliks.
- (v) The rivers rising in the Himadri and Himachal ranges brought gravel, sand and mud along

with them, which was deposited in the rapidly shrinking Tethys Sea.

- (vi) There are some broad valleys between the Himalayas and the Shivalik range which is known as the Duns. The best example is the Dehradun Valley.

12. Explain how the northern plains are agriculturally a very productive part of India.

Ans. The three major river systems of India, the Indus, Ganga, and Brahmaputra have formed the northern plains of India. These plains are formed by the deposition of alluvial soil. The northern plains are agriculturally very productive as these lands are formed by the alluvial deposits. The major reasons in making the northern plains of India more productive agriculturally are as follows:

- (a) **Soil:** This plain has alluvial soil. This soil has been deposited and replenished over the millions of years. Alluvial soil is considered to be the most fertile soil. The rivers coming from the northern mountain carry a huge load of eroded soil and debris. As a river flows down towards the plains, due to the gentler slopes, its velocity decreases, and the material carried by it gets deposited on the way creating riverine islands. This causes the soil to become fertile and agriculturally productive.
- (b) **Availability of Water:** The northern plains receive water from three major rivers and their tributaries. The Indus, Ganga and the Brahmaputra are all perennial in nature. Hence, the water is available for agriculture all through the year.
- (c) **Climate:** Agriculture can only be fruitful if the climate is favourable. The climatic conditions in the northern plains plays a pivotal role in growing of a number of crops. These regions have a moderate temperature because of which plants can grow and sustain life.

Self-Assessment

Multiple-Choice Questions

1. The Northern part of the plain of Bay of Bengal is referred to as
- (a) Malabar Coast. (b) Kannad Plain.
 - (c) The Northern Circars. (d) The Coromandel Coast.

Ans. (c) The Northern Circars.

2. The newer alluvium is known as

- (a) *kankar*. (b) *bhabar*.
- (c) *khadar*. (d) *bhangar*.

Ans. (c) *khadar*.

3. The Chotanagpur plateau is drained by
 (a) river Ghaggar. (b) river Damodar.
 (c) river Teesta. (d) river Chenab.

Ans. (b) river Damodar.

Assertion-Reason Type Questions

For question numbers 4 to 7, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

- (a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) A is false but R is true.

4. **Assertion (A):** The Indian Desert lies towards the western margins of the Satpura Range.

Reason (R): This region receives very low rainfall below 150 mm per year.

Ans. (d) Assertion (A) is wrong because, the Indian desert lies towards the western margins of the Aravali Hills.

5. **Assertion (A):** The northern-most range is known as the Great or Inner Himalayas or the *Himadri*.

Reason (R): It is the most continuous range consisting of the loftiest peaks with an average height of 6,000 metres.

Ans. (a) The northern-most range is known as the Great or Inner Himalayas because it is the most continuous range which consists of the loftiest peaks with an average height of 6000 meters. So Reason (R) is the correct explanation of Assertion (A).

6. **Assertion (A):** The part of the Himalayas lying between Ganga and Kali rivers is known as Kumaon Himalayas.

Reason (R): The Kali and Teesta rivers demarcate the Nepal Himalayas and the part lying between Teesta and Dihang rivers is known as Assam Himalayas.

Ans. (d) Assertion (A) is wrong because the part of the Himalayas lying between Satluj and Kali rivers is known as Kumaon Himalayas.

7. **Assertion (A):** The part of the Peninsular plateau lying to the north of the Narmada river, covering a major area of the Malwa plateau, is known as the Central Highlands.

Reason (R): The Central Highlands are wider in the east but narrower in the west.

Ans. (c) Reason (R) is wrong because, the Central

Highlands are wider in the west but narrower in the east.

Match the Following

8. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (Peaks)	Column B (Height in metres)
A Mt. Everest	1 8848
B Makalu	2 8481
C Nanga Parbat	3 8126
D Namcha Barwa	4 7756

Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	4	1	3	2
(d)	1	3	2	4

Ans. (a)

Find the Incorrect Option

9. (a) The longitudinal valley lying between lesser Himalayas and the Shiwaliks are known as Duns.
 (b) The Ganga River marks the eastern-most boundary of the Himalayas.
 (c) The Purvachal comprises the Patkai hills, the Naga hills, the Manipur hills and the Mizo hills.
 (d) The Ganga plain extends between Ghaggar and Teesta rivers.

Ans. (b)

Arrange the Following

10. Arrange the following ranges in a sequence from north to south.
 (a) Vindhya Range, Satpura Range, Aravali Range, Shiwalik Range.
 (b) Satpura Range, Aravali Range, Shiwalik Range, Vindhya Range.
 (c) Shiwalik Range, Aravali Range, Vindhya Range, Satpura Range.
 (d) Aravali Range, Shiwalik Range, Vindhya Range, Satpura Range.

Ans. (c)

Fill in the Blanks

11. The western part of the northern plains is referred to as **Punjab Plains**.
 12. The Peninsular plateau consists of two broad division namely **Central Highlands** and **the Deccan Plateau**.

Very Short Answer Type Questions

13. Name India's only active volcano and mention where it is located.
- Ans.** India's only active volcano is found on Barren Island and is located in the territory of Andaman and Nicobar Islands.
14. Name the rivers which have formed deltas in the eastern coast of India.
- Ans.** The major rivers which have formed deltas in the eastern coast of India are the Mahanadi, the Godavari, the Krishna and the Kaveri. These rivers flow eastwards and drain into the Bay of Bengal.

Short Answer Type Questions

15. Write a short note on the Punjab Plains.
- Ans.** The Northern Plains in the western part of the country is known as the Punjab Plains. The states of Haryana and Punjab form a part of Punjab Plains. A major portion of this plain lies in Pakistan. These plains are formed by Indus and its five tributaries — the Jhelum, the Chenab, the Ravi, the Beas and the Satluj. This section of the plain is dominated by the doabs.
16. What do you understand by the Terai region? Why is this region full of wildlife?
- Ans.** The Terai region is a wet, swampy and marshy tract in the south of *Bhabar* belt. A number of streams re-emerge south of this belt. The Terai region is more prominent in the eastern part of India than in the west. This is because the eastern parts of India receive higher amount of rainfall as compared to the western areas. Terai region, especially in Punjab, UP, and Uttarakhand has been reclaimed and turned into agricultural land. The Terai region, because of water and adequate temperature is a heaven for wildlife. The region has got hot climate. Here the soil is also fertile. The tropical forests and grasses provide habitat for a number of wildlife animals such as elephant, tiger, leopard, rhino, deer, swamp, etc.
17. Write a short note on Coral reefs.
- Ans.** In the shallow coastal areas, corals are found. Corals are marine organisms. Coral reefs are a very unique biological system. They are held together by calcium carbonate structures which are secreted by corals. They form a part of the underwater ecosystem. These reefs are useful for photosynthetic algae that thrive on the reefs after forming a symbiotic relationship with them. The Gulf of Mannar, Palk Bay, Gulf of Kutch, Andaman and Nicobar Islands and the Lakshadweep Islands are the areas in India where we can find major reef formations. Lakshadweep Island is formed of corals. These are atolls in nature. An atoll is a ring-shaped coral reef, island, or series of islets.

An atoll surrounds a body of water called a lagoon. Sometimes, atolls and lagoons protect a central island.

18. 'The plateau is a storehouse of minerals'. Justify the statement.
- Ans.** It is true to say that, 'The plateau is a storehouse of minerals' because plateaus have played a crucial role in the industrialisation of the country. The peninsular plateau is a table land composed of various types of old crystalline igneous and metamorphic rocks. The central highland and Chottanagpur plateau are the regions composed of minerals like mica, bauxite, copper, limestone etc. Damodar Valley is rich in coal reserves. It is also known as the oldest landmass of the country.

Paragraph Based Questions

19. Read the sources given below and answer the questions that follow:

Source A – The Himalayan Mountains

While the Pir Panjal range forms the longest and the most important range, the Dhauladhar and the Mahabharat ranges are also prominent ones. This range consists of the famous valley of Kashmir, the Kangra and Kullu Valley in Himachal Pradesh. This region is well-known for its hill stations.

- (a) Which is the longest and most important range?

Source B – The Indian Desert

The Indian desert lies towards the western margins of the Aravali Hills. It is an undulating sandy plain covered with sand dunes. This region receives very low rainfall below 150 mm per year.

- (b) What type of climate is found in the desert region of India?

Source C – The Coastal Plains

Large rivers, such as the Mahanadi, the Godavari, the Krishna and the Kaveri have formed extensive delta on this coast.

- (c) Why do these rivers are called east flowing rivers?

- Ans.** (a) The Pir Panjal range forms the longest and the most important range, this range comprises valley of Kashmir, Kangra and Kullu in Himachal Pradesh. The other important ranges of lesser Himalayas are the Dhauladhar and the Mahabharat ranges.
- (b) Arid climate with low vegetation cover is found in Indian desert.
- (c) The Mahanadi, the Godavari, the Krishna and the Kaveri are called east flowing rivers because they drain into the Bay of Bengal.

Case Based Questions

20. The Northern Plain is broadly divided into three sections. The Western part of the Northern Plain is referred to as the Punjab Plains. Formed by the Indus and its tributaries, the larger part of this plain lies in Pakistan. The Indus and its tributaries — the Jhelum, the Chenab, the Ravi, the Beas and the Satluj originate in the Himalaya. This section of the plain is dominated by the doabs. The Ganga plain extends between Ghaggar and Teesta rivers. It is spread over the states of North India, Haryana, Delhi, U.P., Bihar, partly Jharkhand and West Bengal to its east, particularly in Assam lies the Brahmaputra plain. The northern plains are generally described as flat land with no variations in its relief. It is not true. These vast plains also have diverse relief features. According to the variations in relief features, the Northern plains can be divided into four regions. The rivers, after descending from the mountains deposit pebbles in a narrow belt of about 8 to 16 km in width lying parallel to the slopes of the Shiwaliks. It is known as bhabar. All the streams disappear in this bhabar belt. South of this belt, the streams and rivers re-emerge and create a wet, swampy and marshy region known as terai. This was a thickly forested region full of wildlife. The forests have been cleared to create agricultural land and to settle migrants from Pakistan after partition.

- 20.1** Where does the larger part of the northern plain majorly formed by Indus and its tributaries lie?
- (a) Punjab and Haryana (b) Pakistan
(c) North India (d) Uttar Pradesh

Ans. (b) Pakistan

- 20.2** Which of the following statements was used to generally describe the northern plains?
- (a) land with high folded mountain peaks
(b) land extending between Ghaggar and Teesta
(c) plains lying parallel to the slopes of the Shiwaliks
(d) flat land with no variations in its relief

Ans. (d) flat land with no variations in its relief

- 20.3** What lies to the south of the bhabar belt?
- (a) region called doabs
(b) region called terai
(c) Indus tributaries
(d) Shiwaliks

Ans. (b) region called terai

- 20.4** Which of the following statement(s) is/are true about Punjab Plains?
- (a) it is one of the two sections of the Northern Plains formed by Indus

- (b) it lies majorly in Pakistan
(c) it is the Western part of the Northern Plains
(d) only (b) and (c)

Ans. (d) only (b) and (c)

- 21.** The Himalayas, geologically young and structurally fold mountains stretch over the northern borders of India. These mountain ranges run in a west-east direction from the Indus to the Brahmaputra. The Himalayas represent the loftiest and one of the most rugged mountain barriers of the world. They form an arc, which covers a distance of about 2,400 km. Their width varies from 400 km in Kashmir to 150 km in Arunachal Pradesh. The altitudinal variations are greater in the eastern half than those in the western half. The Himalaya consists of three parallel ranges in its longitudinal extent. A number of valleys lie between these ranges. The northern-most range is known as the Great or Inner Himalayas or the Himadri. It is the most continuous range consisting of the loftiest peaks with an average height of 6,000 metres. It contains all prominent Himalayan peaks. The folds of the Great Himalayas are asymmetrical in nature. The core of this part of Himalayas is composed of granite. It is perennially snow bound, and a number of glaciers descend from this range.

- 21.1** The Himalayan range extends from
- (a) Indus and Brahmaputra
(b) West to East
(c) Kashmir to Arunachal Pradesh
(d) all of these

Ans. (d) all of these

- 21.2** The Great Himalayas are distinguished by their
- (a) rugged and loftiest peaks
(b) asymmetrical nature
(c) silicate composition
(d) only (a) and (b)

Ans. (d) only (a) and (b)

- 21.3** What distance does the Himalayan range cover?
- (a) 400 km
(b) 2,400 km
(c) 1,500 km
(d) 6,000 km

Ans. (b) 2,400 km

- 21.4** The northern-most range is also known as
- (a) Inner Himalayas (b) Outer Himalayas
(c) Lesser Himalayas (d) Superior Himalayas

Ans. (a) Inner Himalayas

Long Answer Type Questions

22. Write the points of contrast with regard to the relief of the Himalayan region with that of the Peninsular plateau.

Ans. The points of difference are given below:

	Himalayan Region	Peninsular Plateau
1.	The origin of these mountains is in the recent past.	It was a part of the Gondwana land.
2.	It is made up of young fold mountains.	It is the oldest landmass of Indian subcontinent.
3.	These regions were formed due to the folding process which led to the collision of the Indo Australia plate with the Eurasian plate.	Peninsular Plateau was formed due to the breaking and drifting of Gondwana land.
4.	This region consists of loftiest mountains and deep valleys.	Peninsular Plateau consists of broad and shallow valleys and rounded hills.
5.	Himalayas are made up of sedimentary rocks.	Peninsular Plateau consist of metamorphic and igneous rocks in their constitution.
6.	This is an unstable zone.	This is a stable zone.
7.	Climate in this region varies from tropical at the base to permanent snow at the elevated points.	Peninsular region also has varied climate from tropical monsoon to semi-arid climate.
8.	Pine, fir, and spruce can be found in this region.	Tropical deciduous, dry forest, and deccan thorn scrub forest are found in this region.
9.	Himalayas give birth to perennial rivers such as Indus, Ganga, and Brahmaputra.	Rivers such as Narmada, Tapti, Krishna, Kaveri, etc., are peninsular rivers.

23. Give a detailed account of how the different physiographic units of India contribute towards the economy of the country.

Ans. Geography of a place plays a pivotal role in the development of a country's economy. It is a universally proven theory. Development of India is also due to its geographical features. India is naturally fenced by young fold mountain ranges of Himalayas. These mountain ranges spread in the north-west, north and north east. They are washed by the waters of the Indian Ocean. It has two extended arms, the Arabian Sea and the Bay of Bengal. These water bodies have always remained a distinct part of geopolitical unit since ancient times. These water bodies are characterized by a remarkable variety of traits and

attributes. The Himalayas give birth to a number of perennial rivers. It is an area which is a vast reservoir of minerals, wildlife and vegetation. It is one of the major source of development in India's economy. The Great Plains of India face the loftiest mountains. India's maximum population stays in this region. The plains are fertile due to the deposition of alluvial soil. As a result, this region is agriculturally most developed as compared to a number of other plain regions of the world. India has a long coastline. This coastline lies in the west and the east India. This region has 12 major ports and a number of minor ports. It helps India in carrying out international trade and commerce by promoting exports and imports. Since India is not landlocked, it is able to have access to other countries enabling India to trade with them. Many poor countries are landlocked and don't have rivers that enable the transportation of products and people. The Deccan Plateau of India is rich in mineral deposits. This resource has made India self-sufficient in mineral wealth. There also are several important rivers in India. These are the Indus, Ganges, and Brahmaputra Rivers. These rivers are an important source of transportation in India. These rivers also can aid with farming.

The peninsular rivers have been suitable for hydropower projects and currently generating much of India's energy needs. India also has vast coal reserves. These reserves help in generating huge thermal power. A large number of small scale industries run on this thermal power.

24. Read the extract and answer the questions that follow:

The northern plain has been formed by the interplay of the three major river systems, namely — the Indus, the Ganga and the Brahmaputra along with their tributaries. This plain is formed of alluvial soil. The deposition of alluvium in a vast basin lying at the foothills of the Himalaya over millions of years, formed this fertile plain. It spreads over an area of 7 lakh sq. km. The plain being about 2400 km long and 240 to 320 km broad, is a densely populated physiographic division. With a rich soil cover combined with adequate water supply and favourable climate it is agriculturally a productive part of India.

The rivers coming from northern mountains are involved in depositional work. In the lower course, due to gentle slope, the velocity of the river decreases, which results in the formation of riverine islands. The rivers in their lower course split into numerous channels due to the

deposition of silt. These channels are known as distributaries.

- (a) What do you understand by the term 'Distributaries'?
- (b) Why are the Northern Plains called the most fertile plains?
- (c) Write in detail about the area covered by the Northern Plains.

- Ans.** (a) 'Distributaries' are defined as the branches of the river which flow away from the main stream due to the deposition of silt. For example, delta.
- (b) The Northern Plains are the most fertile plains because these are formed of alluvial soil. The alluvial soil is the most fertile as the deposition of alluvium is lying at the foothills of the Himalayas over millions of years formed this fertile soil. The Northern Plains support bulk of India's population due to fertile land, adequate water supply and suitable weather conditions.
- (c) The Northern Plain has been formed by the three major river systems, namely – the Indus, the Ganga and the Brahmaputra along with their tributaries. These plains extend from the Punjab in the west to West Bengal in the east. The Northern Plains spread over an area of 7 lakh sq km. These plains are about 2400 km long and 240 to 320 km broad.

Let's Compete

Multiple-Choice Questions

1. The sedimentary rocks which were accumulated in the geosynclines are known as
- (a) duns.
 - (b) doabs.
 - (c) tethys.
 - (d) barkhans.

Ans. (c) tethys.

2. The greater or the inner Himalayas are called
- (a) Purvachal.
 - (b) Himachal.
 - (c) Himadri.
 - (d) Shiwaliks.

Ans. (c) Himadri.

3. The length of the Northern Plains is
- (a) 1600 km.
 - (b) 2400 km.
 - (c) 600 km.
 - (d) 1500 km.

Ans. (b) 2400 km.

4. South of the river Narmada lies
- (a) the Malwa Plateau.
 - (b) the Baghelkhand Plateau.
 - (c) the Chotanagpur Plateau.
 - (d) the Deccan Plateau.

Ans. (d) the Deccan Plateau.

5. The north western margins of the Peninsular plateau are occupied by
- (a) the Aravalis.
 - (b) the Western Ghats.
 - (c) the Purvachal.
 - (d) the Jaintia hills.

Ans. (a) the Aravalis.

6. Circular horseshoe shaped coral reefs are called
- (a) ghats.
 - (b) islands.
 - (c) atolls.
 - (d) duns.

Ans. (c) Atolls.

7. Crescent-shaped sand dunes are called
- (a) barchans.
 - (b) reefs.
 - (c) longitudinal dunes.
 - (d) doabs.

Ans. (a) barchans.

8. The fertile flood plain which is renewed every year is called
- (a) *bhabar*.
 - (b) *khadar*.
 - (c) *terai*.
 - (d) *bhangar*.

Ans. (b) *khadar*.

9. Which soil formed the Northern Plains?
- (a) Black
 - (b) Alluvial
 - (c) Laterite
 - (d) Red

Ans. (b) Alluvial

10. The Thar desert lies towards the Western Margin of the
- (a) Jaintia hills.
 - (b) Khasi hills.
 - (c) Shivalik hills.
 - (d) Aravali hills.

Ans. (d) Aravali hills.

Value-based Questions (Optional)

1. The Peninsular plateau of India is a storehouse of minerals. Explain how excessive mining activities and our utilisation of the mineral resources have had a negative impact. Suggest some measures to control the adverse effects.

Ans. There are several negative impacts of mining for the environment.

- (a) To make mining possible, several forests are cleared and this leads to deforestation.
- (b) The vegetation is cleared in order to build the mining facility and laying roads.
- (c) Several organisms and animals live in these forests. With the deforestation, these organisms and animals lose their natural habitat. So, they start looking for a new habitat in order to survive. However, most organisms and animals do not respond very well this change and end up dying.
- (d) The biodiversity is lost in this process.
- (e) Mining also causes a lot of pollution as a lot of chemical waste is incurred due to the various

processed involved. This waste is released into water bodies, rivers and sea.

- (f) The chemical composition of the soil also changes in the mining area. It becomes a desert-like environment where nothing grows.

Some measures to control the adverse effects are as follows:

- (a) Afforestation to reclaim barren lands.
- (b) Pollution-controlling devices to be installed.

2. The Terai region, south of the bhabar plain is a thickly forested area, full of wildlife. Explain how clearing of the forests for agricultural activity has affected this area adversely.

Ans. The Terai region is a very fertile land. The population has adversely affected this region in the following ways:

- (a) The area of Terai is heavily populated. This population has to depend on the nearby forested

areas for agriculture and forest material.

- (b) They destroy the forests to cultivate the land and to settle in the area.
- (c) Agriculturally the land of Terai region is very fertile. The farmers use chemical fertilizers to make the land more fertile and get a better production.
- (d) The forests and the fertile lands are depleting as the people who live in these areas take their pasture for grazing. The livestock farming has also started to take place in this area.
- (e) The construction work is rapidly increasing in this area. This construction work has disturbed the natural environment of the Terai region.
- (f) The ecosystem of this area is disturbed and the animals living in this region have now become less.

3

Drainage

Milestone

Multiple-Choice Questions

1. A drainage basin is drained by
(a) a lake. (b) a single river.
(c) an ocean. (d) a sea.

Ans. (b) a single river.

2. When highland separates two drainage basins it is called
(a) a cliff. (b) a water fall.
(c) a water divide. (d) a conical hill.

Ans. (c) a water divide.

3. A river having water throughout the year is called a
(a) perennial river. (b) seasonal river.
(c) meandering river. (d) swift river.

Ans. (a) perennial river.

Very Short Answer Type Questions

4. Where does the river Yamuna rise from?

Ans. The river Yamuna rises from the Yamunotri Glacier in the Himalayas.

5. What are Sundarbans?

Ans. Sundarbans is the name given to the largest delta in the world. This delta is formed when the mighty rivers, Ganga and Brahmaputra flow into the Bay of Bengal. This place derived its name from the *Sundari* trees which grow in this region on a marshy land.

6. What is the Brahmaputra known as in Tibet?

Ans. Brahmaputra is known as the Tsang Po in Tibet.

7. Name the states which are drained by river Mahanadi.

Ans. The states which are drained by Mahanadi are as follows:

- (a) Chhattisgarh (b) Odisha
(c) Maharashtra (d) Jharkhand

8. Name a man-made lake formed by damming of rivers.

Ans. Guru Gobind Sagar.

Short Answer Type Questions

9. Why do the Himalayan rivers perform intense erosional and depositional activity?

Ans. The Himalayan rivers originate from the north of the mountain ranges. They have cut through the mountains making gorges. Therefore, these rivers and many of their tributaries perform intense erosional activity up the streams and carry huge load of sand and silt. In the plains, they form large meanders, and a variety of depositional features like flood plains, river cliffs and levees.

10. Why does the river Brahmaputra deposit less silt and have less volume of water in Tibet?

Ans. The Brahmaputra river carries a smaller volume of water and less silt in Tibet as it is a cold and a dry area.

11. Name the main rivers of Peninsular India. Which rivers form deltas and which rivers form estuaries?

Ans. The main rivers of Peninsular India are
(a) the Mahanadi, (b) the Godavari,
(c) the Krishna, (d) the Kaveri,
(e) the Narmada, and (f) the Tapi

Major peninsular rivers such as the Mahanadi, the Godavari, the Krishna and the Cauvery flow eastwards. These rivers drain into the Bay of Bengal and make deltas at their mouths.

Rivers such as Narmada and Tapi are west flowing rivers. They originate from the Western Ghats and fall into the Arabian Sea. They form estuaries in place of deltas.

Long Answer Type Questions

12. Discuss briefly about the three different Himalayan

river systems. Name three tributaries of each river system.

Ans. The Himalayas consist of three major rivers:

- (a) The Indus
- (b) The Ganga
- (c) The Brahmaputra

These three rivers form the complex river system of India.

(a) The Indus river system:

- (i) The river Indus originates in Tibet near the Mansarowar Lake.
- (ii) It flows from the west and enters India through the Union Territory of Ladakh.
- (iii) Several tributaries such as the Zaskar, the Nubra, the Shyok and the Hunza, join it in the Ladakh region.
- (iv) The Indus flows through Baltistan and Gilgit and emerges from the mountains at Attock.
- (v) The Satluj, the Beas, the Ravi, the Chenab and the Jhelum join together to enter the Indus near Mithankot in Pakistan.
- (vi) After this, the Indus flows southwards eventually reaching the Arabian Sea, east of Karachi.
- (vii) Indus with a length of 2,900 km is considered as one of the longest rivers of the world.
- (viii) This river forms spectacular gorges in the upper reach and pierces the Kailash range several times.

The three tributaries are the Zaskar, the Nubra, and the Shyok.

(b) The Ganga river system:

- (i) Ganga river basin is one of the largest basins in the country.
- (ii) It originates from the Gangotri glacier in the Himalayas.
- (iii) The Ganga starts off as the Bhagirathi, and is joined by the Alaknanda at Devprayag.
- (iv) The Ganga is joined by many tributaries from the Himalayas, a few of them being major rivers, such as the Yamuna, the Ghaghara, the Gandak and the Kosi.
- (v) The river Yamuna rises from the Yamunotri Glacier in the Himalayas. It flows parallel to the Ganga and as a right bank tributary meets the Ganga at Prayagraj.
- (vi) The Ganga river has a length of over 2,500 km. The three tributaries of Ganga are the Yamuna, the Ghaghara and the Gandak.

(c) The Brahmaputra river system

- (i) The Brahmaputra rises in Tibet east of Mansarowar lake very close to the sources of the Indus and the Satluj.

- (ii) It is slightly longer than the Indus, and most of its course lies outside India.
- (iii) In Tibet it is known as Tsang Po and runs parallel to the Himalayas.
- (iv) It has a long mountain stage and therefore, carries a lot of sediment. When it enters the plains, it slows down suddenly, depositing its load causing it to split into 2 to 3 channels forming island in its course. Such a river is called a Braided River. The Brahmaputra's tributaries are Tista, Subansiri, Barali, Manas, Dhansiri, Buri and Dihang.
- (v) Most of the right bank tributaries of Brahmaputra are snow as well rain feed and are perennial.
- (vi) The Tista, and Manas on the right bank and Burri Dihang, Disang, Kapila and Dhansiri on left bank.

13. Describe in detail any three features of the Narmada basin.

Ans. Narmada is a very unique river. It is the largest west flowing river in peninsular India. Some of the features of Narmada Basin are given below:

- (a) It is the only river in India which flows through a rift valley between Vindhya range in north and Satpura range in south.
- (b) The Narmada creates many picturesque locations. For example, the 'Marble rocks' near Jabalpur and Dhuadhar falls.

14. Bring out the differences between freshwater lakes and lagoons. Give examples of lagoons and freshwater lakes in India.

Ans.

	Freshwater Lake	Lagoon
1.	A lake is a still water body that can be either natural freshwater or man made with an inlet and outlet.	Lagoon is a spot which is separated from the river or sea with the help of a small land and is not going to be as deep.
2.	Do not have any river or sea near them.	Do not have any land near them.
3.	Freshwater lakes depend on a stream of water.	Lakes depend on sea or river for their water supply.
4.	The size of a lake is small but these are deep waters.	The lagoons are big in size but they are not deep.
5.	Most of the freshwater lake in India are around Himalayan region.	Spits and bars form lagoons in the coastal areas.
6.	Lakes are a. Tectonic Lake b. Landside Lake c. Salt Lake d. Carter Lake e. Glacial Lakes f. Oxbow Lakes	There are two types of lagoons a. Coastal Lagoons b. Atoll Lagoons

Freshwater lakes in India:

- (a) Wular Lake – Jammu and Kashmir
- (b) Loktak Lake – Manipur
- (c) Damdama Lake – Haryana
- (d) Dal Lake – Srinagar
- (e) Barapani Lake - Meghalaya

Lagoons of India

- (a) Chilka Lake – Odisha
- (b) Pulicat Lake – Andhra Pradesh
- (c) Kolleru Lake – Andhra Pradesh

15. Enumerate how rivers play a vital role in a nation's economy.

Ans. Rivers are of fundamental importance. They have both cultural and economic importance for a country. Many old civilizations flourished next to rivers. It is true for India also. The first Harappan civilizations were located next to the river Indus. Rivers form an important part of Indian economy due to following reasons:

- (a) It is a source of fresh water. Major civilizations in ancient India typically flourished alongside rivers. This was mainly because of the availability of fresh water. This freshwater was used for daily activities. Near the freshwater was the availability of fertile land for agriculture.
- (b) India is a country with a huge population. This population needs large water resources to help them sustain their day to day agricultural activities. A huge output of water is necessary to support such a huge population.
- (c) Many hydropower projects are made on the rivers. This increases the energy production, besides flood control and canalization of rivers. This in turn becomes important to drive other industries.
- (d) Rivers are a huge source of investment and profit for the tourism industry in India. After every four years Kumbh is organized. In this way the government and general people earn money. The river Ganga for example is a huge source of religious tourism. In the mountain stretches, rivers serve as means for adventure sports.
- (e) Rivers serve as mode of transport for carrying both people and goods. This advantage has not been perhaps effectively utilised in India compared to other countries.

- (b) Satpura range.
- (c) Amarkantak hills.
- (d) Western Ghats.

Ans. (b) Satpura range.

2. Dakshin Ganga is the name given to river

- (a) Mahanadi. (b) Kaveri.
- (c) Godavari. (d) Krishna.

Ans. (c) Godavari.

3. The largest freshwater lake in India is

- (a) Chilika lake. (b) Dal lake.
- (c) Wular lake. (d) Kolleru lake.

Ans. (c) Wular lake.

Assertion-Reason Type Questions

For question numbers 4 to 7, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

4. Assertion (A): Most of the Himalayan rivers are perennial.

Reason (R): It means that they have water throughout the year.

Ans. (a) Most of the Himalayan rivers are perennial which means they have water throughout the year, for example river Ganga, Yamuna and others. So, Reason (R) is the correct explanation of Assertion (A).

5. Assertion (A): The Brahmaputra rises in Tibet east of Mansarowar Lake very close to the sources of the Indus and the Satluj.

Reason (R): Most of its course lies within India.

Ans. (c) Reason (R) is wrong because most of the course of River Brahmaputra lies outside India.

6. Assertion (A): Most of the major rivers of the Peninsula, such as the Mahanadi, the Godavari, the Krishna and the Kaveri flow westwards.

Reason (R): The main water divide in Peninsular India is formed by the Western Ghats.

Ans. (d) Assertion (A) is wrong because most of the major rivers of the Peninsula, such as the Mahanadi, the Godavari, the Krishna and the Kaveri flow eastwards and drain into the Bay of Bengal.

7. Assertion (A): The river cleaning programme in the country was initiated with the launching of the Ganga Action Plan (GAP) in 1985.

Reason (R): The Ganga Action Plan was expanded

Self-Assessment

Multiple-Choice Questions

- 1.** The river Tapi rises from
- (a) Highlands of Chhattisgarh.

to cover other rivers under the National River Conservation Plan (NRCP) in the year 2005.

Ans. (c) Reason (R) is wrong because, The Ganga Action Plan was expanded to cover other rivers under the National River Conservation Plan (NRCP) in the year 1995.

Match the Following

8. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A	Column B
A Tapi	1 It is the largest peninsular river.
B Ganga	2 The river rises in the highlands of Chhattisgarh.
C Mahanadi	3 This river drains into the Arabian Sea.
D Godavari	4 The length of this river is about 2500 km.

Codes:

A	B	C	D
(a) 3	4	2	1
(b) 2	4	1	3
(c) 4	1	3	2
(d) 1	3	2	4

Ans. (a)

Find the Incorrect Option

9. (a) The Ganga water is able to dilute and assimilate pollution loads within 50 km of large cities.
 (b) Rising from a spring near Mahabaleshwar, the Krishna flows for about 1400 km and reaches the Bay of Bengal.
 (c) The total length of the Kaveri river is about 760 km.
 (d) The Godavari is the largest Peninsular river. It rises from the slopes of the Western Ghats in the Nasik district of Maharashtra.

Ans. (a)

Find the Correct Sequence

10. Arrange the stages of river formation in correct sequence.
 (a) Ox-bow lakes, meanders, source of the river, delta.
 (b) Meanders, source of the river, delta, ox-bow lakes.
 (c) Source of the river, meanders, ox-bow lakes, delta.
 (d) Delta, meanders, source of the river, ox-bow lakes.

Ans. (c)

Fill in the Blanks

11. The Ganga emerges from the mountains on to the plains at **Haridwar**.

12. The Brahmaputra river rises from **Mansarowar Lake in Tibet**.

13. The **Narmada** and **Tapi** are the only long rivers which make estuaries in India.

Very Short Answer Type Questions

14. What is a river system?

Ans. A river along with a network of tributaries and distributaries is called a river system.

15. What is the total length of river Indus?

Ans. The total length of river Indus is 2900 km.

16. Name the gorge through which the Brahmaputra enters India.

Ans. The Brahmaputra enters India through the Dihang gorge.

Short Answer Type Questions

17. Explain briefly about the Mahanadi Basin.

Ans. The Mahanadi rises in the highlands of Chhattisgarh. This river gets formed by numerous mountain streams. The farthest stream is located in hills of the Dhamtari district of Chhattisgarh. These hills are extensions of the Eastern Ghats and are a source of many other streams which then go on to join the Mahanadi. The river then flows through Odisha to reach the Bay of Bengal. The length of the river is about 860 km. Its drainage basin is shared by Maharashtra, Chhattisgarh, Jharkhand, and Odisha. Mahanadi river basin is best known for its fertile soil and flourishing agriculture. Before the Hirakud dam was built, the river carried a huge amount of silt.

18. Write a short note on the lakes found in India.

Ans. There are a number of lakes that can be found in India. Each lake is different from the other lake which might lie in faraway corners of India. These lakes can either be permanent, or contain water only during the rainy season. There are lakes which are formed by the action of glaciers and ice sheets, while the others have been formed by human activities. These lakes have been described below:

(a) **Salt water lakes:** The Chilika lake, Pulicat lake and the Kolleru lake are salt water lakes. These lakes can be found in the coastal regions of India. In these areas spit and bars form lagoons or better called as salt water lakes. At times, salt water lake can also be formed with island drainage. Example of such a lake is Sambhar lake in Rajasthan. Its water is used for producing salt.

(b) **Freshwater lakes:** Most of the freshwater lakes are in the Himalayan region. They originate from the glaciers based in the mountains. They are formed when glaciers dug

out a basin, which was later filled with snow melt. The Wular lake in Jammu and Kashmir is the largest freshwater lake in India. Other freshwater lakes are the Dal, Bhimtal, Nainital, Loktak and Barapani.

- (c) **Man-made lakes:** The damming of the rivers for the generation of hydel power has also led to the formation of lakes. These lakes are formed to drain excessive water of the river during floods and adding water to the rivers during the dry season. Some examples of such lakes are the Guru Gobind Sagar (Bhakra Nangal Project), Nizam Sagar, Nagarjuna Sagar, Rana Pratap Sagar, etc.

19. How have the rivers been of fundamental importance throughout the human history?

Ans. Rivers have been considered as the lifeline of human civilization. They have marked a major role in the settling of the human history. The river water is a natural resource for the humans. This water is essential for various human activities. The river banks have attracted the settlers and traders from ancient times. Indus valley civilization started because of the river banks. Nomads started settling due to the availability of water. These settlements eventually turned into big cities when people settled and started their respective occupations.

Paragraph Based Questions

20. Read the sources given below and answer the questions that follow:

Source A - The Godavari Basin

The Godavari is the largest Peninsular River. It rises from the slopes of the Western Ghats in the Nasik district of Maharashtra. Its length is about 1500 km. It drains into the Bay of Bengal. Its drainage basin is also the largest among the peninsular rivers.

- (a) Why is Godavari known as the Dakshin Ganga?

Source B - Lakes

The Wular lake in Jammu and Kashmir, in contrast, is the result of tectonic activity. It is the largest freshwater lake in India.

- (b) Why is Wular lake in Jammu and Kashmir called a freshwater lake?

Source C - River Pollution

The growing domestic, municipal, industrial and agricultural demand for water from rivers naturally affects the quality of water. As a result, more and more water is being drained out of the rivers reducing their volume.

- (c) Give two reasons for rivers being reduced of their volume.

- Ans.** (a) The Godavari is known as the Dakshin Ganga because it is the largest peninsular river. Its length is about 1500 km. Its drainage basin is also the largest among the peninsular rivers. It is the perennial river of south India which caters to the needs of irrigation.
- (b) We know that most of the freshwater lakes are in Himalayan region. These lakes are of glacial origin that is why Wular lake in Jammu and Kashmir is called a freshwater lake.
- (c) Rivers are reducing their volume because of the following reasons:
- Increase in the consumption of water due to increase in population.
 - Draining of the industrial effluents into the rivers.

Case Based Questions

21. India has many lakes. These differ from each other in size and other characteristics. Most lakes are permanent, while some contain water only during the rainy season, like the lakes in the basins of inland drainage of semi-arid regions. There are some lakes which are the result of the action of glaciers and ice sheets, while others have been formed by wind, river action and human activities. A meandering river across a floodplain forms cut-offs that later develops into ox-bow lakes. Spits and bars form lagoons in the coastal areas, e.g. the Chilika lake, the Pulicat lake and the Kolleru lake. Lakes in the region of inland drainage are sometimes seasonal; for example, the Sambhar lake in Rajasthan, which is a salt water lake. Its water is used for producing salt. Most of the freshwater lakes are in the Himalayan region. They are of glacial origin. In other words, they formed when glaciers dug out a basin, which was later filled with snowmelt. The Wular lake in Jammu and Kashmir, in contrast, is the result of tectonic activity. It is the largest freshwater lake in India. The Dal lake, Bhimtal, Nainital, Loktak and Barapani are some other important freshwater lakes. Apart from natural lakes, the damming of the rivers for the generation of hydel power has also led to the formation of lakes, such as Guru Gobind Sagar (Bhakra Nangal Project). Lakes are of great value to human beings. A lake helps to regulate the flow of a river. During heavy rains, it prevents flooding and during the dry season, it helps to maintain an even flow of water. Lakes can also be used for developing hydel power. They moderate the climate of the surroundings; maintain the aquatic ecosystem, enhance natural beauty, help develop tourism and provide recreation.

21.1 Lakes can be divided into various categories. Identify under which category do the following lakes fall.

Lake	Category
1. Wular Lake	(a) Saltwater
2. Sambhar Lake	(b) Seasonal
3. Guru Gobind Sagar	(c) Freshwater
4. Pulicat Lake	(d) Man-made

- (a) (1) – (d); (2) – (b); 3 – (a); 4 – (c)
 (b) (1) – (a); (2) – (c); 3 – (b); 4 – (d)
 (c) (1) – (c); (2) – (a); 3 – (d); 4 – (b)
 (d) (1) – (b); (2) – (d); 3 – (c); 4 – (a)

Ans. (c) (1) – (c); (2) – (a); 3 – (d); 4 – (b)

21.2 What sort of human activities result in the creation of lakes?

- (a) melting the glaciers by heating them artificially
 (b) excavating land and diverting a part of natural water source towards it
 (c) building a dam over a river or across a valley
 (d) only (b) and (c)

Ans. (d) only (b) and (c)

21.3 Which of the following is not a function of a lake?

- (a) climate moderation
 (b) tourism development
 (c) river water flow regulation
 (d) none of these

Ans. (d) none of these

21.4 Which one of the following is formed by a meandering river?

- (a) bays (b) ox-bow lakes
 (c) lagoons (d) spits and bars

Ans. (b) ox-bow lakes

22. The headwaters of the Ganga, called the 'Bhagirathi' is fed by the Gangotri Glacier and joined by the Alaknanda at Devprayag in Uttarakhand. At Haridwar, the Ganga emerges from the mountains on to the plains. The Ganga is joined by many tributaries from the Himalayas, a few of them being major rivers, such as the Yamuna, the Ghaghara, the Gandak and the Kosi. The river Yamuna rises from the Yamunotri Glacier in the Himalayas. It flows parallel to the Ganga and as a right bank tributary meets the Ganga at Allahabad. The Ghaghara, the Gandak and the Kosi rise in the Nepal Himalaya. They are the rivers, which flood parts of the northern plains every year, causing widespread damage to

life and property, whereas, they enrich the soil for agricultural use. The main tributaries, which come from the peninsular uplands, are the Chambal, the Betwa and the Son. These rise from semi-arid areas, have shorter courses and do not carry much water in them. Enlarged with the waters from its right and left bank tributaries, the Ganga flows eastwards till Farakka in West Bengal. This is the northernmost point of the Ganga delta. The river bifurcates here; the Bhagirathi-Hooghly (a distributary) flows southwards through the deltaic plains to the Bay of Bengal. The mainstream, flows southwards into Bangladesh and is joined by the Brahmaputra. Further downstream, it is known as the Meghna. This mighty river, with waters from the Ganga and the Brahmaputra, flows into the Bay of Bengal. The delta formed by these rivers is known as the Sundarban Delta. The length of the Ganga is over 2500 km.

22.1 Bhagirathi is fed by

- (a) Gangotri Glacier (b) Alaknanda
 (c) Gandak (d) Kosi

Ans. (a) Gangotri Glacier

22.2 Which rivers come together to form the Bengal Delta?

- (a) Ganga and Brahmaputra
 (b) Meghna and Ganga
 (c) Bhagirathi and Meghna
 (d) all of these

Ans. (a) Ganga and Brahmaputra

22.3 Complete the statement: the Chambal, the Betwa and the Son come from

- (a) the greater Himalayas
 (b) Farakka in West Bengal
 (c) the peninsular uplands
 (d) none of the above

Ans. (c) the peninsular uplands

22.4 Which of the following rivers does not join Ganga?

- (a) Yamuna (b) Ghaghara
 (c) Gandak (d) Gomti

Ans. (d) Gomti

Long Answer Type Questions

23. What are the Ganga Action Plan (GAP) and National Rivers Conservation Plan (NRC)? What do they entail?

Ans. The river cleaning programme in the country was initiated with the launching of the Ganga Action Plan (GAP) in 1985. Ganga Action Plan was first initiated by the late Prime Minister Rajiv Gandhi in 1986. The fast shrinking glaciers, dams,

barrages, canals and alarmingly high volume of pollution pose an ever-increasing threat to the health and life of the river. The Ganga Action Plan was expanded to cover other rivers under the National River Conservation Plan (NRCP) in the year 1995. The objective of the NRCP is to improve the water quality of the rivers, which are major water sources in the country, through the implementation of pollution abatement work.

It entails the following aspects:

- (a) Rehabilitation of soft shelled turtles which may be used for the purpose of pollution abatement of the river.
- (b) Control of pollution such as waste from agricultural, human defecation, throwing of unburnt and half burnt bodies into the river.
- (c) Treatment of the domestic sewage, industrial sewage, industrial waste, toxic chemicals, and pollutants discharge into the river.
- (d) To improve the water quality of river Ganga.
- (e) Millions of people bathe in river Ganga because of its holy aspect which may leads to its pollution.

24. Highlight a few characteristics of the Ganga-Brahmaputra delta.

Ans. The Ganga-Brahmaputra delta is a river delta in the South Asia region of Bangladesh and in West Bengal, India. It is the world's largest delta.

This region is also known as the Brahmaputra Delta or the Sunderbans Delta. Since this region is also one of the most fertile regions in the world, it is called the Green Delta. This region is the floodplain of three rivers: the Ganga, the Brahmaputra, and the Meghna river.

This delta is formed due to the confluence and meeting of two rivers namely Ganga and Brahmaputra.

This area is famous for mangrove forests. Also, this place is home to the famous Royal Bengal Tiger. With more than 130 million inhabitants, this belongs to the most densely populated areas in the world (1300 inhabitants/sq km).

25. Read the extract and answer the questions that follow:

The river Indus rises in Tibet, near Lake Mansarowar. Flowing west, it enters India in the union territory of Ladakh. It forms a picturesque gorge in this part. Several tributaries, the Zaskar, the Nubra, the Shyok and the Hunza, join it in the Ladakh region. The Indus flows through Baltistan and Gilgit and emerges from the mountains at Attock. The Satluj, the Beas, the Ravi, the Chenab and the Jhelum join together to enter the Indus

near Mithankot in Pakistan. Beyond this, the Indus flows southwards eventually reaching the Arabian Sea, east of Karachi. The Indus plain has a very gentle slope. With a total length of 2900 km, the Indus is one of the longest rivers of the world.

A little over a third of the Indus basin is located in India in the union territories of Ladakh and Jammu and Kashmir, states of Himachal Pradesh and Punjab and the rest is in Pakistan.

According to the regulations of the Indus Water Treaty (1960), India can use only 20 per cent of the total water carried by the Indus river system. This water is used for irrigation in Punjab, Haryana and the southern and the western parts of Rajasthan.

- (a) From where does the river Indus originates? Name its tributaries.
- (b) Write a brief note on Indus Water Treaty.
- (c) Write a short note on Indus River system.

- Ans.**
- (a) The River Indus rises in Tibet, near Lake Mansarowar. Flowing west, it enters India in the Union territory of Ladakh. The important tributaries of River Indus are the Zaskar, the Nubra, the Shyok and the Hunza.
 - (b) This treaty was signed between India and Pakistan in the year 1960. According to its provisions, India is entitled to use only 20 per cent of the total water carried by the Indus river system. This water is used for irrigation in Punjab, Haryana, the southern and the western parts of Rajasthan.
 - (c) The River Indus rises in Tibet and flows through Baltistan and Gilgit and emerges from the mountains at Attock. It's total length is 2900 Km and is one of the longest rivers of the world. The Satluj, the Beas, the Ravi, the Chenab and the Jhelum join together to enter the Indus near Mithankot in Pakistan. The River Indus drains into Arabian Sea and covers Ladakh, Jammu and Kashmir, Himachal Pradesh and Punjab in India.

Let's Compete

Multiple-Choice Questions

1. Which one of the following rivers rises from Nepal Himalayas?
 - (a) Chambal.
 - (b) Kosi.
 - (c) Alaknanda.
 - (d) Tapi.

Ans. (b) Kosi

2. Meandering rivers form

- (a) freshwater lakes.
- (b) lagoons.
- (c) ox-bow lakes.
- (d) man-made lakes.

Ans. (c) ox-bow lakes.

3. Sundarbans is a

- (a) water divide.
- (b) estuary.
- (c) delta.
- (d) glacier.

Ans. (c) delta.

4. The Dhuandhar falls is formed by the

- (a) Ganga.
- (b) Narmada.
- (c) Tapi.
- (d) Brahmaputra.

Ans. (b) Narmada.

5. The Zaskar, Nubra, Shyok and Hunza are the tributaries of the river

- (a) Indus.
- (b) Brahmaputra.
- (c) Godavari.
- (d) Ganga.

Ans. (a) Indus.

6. Name the river that flows in west direction and make estuaries.

- (a) Tapi
- (b) Kaveri
- (c) Satluj
- (d) Narmada

Ans. (d) Narmada

7. The length of the Ganga is

- (a) 1800 km.
- (b) 2500 km.
- (c) 2900 km.
- (d) 860 km.

Ans. (b) 2500 km.

8. The Brahmaputra in Tibet is called

- (a) Jamuna.
- (b) Tsang Po.
- (c) Lohit.
- (d) Dihang.

Ans. (b) Tsang Po.

9. The Musi and Bhima are the tributaries of river

- (a) Tapi.
- (b) Godavari.
- (c) Narmada.

(d) Krishna.

Ans. (d) Krishna

10. Sambhar lake is a salt water lake located in

- (a) Tamil Nadu.
- (b) Rajasthan.
- (c) Maharashtra.
- (d) Odisha.

Ans. (b) Rajasthan.

Value-based Questions (Optional)

1. Why do the rivers in India are considered holy and worshipped yet every year pollutants are being dumped into them? Give two reasons.

Ans. India is a country which has rich resources of water. This is because of the number of rivers and their respective tributaries which are present throughout the country. India is often referred as the Land of Rivers. People all over the country worship various rivers as gods and goddesses. But what is ironical is that in spite of our profound respect and reverence for our rivers, we have not been able to maintain their purity, cleanliness and the physical well-being. Given below are the main causes of pollution of our rivers.

- (a) High population density around the river banks and the reckless dumping of non-biodegradable waste, especially plastics, is a major cause of pollution of the rivers. Despite warning and strict fines imposed by the government on those found dumping garbage into rivers and their estuaries, this uncivilised practice continues unabated.
- (b) A lot of significance is attached to afterlife. In most of the cities around the country, cremation grounds are situated next to a river bank. For example, Kashi or Varanasi is one such place with cremation grounds located right on banks of river Ganga. Ganga is the longest Indian river. Unfortunately, lots of Indians families that cannot afford cremation consign mortal remains of loved ones to rivers. These human cadavers cause severe water pollution.
- (c) Industries along the river belt are also a major cause of polluting the water with chemicals and other industrial effluents. While large corporations adopt advanced techniques to treat effluents and chemicals to negate or reduce their toxicity, smaller firms often have no such considerations and violate environment safety standards.

2. The river Ganga floods parts of the Northern Plains every year causing a lot of damage to life and property. Explain how the floods can be controlled and the rich soil used to bring more land under cultivation.

Ans. There are a number of factors which can cause floods in an area. Some of these factors may be heavy rainfall over a short period, moderate rainfall over a long period, melting snow, hurricane storm surge, ice or debris jams on rivers, and dam failures. Floods can cause great harm to people and property. They are the deadliest form of natural disaster.

These floods need to be controlled in the following ways:

- (a) These methods include planting vegetation to retain extra water.
- (b) Hillsides can also be terraced to slow the flow downhill.
- (c) Other techniques include the construction of dams, reservoirs or retention ponds to hold extra water during times of flooding.
- (d) Coastal areas built coastal defences, such as sea walls, beach nourishment, and barrier islands.
- (e) Floods can also be controlled with the help of flood gates. Flood gates are systems that have adjustable gates to control the flow rate of a river. The water can either be stored or routed depending on the situation. Also, flood gates can also lower the water levels from canal channels or the main river channel. This allows more water to flow into a storage area if a flood is being predicted.

4

Climate

Milestone

Multiple-Choice Questions

1. The climate of India is described as
- (a) equatorial. (b) temperate.
(c) monsoon. (d) arctic.

Ans. (c) monsoon.

2. The latitudinal line passing through the centre of India is the
- (a) Antarctic Circle. (b) Tropic of Cancer.
(c) Equator. (d) Tropic of Capricorn.

Ans. (b) Tropic of Cancer.

3. Jet streams are
- (a) north east trade winds.
(b) tropical cyclonic winds.
(c) western cyclonic winds.
(d) monsoon winds.

Ans. (c) western cyclonic winds.

Very Short Answer Type Questions

4. Name the two branches of the southwest monsoons.

Ans. The two branches of southwest monsoons are

- (a) Bay of Bengal
(b) Arabian Sea

5. Name the four seasons of India.

Ans. Four main seasons can be identified in India – the cold weather season, the hot weather season, the advancing monsoon and the retreating monsoon.

6. Give reason why India experiences Tropical Monsoon type of climate.

Ans. India has a tropical monsoon climate because most of India lies in the tropical belt. The climate of India is influenced by the monsoon winds which mainly blow in the tropics, i.e., 20° North and 20° South. High temperatures

during summers and dry winters are some of the characteristics of the monsoon types of climate.

7. Why does Tamil Nadu get rainfall in winter?

Ans. In winter, Tamil Nadu gets rainfall from northeast trade winds as they blow from sea to land here.

Short Answer Type Questions

8. Differentiate between weather and climate.

Ans.

	Weather	Climate
1.	It refers to the state of the atmosphere over an area at any point of time.	It refers to the sum total of weather conditions and variations over a large area for a long period of time.
2.	Weather conditions change frequently.	Climatic conditions do not change frequently.

9. Highlight two characteristics of Loo and Kaal Baisakhi.

Ans. Two characteristics of loo and Kaal Baisakhi are given below:

Loo:

- (a) 'Loo' are strong, gusty, hot, dry winds blowing during the day over the north and northwestern India.
(b) Loo causes the temperature to rise upto 45 to 50 °C which causes tremendous loss to life due to extreme heat.

Kaal Baisakhi

- (a) The localised thunderstorms, in West Bengal, which are associated with violent winds, torrential downpours, are known as the 'Kaal Baisakhi'.
(b) These thunderstorms are extremely helpful for the pre-Kharif crops such as jute, paddy and a large number of vegetables and fruits. These thunderstorms give relief after mid-day heat and pours well on the thirsty soil for development of crops.

10. How do the Himalayas affect the climate of India?

Ans. Himalayas play a very important role in managing the climate of India. India is situated towards the south of the Himalayas. It is because of the height, altitude and length of Himalayas that the summer monsoons coming from the Bay of Bengal and Arabian Sea cause precipitation in the form of rain or snow. The Himalayas also prevent cold air which runs from Central Asia to enter India. The height of the Himalayan Mountains concentrates most of the monsoonal rainfall on the Indian Subcontinent. This same mountain range blocks cold winds from Siberia from penetrating the region. This is why most of India has a warm, tropical climate with high precipitation. Had there been no Himalayas, the whole of India would have been a desert in the absence of precipitation and its winters would have been very severe under the influence of cold air masses coming from Central Asia.

11. How are the monsoons affected by the change in the pressure conditions over the southern oceans?

Ans. It has been noticed that changes in the pressure conditions over the southern oceans can also affect the monsoons. Normally when the tropical eastern south Pacific Ocean experiences high pressure, the tropical eastern Indian Ocean experiences low pressure. Through the course of time, there is a reversal in the pressure conditions and the eastern Pacific has lower pressure in comparison to the eastern Indian Ocean. This periodic change in pressure conditions is called Southern Oscillation or SO. The intensity of the monsoons is predicted by computing the difference in pressure over Tahiti and Darwin. If the pressure differences were negative, it means below average and late monsoons.

Long Answer Type Questions

12. Explain the mechanism of monsoons.

Ans. The mechanism of monsoons is explained as below:

The seasonal reversal of winds is the main phenomena of monsoon. These occur because the southwest monsoon winds blow from sea to land at the end of the summer season. At the same time, the northeast winds blow from land to sea during the winter season.

The Indian mainland gets intensely heated up during the summer season. This creates a low pressure because of the differential heating and cooling of land and water. Now a high-pressure area is created over the Indian Ocean due to this differential heating of the land and the sea. Because the winds blow from high pressure to

low pressure areas, the southwest monsoon winds blow from sea towards the Indian mainland.

When moisture laden winds strike the Western Ghats and the mountains of north-eastern parts of the country, they shed their moisture causing rainfall on the places lying on the windward side of the mountains. The monsoon is also aided by the Inter Tropical Convergence Zone or monsoon trough near the Equator where winds from northern and southern hemisphere merge. During winters, the Indian mainland begins to cool down creating high pressure areas. Thus, the north-eastern winds blow from land and hence do not cause enough rainfall. They cause rainfall over the Coromandel Coast during winters.

13. Highlight the western conditions and characteristics of the hot weather season.

Ans. India experiences the hot weather season from the month of March to May. During this season, there is an apparent northward movement of the sun. The hot weather season has the following characteristics:

- The influence of the shifting of the heat belt can be seen clearly from temperature recordings taken during March-May at different latitudes.
- In March, the highest temperature is about 38° Celsius, recorded on the Deccan plateau.
- In April, temperatures in Gujarat and Madhya Pradesh are around 42° Celsius.
- In May, temperature of 45° Celsius is common in the northwestern parts of the country.
- In peninsular India, temperatures remain lower due to the moderating influence of the oceans.
- An elongated low-pressure area develops from Thar Desert (in North-West) to Patna and Chotanagpur plateau (in East and South-East) towards the end of May. From this low-pressure belt, the circulation of air begins.
- In the Northern and North-Western parts of India, there is an occurrence of 'Loo'- strong, hot, dry wind.
- In the Northern India, there is common occurrence of dust storm in May.
- There is also an occurrence of localised thunderstorms associated with violent winds, torrential downpours, often accompanied by hailstorm at some places (e.g., West Bengal).

14. How do El Nino and Southern Oscillation control the climate of India?

Ans. It has been noticed that certain changes in the pressure conditions over the southern oceans affect the monsoons of India. Normally, when the tropical eastern south Pacific Ocean experiences

high pressure, the tropical eastern Indian Ocean would experience low pressure. But in certain years, there has been a reversal in the pressure conditions. The eastern Pacific has lower pressure in comparison to the eastern Indian Ocean.

This periodic change in pressure conditions is known as the Southern Oscillation or SO. A feature connected with the SO is the El Niño phenomenon. In El Niño, a warm ocean current flows past the Peruvian Coast, in place of the cold Peruvian current, every 2 to 5 years. The changes in pressure conditions are connected to the El Niño. Hence, the phenomenon is referred to as ENSO (El Niño Southern Oscillations). ENSO-induced warm zones in the Pacific cause the warm air over them to rise and initiate circulation cells. Such cells along northern Australia, Indonesia and the eastern edge of the Indian Ocean could have their downdraft sides over a nascent monsoon circulation cell in the Indian Ocean, which would disrupt its formation, causing poor monsoon rains over the subcontinent. El Niño and the Indian Monsoon rains are inversely related. Trade winds coming from South America normally blow westward towards Asia during southwest monsoon. Warming of the Pacific Ocean results in weakening of these winds. Therefore, moisture and heat content gets limited and results in reduction and uneven distribution of rainfall across the Indian sub-continent.

15. Bring out the differences between southwest monsoons and retreating monsoons by explaining five distinctive features of each.

Ans.

	Southwest Monsoon	Retreating Monsoon
1.	These winds blow from June to September.	These winds blow during October and November.
2.	The direction of these winds is from the West to the North East.	Here the apparent movement is towards the South.
3.	A low pressure is developed over the Central India.	A low pressure is developed over Bay of Bengal which causes the southwest monsoon to retreat and blows from North – East.
4.	During these months, Southwest Monsoons cover the whole of India and give heavy rainfall.	The coastal areas of Tamil Nadu receive maximum rainfall from these retreating winds.
5.	These winds blow over the warm oceans, gather moisture and bring widespread rainfall over the mainland of India.	The retreat of the monsoon is marked by clear skies and rise in temperature.

6.	These rains at times bring abundant rainfall, sometimes even floods, to regions such as Indochinese Peninsula.	Retreating monsoons develop tropical cyclones which are often very destructive.
7.	It strikes at Western Ghats and gives rainfall to the western most regions while Western Ghats shield the inner region so that Deccan plateau becomes a dry land.	Direction of winds is from North west to south east and Winds blow from surface to sea there by carrying no moisture.

Self-Assessment

Multiple-Choice Questions

1. The sudden arrival of monsoon is known as
 (a) Retreating monsoons. (b) Burst of monsoons.
 (c) Break in monsoons. (d) Pre-monsoon showers.

Ans. (b) Burst of monsoons.

2. The monsoon withdraws completely from the northern half of the peninsular India by mid-
 (a) July. (b) September.
 (c) October. (d) November.

Ans. (c) October.

3. Loo is a
 (a) Periodic wind. (b) Local wind.
 (c) Planetary wind. (d) Cyclonic wind.

Ans. (b) Local wind.

Assertion-Reason Type Questions

For question numbers 4 to 7, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

- (a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) A is false but R is true.

4. **Assertion (A):** The word monsoon is derived from the Russian word 'mausim' which literally means season.

Reason (R): 'Monsoon' refers to the seasonal reversal in the wind direction during a year.

Ans. (d) Assertion (A) is wrong because, the word monsoon is derived from the Arabic word 'mausim' and, not the Russian word, which literally means season.

5. **Assertion (A):** There are six major controls of the climate of any place.

Reason (R): They are latitude, altitude, pressure

and wind system, distance from the sea, ocean currents and relief features.

Ans. (a) Reason (R) is the correct explanation of Assertion (A), because there are six major controls of the climate, namely, latitude, altitude, pressure and wind system, distance from the sea, ocean currents and relief features.

6. Assertion (A): Jet streams are located approximately over 30° – 35° north latitude.

Reason (R): They are known as subtropical westerly jet streams.

Ans. (d) Assertion (A) is wrong because, Jet streams are located approximately over 27° – 30° north latitude and Reason (R) is correct because they are known as subtropical westerly jet streams.

7. Assertion (A): The cold weather season begins from mid November in northern India and stays till February.

Reason (R): The average temperature of Chennai, on the eastern coast, is between 35° – 40° Celsius.

Ans. (c) Reason (R) is wrong because, the average temperature of Chennai is between 24° – 25° Celsius.

Match the Following

8. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A	Column B
A Mawsynram	1 Broad trough of low pressure in equatorial latitudes
B ITCZ	2 Wettest place on the earth
C El Nino	3 Spanish word meaning 'the child'
D Coriolis force	4 Caused by the earth's rotation

Codes:

A	B	C	D
(a) 3	4	2	1
(b) 2	1	3	4
(c) 4	1	3	2
(d) 1	3	2	4

Ans. (b)

Find the Incorrect Option

- 9.** (a) The climate of India is strongly influenced by monsoon winds.
 (b) The western cyclonic disturbances are weather phenomena of the summer months brought in by the westerly flow from the Mediterranean region.
 (c) The Tropic of Cancer passes through the

middle of the country from the Rann of Kutch in the west to Mizoram in the east.

(d) The pressure and wind system of any area depend on the latitude and altitude of the place.

Ans. (b)

10. (a) In the Thar Desert the day temperature may rise to 50°C, and drop down to near 15°C the same night.

(b) The annual precipitation varies from over 400 cm in Meghalaya to less than 10 cm in Ladakh and western Rajasthan.

(c) India has mountains to the north, which have an average height of about 8,000 metres.

(d) The total amount of winter rainfall locally known as 'mahawat'.

Ans. (c)

Fill in the Blanks

11. The term **monsoon** refers to the seasonal reversal in the wind direction during a year.

12. The wind blowing during the summer in the Northern plains is known as **loo**.

13. **El Nino** is the name given to the periodic development of a warm ocean current along the coast of Peru.

Very Short Answer Type Questions

14. Name the state affected by Kaal Baisakhi.

Ans. West Bengal

15. Name the winds which bring rainfall along the Malabar Coast.

Ans. The southwest monsoon winds are responsible for bringing rainfall along the Malabar Coast.

16. Why do parts of Rajasthan, Gujarat and leeward side of Western Ghats get less rainfall?

Ans. Parts of Rajasthan, Gujarat and the leeward side of the Western Ghats receive less rainfall during the monsoon rains. The progressive decrease in the humidity of the winds of the Bay of Bengal branch causes the amount of rainfall to decrease from east to west in northern India. As the leeward side of the western Ghats is the rain-shadow area, the places located in this region receive very little rainfall from the Arabian Sea branch. It is the windward side of the Ghats that receives the maximum rain.

Short Answer Type Questions

17. Give reasons why the rainfall decreases from east to west in North India.

Ans. The rainfall decreases from east to west in northern India because of the following reason: Rainfall decreases from the east to the west in Northern India because there is a decrease in the moisture of the winds. As the moisture bearing

winds of the Bay of Bengal branch of the south west monsoon move further and further inland, the moisture gradually decreases and results in low rainfall when moving westwards. Thus, Mawsynram in the southern ranges of the Khasi Hills receives the highest average rainfall in the world. Rainfall in the Ganga valley decreases from the east to the west. Hence, Rajasthan and parts of Gujarat which are on the western get scanty rainfall.

18. How does monsoon create a unified bond in India?

Ans. India has various physical features which act for the unification of the country. For example, when we look at the Himalayan ranges in the North, they protect the subcontinent from extremely cold polar winds. This enables even northern India to have uniformly high temperature for their latitudes. This high temperature creates low pressure belt over the Indian regions. This helps the south-east trade winds to change direction to southwest after crossing equator and brings southwest monsoon. Even in south, the peninsular plateau, under the influence of the sea from three sides, has moderate temperatures. Despite climate contrast and variations in region to region, the monsoons provide a rhythmic cycle of seasons every year. It is around this seasonal rhythm that the Indian landscape, its animals and plant life, its entire agricultural calendar and its total life of Indian people and their festival revolve around. Though, monsoon is characterized by their most uneven distribution of rainfall in the country, yet they are responsible for bringing highly moist marine air to almost every part of the country at least for few weeks whether it brings rain or not.

19. 'The Himalayas protect the subcontinent from extremely cold winds from central Asia'. Justify the statement.

Ans. We know that the Himalayas protect the subcontinent from the extreme cold winds coming from central Asia which helps in maintaining the moderate weather conditions in northern plains and across the subcontinent. The Peninsular plateau, under the influence of the sea from three sides experiences the moderate weather conditions.

Paragraph Based Questions

20. Read the sources given below and answer the questions that follow:

Source A - The Cold Weather Season (Winter)

The cold weather season begins from mid-November in northern India and stays till February. December and January are the coldest

months in the northern part of India. The temperature decreases from south to the north.

(a) Write a short note on the winter season in India.

Source B - The Indian Monsoon

The climate of India is strongly influenced by monsoon winds. The sailors who came to India in historic times were one of the first to have noticed the phenomenon of the monsoon. They benefited from the reversal of the wind system as they came by sailing ships at the mercy of winds. The Arabs, who had also come to India as traders named this seasonal reversal of the wind system 'monsoon'.

(b) How were sailors in the historic times were benefited from the monsoon winds.

Source C - Monsoon as a Unifying Bond

Year after year, people of India from north to south and from east to west, eagerly await the arrival of the monsoon. These monsoon winds bind the whole country by providing water to set the agricultural activities in motion. The river valleys which carry this water also unite as a single river valley unit.

(c) 'Year after year, people of India from north to south and from east to west, eagerly await the arrival of the monsoon'. Evaluate this statement.

Ans. (a) The winter season sets in mid-November in northern India and continues till February. The months of December and January are the coldest in the northern part of India. The higher slopes of the Himalayas experience snowfall. There is variation in temperature from south to the north. The peninsular region does not have a well defined cold season.

(b) Monsoon winds have strong influence on the climate of India. During ancient times sailors who navigated to India were the first ones to notice the phenomenon of the monsoon. The sailors benefited from the reversal of the wind system as they sailed at the mercy of winds. The Arab traders named this seasonal reversal of the wind system as 'monsoon'.

(c) In this statement, it is said that people from all over India, eagerly awaits for the arrival of the monsoon. It is because monsoon is the only season when people expect maximum amount of rainfall. This provides water to agricultural activities as well as non-perennial rivers.

Case Based Questions

21. The Monsoon, unlike the trades, are not steady winds but are pulsating in nature, affected by different atmospheric conditions encountered by

it, on its way over the warm tropical seas. The duration of the monsoon is between 100–120 days from early June to mid-September. Around the time of its arrival, the normal rainfall increases suddenly and continues constantly for several days. This is known as the 'burst' of the monsoon, can be distinguished from the pre-monsoon showers. The monsoon arrives at the southern tip of the Indian peninsula generally by the first week of June. Subsequently, it proceeds into two — the Arabian Sea branch and the Bay of Bengal branch. The Arabian Sea branch reaches Mumbai about ten days later on approximately the 10th of June. This is a fairly rapid advance. The Bay of Bengal branch also advances rapidly and arrives in Assam in the first week of June. The lofty mountains causes the monsoon winds to deflect towards the west over the Ganga plains. By mid-June the Arabian Sea branch of the monsoon arrives over Saurashtra – Kuchchh and the central part of the country. The Arabian Sea and the Bay of Bengal branches of the monsoon merge over the north-western part of the Ganga plains. Delhi generally receives the monsoon showers from the Bay of Bengal branch by the end of June (tentative date is 29th of June). By the first week of July; western Uttar Pradesh, Punjab, Haryana and eastern Rajasthan experience the monsoon. By mid-July, the monsoon reaches Himachal Pradesh and the rest of the country.

- 21.1** Which of the following statements is not correct about monsoon advancement in India?
- it arrives at the southern tip and moves ahead in two branches
 - it first reaches Mumbai in the west and Assam in the east
 - the Arabian Sea branch reaches Mumbai in about ten days
 - the two branches merge over the north-western part of the Ganga plains

Ans. (b) it first reaches Mumbai in the west and Assam in the east

- 21.2** The 'burst' of the monsoon can be distinguished from the
- post-monsoon showers
 - spring showers
 - pre-monsoon showers
 - branching monsoon showers

Ans. (c) pre-monsoon showers

- 21.3** Which relief feature contributes to the deflection of monsoon winds towards Ganga plains?
- rivers
 - valleys

- altitudes
- mountains

Ans. (d) mountains

- 21.4** When does the monsoon spread over the entire country?
- mid-July
 - mid-June
 - beginning of July
 - end of June

Ans. (a) mid-July

- 22.** The climate of India is described as the 'monsoon' type. In Asia, this type of climate is found mainly in the south and the southeast. Despite an overall unity in the general pattern, there are perceptible regional variations in climatic conditions within the country. Let us take two important elements – temperature and precipitation, and examine how they vary from place to place and season to season. In summer, the mercury occasionally touches 50 °C in some parts of the Rajasthan desert, whereas it may be around 20 °C in Pahalgam in Jammu and Kashmir. On a winter night, temperature at Drass in Jammu and Kashmir may be as low as minus 45 °C. Thiruvananthapuram, on the other hand, may have a temperature of 22 °C. There are variations not only in the form and types of precipitation but also in its amount and the seasonal distribution. While precipitation is mostly in the form of snowfall in the upper parts of Himalayas, it rains over the rest of the country. The annual precipitation varies from over 400 cm in Meghalaya to less than 10 cm in Ladakh and western Rajasthan. Most parts of the country receive rainfall from June to September. But some parts like the Tamil Nadu coast gets a large portion of its rain during October and November.

- 22.1** What typical feature does India possess which justifies its position as a south and south-east Asian country?
- the unity of its pattern
 - the regional variations
 - its monsoon climate type
 - the seasons and terrain

Ans. (c) its monsoon climate type

- 22.2** In summers, the Rajasthan desert scorches at temperature.
- 50 °C
 - 45 °C
 - 20 °C
 - 22 °C

Ans. (a) 50 °C

- 22.3** Climatic conditions are dependent on and
- temperature, terrain.
 - temperature, precipitation.
 - precipitation, humidity.
 - green cover, terrain.

Ans. (b) temperature, precipitation.

- 22.4** What is the range of precipitation in India? Choose the most appropriate answer.
- 10 cm to 400 cm
 - between 0 cm and 50 cm
 - more than 50 cm but less than 500 cm
 - less than 10 cm to more than 400 cm

Ans. (d) less than 10 cm to more than 400 cm

Long Answer Type Questions

- 23.** Explain the phenomenon of Jet Streams. How can they be classified? Bring out their differences.

Ans. The jet stream is a river of wind that blows horizontally through the upper layers of the troposphere. These are a narrow belt of high altitude (above 12,000 m) westerly winds in the troposphere. They generally move from west to east, at an altitude of 20,000–50,000 feet (6,100–9,144 meters). Jet streams form where there is a large temperature difference between two air masses. Their speed varies from about 110 km/h in summer to about 184 km/h in winter. A number of separate jet streams have been identified. The most constant are the mid-latitude and the sub-tropical jet stream. Objects and air at the equator rotate around the Earth's axis much faster than they do at more northerly or southerly latitudes.

Thus, as the warmer air is drawn towards the poles, it moves faster, relative to the Earth's surface. Because the rising warm air feeding the jet stream happens all along the equator, the effects accumulate, giving rise to high-speed winds.

On the basis of locational aspect, jet streams are divided into five types:

- Polar Front Jet Streams:** This stream is also known as the polar front jet or mid-latitude jet stream. It is a belt of powerful upper-level winds that sits atop the polar front. These winds are strongest in the tropopause and move in a generally westerly direction in mid-latitudes. These winds move in the easterly direction but are irregular.
- Subtropical Westerly Jet Streams:** These jet streams are located approximately over 27°–30° north latitude, therefore, they are

known as subtropical westerly jet streams. The circulation of these winds is in the west to east direction. They are more regular as compared to the polar jets.

- Tropical Easterly Jet Streams:** An easterly jet stream, called the sub-tropical easterly jet stream blows over peninsular India, approximately over 14°N during the summer months. The existence of this jet implies that there is a deep layer of warm air to the north of the jet and colder air to the south over the Indian Ocean. This warm air is of course associated with the maximum heating taking place over India in summer, while the colder air is over the ocean. The difference in heating and cooling and the ensuing pressure gradient is what drives this jet.
- Polar Night Jet Streams:** Polar night jet streams, also known as stratospheric sub-polar jet streams, develop in winter season due to steep temperature gradient in the stratosphere around the poles at the height of 30 km.
- Local Jet Streams:** Local jet streams are formed locally due to local thermal and dynamic conditions and have limited local importance.

- 24.** Explain the distribution of rainfall in India.

Ans. India has a very uneven distribution of rainfall. Given below is how the rainfall is distributed over the entire country.

- Parts of western coast and northeastern India receive over about 400 cm of rainfall annually.
- Western Rajasthan and adjoining parts of Gujarat, Haryana and Punjab receive less than 60 cm of rainfall.
- Rainfall is equally low in the interior of the Deccan plateau, and east of the Sahyadris.
- A third area of low precipitation is around Leh in Jammu and Kashmir.
- The rest of the country receives moderate rainfall.
- Snowfall is restricted to the Himalayan region.

Also, we should keep in mind that there are certain areas in India where there is more than 200 cm rainfall. There are three such main areas in India:

- The western slopes of the Western Ghats
- The north-east India (except Tripura and Manipur)
- The Andaman and Nicobar Islands

Again, there are certain areas in the country which receive less than 50 cm average annual rainfall. There are three such areas in India:

- (a) Northern Gujarat, western Rajasthan and the southern parts of Punjab-Haryana
- (b) The rain-shadow area of the Western Ghats
- (c) The desert of Ladakh

Owing to the nature of monsoons, the annual rainfall is highly variable from year to year. Variability is high in the regions of low rainfall, such as parts of Rajasthan, Gujarat and the leeward side of the Western Ghats. As such, while areas of high rainfall are liable to be affected by floods, areas of low rainfall are drought-prone.

25. Read the extract and answer the questions that follow:

Due to the curvature of the earth, the amount of solar energy received varies according to latitude. As a result, air temperature generally decreases from the equator towards the poles. As one goes from the surface of the earth to higher altitudes, the atmosphere becomes less dense and temperature decreases. The hills are therefore cooler during summers. The pressure and wind system of any area depend on the latitude and altitude of the place. Thus it influences the temperature and rainfall pattern. The sea exerts a moderating influence on climate: As the distance from the sea increases, its moderating influence decreases and the people experience extreme weather conditions. This condition is known as continentality (i.e. very hot during summers and very cold during winters). Ocean currents along with onshore winds affect the climate of the coastal areas. For example, any coastal area with warm or cold currents flowing past it, will be warmed or cooled if the winds are onshore.

- (a) What is the reason for variation in the amount of solar energy received by earth?
- (b) Why is Shimla or any other hill station remains colder in comparison to plains during summers?
- (c) Define the concept of continentality.

- Ans.** (a) Due to the curvature of the earth, the amount of solar energy received varies according to latitude.
- (b) Hill stations remain colder in summers due to their altitudes. When one goes from the surface of the earth to higher altitudes, the atmosphere becomes less dense due to which the temperature decreases.
- (c) The Sea has a moderate influence on the climate of any place. As the distance from the sea increases, its moderate influence decreases and the people experience extreme weather conditions. This condition is known

as continentality which means very hot during summers and very cold during winters.

————— Let's Compete —————

Multiple-Choice Questions

1. The sum total of weather conditions and variations of a vast area for a long duration of time is known as
- (a) monsoon.
 - (b) weather.
 - (c) climate.
 - (d) hot weather.

Ans. (c) climate.

2. The amount of sun's rays received depends on
- (a) altitude.
 - (b) longitude.
 - (c) latitude.
 - (d) none of these.

Ans. (c) latitude.

3. A low pressure trough found in the equatorial latitude is called
- (a) ITCZ.
 - (b) Coriolis force.
 - (c) Centrifugal force.
 - (d) Centripetal force.

Ans. (a) ITCZ.

4. A mango shower is a
- (a) monsoonal rainfall.
 - (b) winter rainfall.
 - (c) pre-monsoon rainfall in Karnataka and Kerala.
 - (d) cyclonic rainfall.

Ans. (c) pre-monsoon rainfall in Karnataka and Kerala.

5. In Northern India, the cold weather season begins from
- (a) early November.
 - (b) mid-October.
 - (c) late November.
 - (d) early December.

Ans. (c) mid November.

6. Which of the following places receive rainfall more than 250 cm?
- (a) Uttar Pradesh
 - (b) Western Rajasthan
 - (c) Assam
 - (d) Western slopes of the Western Ghats

Ans. (d) Western slopes of the Western Ghats

7. Which of the following stations have equable climate?
- (a) Jodhpur
 - (b) Mumbai
 - (c) Delhi
 - (d) Leh

Ans. (c) Delhi

8. The monsoon withdraws completely from India by the month of
- (a) February.
 - (b) December.
 - (c) January.
 - (d) November.

Ans. December.

9. Maximum rainfall in India is brought by
- (a) Northeast trade winds.

- (b) Western disturbances.
- (c) Southwest monsoons.
- (d) Retreating monsoons.

Ans. (c) Southwest monsoons.

10. During the summer season, the hills are comparatively cooler than the plains due to

- (a) distance from the sea. (b) latitude.
- (c) relief. (d) higher altitude.

Ans. (d) higher altitude.

Value-based Questions

(Optional)

1. What kind of suffering and devastation happens when floods occur? How can we help the people living in flood prone areas?

Ans. Floods have a devastating effect on humans, their environment, their living and the land on the whole. Some of the effects of floods are given below:

- (a) Floods can seriously disrupt public and personal transport by cutting off roads and railway lines, as well as communication links when telephone lines are damaged.
- (b) Floods disrupt normal drainage systems in cities.
- (c) Floodwater enters the drainage system and as a result, sewage spills happen. These seepage spills represent a serious health hazard, along with standing water and wet materials in the home.
- (d) A number of bacteria, mould and viruses start developing in the areas with floodwater which cause diseases, trigger allergic reactions, and continue to damage materials long after a flood.
- (e) Floods can though distribute large amounts of water and suspended sediment over vast areas, restocking valuable soil nutrients to agricultural lands.
- (f) In contrast, soil can be eroded by large amounts of fast flowing water, ruining crops, destroying agricultural land / buildings and drowning farm animals.
- (g) Floods not only ruin homes / businesses and destroy personal property, but the water left behind causes further damage to property and contents.

We can help people living in flood prone areas by:

- (a) Constructing levees, beams, or floodwalls to stop floodwater from entering your home.
- (b) By installing a sump pump and zero reverse flow valves in basement floor drains.
- (c) Information and announcements should be made from time to time regarding the floods.
- (d) When there is a flood, the main switches or valves should be turned off. Disconnect electrical appliances.
- (e) Remove toxic substances such as pesticides and insecticides from the flood area to prevent pollution.
- (f) Construction in flood hazard areas should be discouraged. The construction should also comply with floodplain development standards.

2. Parts of Rajasthan and Gujarat are drought prone. Explain how the farmers of these states have managed to cultivate crops. What methods can the farmers adopt to increase their production?

Ans. A lot of areas in Rajasthan and Gujarat are prone to droughts. The farmers in these areas have adopted a number of policies to make sure that they utilize the water which is available to them methodically.

- (a) In Rajasthan, communities participate in checking on rainwater loss and thus ensuring the enhancement of groundwater.
- (b) State Governments have started excellent initiatives for water conservation in last few years using Mahatma Gandhi NREGA funds such as the 'Mukhyamantri Jal Swalalamban Abhiyan' in Rajasthan.
- (c) Cultivation of drought resistant crops and crop varieties followed by scientific management practices would lead to drought proofing over a period of time.
- (d) The farmers can raise a community nursery for cereal crops and transplant the seedlings at the start of the rainy season.
- (e) Farmers can store water for providing life-saving or protective irrigation to the crops grown in dry land areas. The water could be stored for short period or long period and it can be preserved either in soil, pond or ditches based on situation and utilized for irrigation during dry periods.

5

Natural Vegetation and Wildlife

Milestone

Multiple-Choice Questions

1. The total number of flowering plants that India accounts for is

- (a) 9 per cent. (b) 8 per cent.
(c) 6 per cent. (d) 2 per cent.

Ans. (c) 6 per cent.

2. Plants of a particular region or period are called

- (a) biome. (b) flora.
(c) lichens. (d) fauna.

Ans. (b) flora.

3. Tropical Evergreen forests are found in

- (a) Western Ghats.
(b) foothills of the Himalayas.
(c) delta of the Ganga.
(d) Rajasthan.

Ans. (a) Western Ghats.

Very Short Answer Type Questions

4. Differentiate between flora and fauna.

Ans.

	Flora	Fauna
1.	Flora is the plant life occurring in a particular region or period.	Fauna is the animal life of any particular region or period.
2.	Flora represents the entire plant life.	Fauna represents the entire animal life.
3.	Flora prepares its own food with the help of sunlight.	Fauna doesn't prepare its own food. They depend on flora for food.
4.	They cannot move from one place to another.	They are mobile in their nature.
5.	Flora include palm trees, grass, sunflowers, etc.	Fauna includes lions, tigers, bears, cows, etc.

5. What type of occupation is practised in the grasslands and woodlands?

Ans. Grasslands – cattle rearing
Woodlands – production of timber

6. Name one particular state that does not have Tropical Deciduous forests.

Ans. Rajasthan.

7. What are migratory birds?

Ans. Migration is a natural process. Different birds fly over hundreds and thousands of kilometre in order to find the best ecological conditions and habitats for themselves and their young ones. When the conditions at breeding sites become unfavourable due to low temperatures, migratory birds fly to regions where conditions are better.

8. How many biosphere reserves have been set-up in India to protect its flora and fauna?

Ans. Eighteen biosphere reserves have been set-up in India to protect its flora and fauna.

Short Answer Type Questions

9. 'India has a colourful bird life.' Explain.

Ans. India has a wide variety of fauna. Various life forms develop and prosper here. India has rich climatic conditions and various relief factors which help the number of animals and birds to survive here. The rich green environment and serene atmosphere has always invited thousands of birds to India. This is a result that India has a colourful bird life. It has about 2000 species of birds, which includes peacocks, pheasants, ducks, parakeets, cranes and pigeon.

10. Why and how do trees grow faster in summer?

Ans. We know that plants depend on sunlight for their growth and development. The process of photosynthesis needs sunlight to prepare their food. Now due to longer duration of sunlight, trees grow faster in summer.

11. Explain how forests are important for human beings.

- Ans.** (a) The entire living organisms group depends on the forests for their survival. Directly or indirectly we depend on forests for our survival.
- (b) Right from the air we breathe to the wood we use has been provided by the forests.
- (c) Besides providing habitats for animals and livelihoods for humans, forests also offer watershed protection, prevent soil erosion and mitigate climate change.
- (d) They support a variety of industries like the rubber industry.

Long Answer Type Questions

12. Highlight the reasons why the evergreen forests are found on the western slopes of the Western Ghats.

- Ans.** (a) Tropical evergreen forests are found in the heavy rainfall areas of the Western Ghats.
- (b) These regions receive an annual precipitation of more than 200 cm.
- (c) They also have an annual temperature of more than 22 degree Celsius.
- (d) These areas are situated in the rainy sides of the Western Ghats with an altitude of 500 to 1500 metre.
- (e) Western side of the Western Ghats is a windward side. Therefore, this region receives more rainfall as the monsoon wind coming from the Arabian Sea clashes against the mountains of the Western Ghat.

13. Describe the type of vegetation and wildlife found in the Ganga–Brahmaputra delta.

- Ans.** The mangrove tidal forests are found in the areas of coasts influenced by tides. Dense mangroves are the common varieties. In the Ganga–Brahmaputra delta, sundari trees are found. Palm, coconut, *keora*, *agar*, etc. also grow in some parts. Royal Bengal Tiger, turtles, crocodiles, gharials and snakes are found in these forests.

Self-Assessment

Multiple-Choice Questions

1. An example of dry deciduous tree is
- (a) sal.
- (b) juniper.
- (c) cacti.
- (d) cinchona.

Ans. (a) sal.

2. Acacias are found in
- (a) Mangrove forests.
- (b) Thorn and Scrub forests.

(c) Tropical Evergreen forests.

(d) Montane forests.

Ans. (b) Thorn and Scrub forests.

3. Rubber belongs to the following type of vegetation.

(a) Tropical Evergreen (b) Tropical Deciduous

(c) Montane Forests (d) Tidal Forests

Ans. (a) Tropical Evergreen

Assertion-Reason Type Questions

For question numbers 4 to 7, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

4. **Assertion (A):** The character and extent of vegetation are mainly determined by temperature along with humidity in the air, precipitation and soil.

Reason (R): The fall in the temperature affects the types of vegetation and its growth.

Ans. (a) Reason (R) is the correct explanation of Assertion (A) because on the slopes of the Himalayas and the hills of the Peninsula above the height of 915 metres, the fall in the temperature affects the types of vegetation and its growth, and changes it from tropical to subtropical temperate and alpine vegetation.

5. **Assertion (A):** Tropical Deciduous Forests are the most widespread forests of India.

Reason (R): They are also called the monsoon forests.

Ans. (b) Both Assertion (A) and Reason (R) are correct but Reason (R) is not the correct explanation of (A). These forests spread over the region receiving rainfall between 200 cm and 70 cm. Trees of this forest type shed their leaves for about six to eight weeks in dry summer.

6. **Assertion (A):** To protect the flora and fauna of the country, the government has taken many steps.

Reason (R): Eighteen biosphere reserves have been set-up in the country to protect flora and fauna.

Ans. (a) Ten out of these biosphere reserves, the Sundarbans, Nanda Devi, the Gulf of Mannar, the Nilgiri, Nokrek, Great Nicobar, Manas, Simlipal, Pachmarhi and Achanakmar-

Amarkantak have been included in the world network of biosphere reserves.

7. Assertion (A): In the Ganga-Brahmaputra delta, sundari trees are found.

Reason (R): Sundari trees provide durable hard timber.

Ans. (b) Both the Assertion (A) and Reason (R) are true. However, Reason (R) is not the correct explanation of Assertion. Palm, coconut, keora, agar, etc., also grow in some parts of the delta.

Match the Following

8. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A	Column B
A Trees reach a height of 60 metres	1 Tundra vegetation
B Mosses and Lichens	2 Tropical evergreen forests
C Acacias and euphorbias species	3 Montane forests
D Alpine vegetation	4 Thorn forests

Codes:

	A	B	C	D
(a)	3	4	2	1
(b)	2	1	4	3
(c)	4	1	3	2
(d)	1	3	2	4

Ans. (b)

Find the Incorrect Option

- 9.** (a) There are about 90,000 species of animals in India.
 (b) Wildlife Protection Act was implemented in India in the year 1972.
 (c) The Gir forest is the last remaining habitat of the Asiatic Lion.
 (d) Sixteen biosphere reserves have been established to protect flora and fauna.

Ans. (d)

- 10.** (a) Tropical evergreen forests are restricted to heavy rainfall areas of the Eastern Ghats.
 (b) The trees reach great heights up to 60 metres or even above in tropical evergreen forests.
 (c) In regions with less than 70 cm of rainfall, the natural vegetation consists of thorny trees and bushes.
 (d) On the basis of the availability of water, Tropical Deciduous forests are further divided into moist and dry deciduous.

Ans. (a)

Fill in the Blanks

11. India has **2000** species of birds.
 12. The deltas of Ganga, Mahanadi, Kaveri, etc. have **mangrove** forests.
 13. **Eighteen** biosphere reserves have been set-up to protect flora and fauna.

Very Short Answer Type Questions

14. Name some common animals found in Tropical Evergreen forests area.

Ans. The common animals found in these forests are elephant, monkey, lemur and deer. One-horned rhinoceroses are found in the jungles of Assam and West Bengal. Besides these animals, plenty of birds, bats, sloth, scorpions and snails are also found in these jungles.

15. At what altitude is alpine vegetation found?

Ans. Alpine vegetation is found at high altitudes, generally 3600 metres above the sea level.

Short Answer Type Questions

16. Name some of the factors due to which the natural vegetation of India has undergone many changes.

Ans. The natural vegetation of India has undergone many changes. The factors responsible for these changes have been discussed below:

- (a) There is a growing demand for cultivated land. This is because the population of our country has increased manifold. So, in order to meet the food grain requirement, more and more forested lands are being used. This has caused the natural vegetation of that particular area to either die out or change its pattern.
 (b) Industrial development and mining have resulted in forests being cleared away to enable access to resources.
 (c) Urbanization has caused a lot of changes in the wildlife and natural vegetation of India. Due to increasing economic activities and development, the land replenishment has reduced.
 (d) The landforms, cutting down of trees, increase in temperature are some factors that may have also brought about the changes.

17. How many bio-reserves have been set-up by the government of India. Name them.

Ans. India has set-up 18 bio-reserves to protect the flora and fauna of the country. These bio-reserves are:

- | | |
|-------------------|---------------------------------|
| 1. Sundarbans | - West Bengal |
| 2. Gulf of Mannar | - Tamil Nadu |
| 3. Nilgiri | - Tamil Nadu, Kerala, Karnataka |

- | | |
|---------------------------|--------------------------------|
| 4. Nanda Devi | - Uttarakhand |
| 5. Nokrek | - Meghalaya |
| 6. Great Nicobar | - Andaman and Nicobar Islands |
| 7. Manas | - Assam |
| 8. Simlipal | - Odisha |
| 9. Dihang-Dibang | - Arunachal Pradesh |
| 10. Dibru Saikhowa | - Assam |
| 11. Agasthyamalai | - Kerala, Tamil Nadu |
| 12. Kangchendzonga | - Sikkim |
| 13. Pachmarhi | - Madhya Pradesh |
| 14. Achanakmar-Amarkantak | - Madhya Pradesh, Chhattisgarh |
| 15. Great Rann of Kachchh | - Gujarat |
| 16. Cold Desert | - Himachal Pradesh |
| 17. Panna | - Madhya Pradesh |
| 18. Seshachalam Hills | - Andhra Pradesh |

18. How can wildlife be protected? Mention three measures adopted for the protection of wildlife.

Ans. Every animal species has a role to play in the ecosystem. Hence, their conservation is essential. Given below are some of the ways in which we can protect the wildlife.

- Killing of wild animals and birds on the large scale by man is a serious threat that wildlife is facing for its survival. This disturbs the food chain and also the ecosystem. Hence the killing of the animals should be stopped completely.
- The more number of National Parks and Sanctuaries should be established for preserving the natural habitats of wild animals and birds throughout the country.
- The Department of Government should conduct a periodic survey in all the forests regarding the conservation of wildlife. They should have the knowledge about the population of all the species of wild animals and birds, so that they can be helped during the time of floods and famines.

Three methods adopted by the government of India for the protection of wildlife are:

- Project Tiger, Project Rhino, Project Great Indian Bustard and many other eco-developmental projects have been introduced.
- 103 National Parks, 535 Wildlife sanctuaries and Zoological gardens are set up to take care of natural heritage.
- Eighteen biosphere reserves have been set-up in the country to protect the flora and fauna of the country.

19. 'All of us must realise the importance of

natural ecosystem for our survival'. Express your views.

Ans. Natural ecosystem consist of living and non-living organisms. In natural ecosystem each component interacts with other through physical, chemical and biological processes. It plays a very important role in enhancing the quality of environment. Natural ecosystem occurs freely in nature, it modifies local climate, control soil erosion, regulate stream flow, support variety of industries and provide livelihood to many communities.

Paragraph Based Questions

20. Read the sources given below and answer the questions that follow:

Source A – Mangrove Forests

The mangrove tidal forests are found in the areas of coasts influenced by tides. Mud and silt get accumulated on such coasts. Dense mangroves are the common varieties with roots of the plants submerged under water.

(a) How are mangrove forests different from other forests?

Source B – Tropical Evergreen Forests

These forests are restricted to heavy rainfall areas of the Western Ghats and the island groups of Lakshadweep, Andaman and Nicobar, upper parts of Assam and Tamil Nadu coast.

(b) Why tropical evergreen forests appear green throughout the year?

Source C – Wildlife

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 habitation, are also responsible for the imbalance.

(c) What are the factors responsible for ecological imbalance?

Ans. (a) Mangrove forests are different from other forests because they are found in the coastal areas and influenced by tides. These forests are associated with wetness, where mud and silt get accumulated. The roots of the mangroves are submerged under water.

(b) The tropical evergreen forests appear green throughout the year because these forests are found in the areas of heavy rainfall with a short dry season.

(c) Factors responsible for ecological imbalance are as follows:

- Introduction of new species
- Deforestation
- Pollution
- Poaching and hunting of species.

Case Based Questions

21. Tropical deciduous forests are the most widespread forests of India. They are also called the monsoon forests and spread over the region receiving rainfall between 200 cm and 70 cm. Trees of this forest type shed their leaves for about six to eight weeks in dry summer. On the basis of the availability of water, these forests are further divided into moist and dry deciduous forests. The former is found in areas receiving rainfall between 200 and 100 cm. These forests exist, therefore, mostly in the eastern part of the country – the north-eastern states, along the foothills of the Himalayas, Jharkhand, West Odisha and Chhattisgarh, and on the eastern slopes of the Western Ghats. Teak is the most dominant species of this forest. Bamboos, sal, shisham, sandalwood, khair, kusum, arjun and mulberry are other commercially important species. The dry deciduous forests are found in areas having rainfall between 100 cm and 70 cm. These forests are found in the rainier parts of the Peninsular plateau and the plains of Bihar and Uttar Pradesh. There are open stretches, in which teak, sal, peepal and neem grow. A large part of this region has been cleared for cultivation and some parts are used for grazing. 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.

- 21.1** What is the difference between moist and dry deciduous forests?
- moist deciduous forests receive at least 80 cm more rainfall
 - dry deciduous forests receive nearly 30 cm less rainfall
 - moist deciduous forests receive nearly 50 cm less rainfall
 - dry deciduous forests receive at least 50 cm less rainfall

Ans. (a) moist deciduous forests receive at least 80 cm more rainfall

21.2 Which tree is capable of growing in both moist and dry deciduous forests?

- sandalwood
- shisham
- sal
- neem

Ans. (c) sal

21.3 How long does the leaf shedding season last for deciduous forests?

- six to eight weeks in dry summer
- four to six weeks in autumn
- six to twelve weeks in autumn
- six to eight weeks in winters

Ans. (a) six to eight weeks in dry summer

21.4 The eastern slopes of the Western Ghats are usually adorned by

- moist deciduous forests.
- dry deciduous forests.
- tropical deciduous forests.
- both (a) and (b)

Ans. (a) moist deciduous forests.

22. In mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation. As such, there is a succession of natural vegetation belts in the same order as we see from the tropical to the tundra region. The wet temperate type of forests are found between a height of 1000 and 2000 metres. Evergreen broad-leaf trees, such as oaks and chestnuts predominate. Between 1500 and 3000 metres, 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. At high altitudes, generally, more than 3,600 metres above the sea level, temperate forests and grasslands give way to the Alpine vegetation. Silver fir, junipers, pines and birches are the common trees of these forests. However, they get progressively stunted as they approach the snow-line. Ultimately, through shrubs and scrubs, they merge into the Alpine grasslands.

22.1 Which of the following statements is true?

- increase in temperature with increasing altitude leads to change in natural vegetation
- decrease in temperature with increasing altitude leads to change in natural vegetation
- decrease in temperature with decreasing altitude leads to change in natural vegetation
- increase in temperature with decreasing altitude leads to change in natural vegetation

Ans. (b) decrease in temperature with increasing altitude leads to change in natural vegetation

22.2 The forests found between a height of 1000 and 2000 metres are broadly classified as

- Tropical Rain Forest.
- Montane Forests.
- Tropical Deciduous.
- Swamp Forests.

Ans. (b) Montane Forests.

22.3 Oaks and chestnuts can be classified as

- Tropical thorn trees.

- (b) Tropical trees.
- (c) Deciduous trees.
- (d) Evergreen broad-leaf trees.

Ans. (d) Evergreen broad-leaf trees.

22.4 What sort of forests are found over 3,600 metres above the sea level?

- (a) Alpine forests
- (b) Temperate forests
- (c) Temperate grasslands
- (d) Wet-temperate forests

Ans. (a) Alpine forests

Long Answer Type Questions

23. Describe the features of tidal forests.

Ans. (a) The tidal forests are also known as the mangrove forests.

- (b) They are found in the areas with coasts which are influenced by the tides.
- (c) These forests can also be found in the delta regions of the country.
- (d) Mud and silt get accumulated in such areas.
- (e) The trees in these forests have stilt like roots which support the plants during high tides.
- (f) The deltas of the Ganga, the Mahanadi, the Krishna, the Godavari and the Kaveri are covered by such vegetation.
- (g) Two types of trees found here are sundari trees and gorjan trees.
- (h) Mangrove forests have a varied variety of the plants which are submerged underwater.
- (i) These forests help both in pollination and in seed dispersal and they are thick and dense.
- (j) The trees of tidal forests also form communities that help them to stabilise banks and coastlines and also provide natural habitat to many types of animals.
- (k) Royal Bengal Tiger is the famous animal in these forests. Turtles, crocodiles, gharials and snakes are also found in these forests.

24. Differentiate between thorn forests and montane forests.

Ans.

	Thorn Forests	Montane Forests
1.	They are found in the areas which receive less than 70 cm of rainfall.	The areas of montane forests receive 470 mm of rainfall.
2.	Found in the northwestern parts of India, e.g., Rajasthan, Northern parts of Gujarat, Haryana, some parts of Deccan Plateau.	These forests are found in the mountainous regions at a height of 1000 to 2000 metres.

3.	The trees are small and stunted in shape and size.	The trees are conical in shape.
4.	Camel and horses live in these forests.	Kashmir stag and Tibetan Antelope live in this area.
5.	Acacia, palms, euphorbias, and cactus are found in this region.	Oak, pine, chestnut, deodar, etc., can be found in these forests.

25. Read the extract and answer the questions that follow:

We also experimented and selected many medicinal plants. The animals were selected from large stock provided by nature as milch animal. They also provided us draught power, transportation, meat and eggs. The fish provide nutritive food. Many insects' help in pollination of crops and fruit trees and exerting biological control on such insects is harmful. Every species has a role to play in the ecosystem. Hence, conservation is essential. As has been mentioned earlier due to excessive exploitation of plant 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.

- (a) What is the importance of bio-diverse environment?
- (b) How human activities are affecting the ecosystem?
- (c) What is the role of insects in ecosystem?

Ans. (a) All the living beings are dependent on each other in a food cycle. Human beings are also dependent on plants and animals for their survival. Nature has provided us abundant of medicinal plants and large stock of animals to provide us the products like milk, meat, eggs, etc. Every species play an important role in the ecosystem and helps in the conservation of environment. Hence, it is the responsibility of human beings to conserve the biodiversity for sustainable development.

- (b) Due to the excessive exploitation of plant and animal resources by humans, the ecosystem has been disturbed. Activities like illegal poaching and hunting has resulted in the extinction of many animal species. There are some plant and animal species that have become endangered whereas some have become extinct.
- (c) Insects help in pollination of crops and fruit trees.

Let's Compete

Multiple-Choice Questions

1. Fauna is referred to as
- (a) natural vegetation found in the Himalayas.
 - (b) species of plants.
 - (c) species of animals.
 - (d) none of these.

Ans. (c) species of animals.

2. Different places have difference in the duration of sunlight due to

- (a) different latitudes.
- (b) different seasons.
- (c) different altitude.
- (d) all of these.

Ans. (d) all of these.

3. The following tree is not found in tropical deciduous forests

- (a) peepal.
- (b) teak.
- (c) sal.
- (d) mahogany.

Ans. (d) mahogany.

4. The trees of the thorn and scrub forests are

- (a) dense.
- (b) tall.
- (c) scattered.
- (d) none of these.

Ans. (c) scattered.

5. Pine and deodar are found in

- (a) tropical deciduous forests.
- (b) thorn forests.
- (c) montane forests.
- (d) tropical evergreen forests.

Ans. (c) montane forests.

6. The state having the largest covered forest area is

- (a) Rajasthan.
- (b) Assam.
- (c) West Bengal.
- (d) Odisha.

Ans. (d) Odisha.

7. The two geographical factors on which the growth of forest depends are

- (a) latitude and sunlight.
- (b) rainfall and altitude.
- (c) sunlight and humidity.
- (d) temperature and latitude.

Ans. (b) rainfall and altitude.

8. Gir National Park is located in

- (a) Kerala.

- (b) Gujarat.
- (c) Assam.
- (d) West Bengal.

Ans. (b) Gujarat.

9. The Royal Bengal Tiger in India is found in the

- (a) Thar desert.
- (b) Sunderbans delta.
- (c) Himalayas.
- (d) Andaman and Nicobar islands.

Ans. (b) Sunderbans delta.

10. An integrated environment connecting plants, animals and man is called

- (a) biome.
- (b) ecology.
- (c) ecosystem.
- (d) fauna.

Ans. (c) ecosystem.

Value-based Questions (Optional)

1. Mention two ways how human beings have brought about a lot of changes in the ecosystem and what are the consequences to be faced because of human interference in nature.

Ans. Human activity has changed the ecosystem. The following two human activities have brought about the maximum changes in the ecosystem.

- (a) Population explosion has used up many natural resources of the earth. As a result, the ecosystem has suffered.
- (b) Pollution also hampers the ecosystem. This pollution is caused due to chemical and industrial waste, acid deposits, reckless cutting of the forests to bring land under cultivation and habitation.

Consequences of human interference.

- (a) Air pollution has increased due to increased human activities. A lot of fossil fuel combustion has started taking place from the vehicles, industrial factories and power plants. All these objects eject large quantities of air pollutants, such as carbon monoxide, ozone and nitrous oxides, into the atmosphere.
- (b) Some air pollutants, such as lead-based compounds, can lead to serious health problems like cancer, or other types of reproductive effects and birth defects.
- (c) Human activities have led to a change in the temperature and climate of a place.
- (d) Removing trees and other plants to increase areas of cultivation causes habitat loss and

threatens the survival of numerous species of animals and plants.

2. Mention the initiatives taken by the government to conserve our forests resources.

- Ans.** (a) The government of India introduced the Forest Conservation Act 1980 to help conserve the ever-disappearing forest cover. This act also restricts the use of forest land for commercial purposes.
- (b) The government, through the introduction of a joint management programme, has involved local communities in the management of forests.

- (c) Eighteen biosphere reserves have been set-up in the country to protect flora and fauna.
- (d) 103 national parks, 535 wildlife sanctuaries and zoological gardens have been set-up to take care of natural heritage.
- (e) Financial and technical assistance is being provided to many botanical gardens by the government since 1992.
- (f) The government is now also providing training of skill levels to the forest technicians and forest managers regarding the prevention, detection and monitoring programs.

6

Population

Milestone

Multiple-Choice Questions

1. The least densely populated Union Territory is
(a) Chandigarh. (b) Lakshadweep.
(c) Puducherry. (d) Daman and Diu.

Ans. (b) Lakshadweep.

2. Which of the following is the most important element of society?
(a) Population (b) Resources
(c) Industries (d) Education

Ans. (a) Population

3. What does census provide us?
(a) Information regarding schools.
(b) Information regarding population.
(c) Information regarding migration.
(d) Information regarding agriculture.

Ans. (b) Information regarding population.

Very Short Answer Type Questions

4. After how many years is the census held in India?

Ans. The census is held regularly after every ten years.

5. Name the state having the lowest population density.

ans. Arunachal Pradesh has the lowest population density.

6. What are the two types of migration?

Ans. The two types of migration are:

- (a) Internal migration – moving within a country
- (b) International migration – movement between the countries

7. Within the nation what kind of migration leads to changes in the distribution of population?

Ans. Internal migration changes the population distribution of a country.

8. What is sex ratio. Why is it considered to be an important social indicator?

Ans. Sex ratio is defined as the number of females per thousand males in the population. Sex ratio is an important indicator to measure the extent of equality between males and females in a society at any given time. The sex ratio in the country has always remained unfavourable to females.

Short Answer Type Questions

9. Discuss four main causes which are responsible for the rapid population growth.

Ans. Growth of population refers to the change in the number of inhabitants of a country/territory during a specific period of time. The main causes of rapid population growth are given below:

- (a) Higher mortality rate – Due to changes in medical science and advancements in technology the mortality rate of countries have changed. This has led to rapid population growth in countries across the world.
- (b) Decline in death rate – The rapid decline in death rate results in the growth of population.
- (c) Migration - Migration is an important determinant of population change. It changes not only the population size but also the population composition of urban and rural populations in terms of age and sex composition. Migration plays a very significant role in changing the composition and distribution of population.
- (d) Illiteracy - A majority of population in underdeveloped and developing nations are illiterates. They know nothing about the birth control measures. As a result there is rapid population growth.

10. Though agriculture has been mechanised and cottage industry has improved yet rural migration continues to increase. Give any two reasons for it.

Ans. Though agriculture and cottage industry has improved, yet the rural migration continues due to the following reasons:

- (a) The rural areas in India still do not have proper healthcare facilities and education facilities which are being provided and are available in the urban areas. Schools, colleges and hospitals are there in villages but the quality provided by them is still not up to the mark of the urban areas.
- (b) Maximum migrations occur due to the “push” factor in rural areas. These push factors are adverse conditions of poverty and unemployment in the rural areas and the “pull” of the city in terms of increased employment opportunities and better living conditions.

Long Answer Type Questions

11. Highlight the significant improvements seen in the health status of our population.

Ans. In the last few years a number of improvements in the health status of the Indian population. A few of them have been listed below.

- (a) Diseases such as smallpox, plague, and rabies have been completely eradicated. Also, malaria, polio, measles are now kept under control.
- (b) Many measures are being taken to keep dengue, filaria, HIV, tuberculosis, and leprosy under control.
- (c) Many institutes and hospitals have come up to treat cancer as a specialty.
- (d) Immunisation schedule has been made mandatory for infants, toddlers, and children. The government organizes a free pulse-polio program for children under 5 years.
- (e) The death rates have significantly declined from 25 per thousand population in 1951 to 7.2 per 1000 in 2011. Also, the average life expectancy at birth has increased from 36.7 years as in 1951 to 67.9 years in 2012.

12. Explain what is the annual growth rate of population. Why is even low annual growth rate of population considered not good for India?

Ans. The rate or the pace of population increase in per cent per annum is referred to as the annual growth rate.

India has very large population. The low annual growth rate of population is considered not good for India because

- (a) For a larger population, even a lower birth rate the annual growth keeps on increasing.
- (b) Therefore, when a low annual rate is applied to a large population, it becomes a very high absolute number. When more than a billion

people increase even at a lower rate, the total numbers being added becomes very large.

13. Mention the important features of NPP 2000. What measures have been taken by NPP 2000 to protect the adolescent population?

Ans. The Government of India initiated a comprehensive Family Planning Programme in 1952. This was done to promote a responsible and planned parenthood. The National Population Policy (NPP) 2000 is a culmination of years of planned efforts.

Main features of NPP 2000 are as follows:

- (a) The NPP 2000 provides a policy framework for imparting free and compulsory school education up to 14 years of age.
- (b) It works to reduce the infant mortality rate to below 30 per 1000 live births.
- (c) It also works to achieve the universal immunisation of children against all vaccine preventable diseases.
- (d) It promotes delayed marriage for girls.
- (e) It is also working to make family welfare a people-centred programme.

Measures taken by the NPP to protect the adolescents are as follows:

- (a) NPP 2000 identifies adolescents as one of the major section of the population.
- (b) The policy puts greater emphasis on important needs of adolescent including protection from unwanted pregnancies and sexually transmitted diseases (STDs). This is done along with their nutritional requirements.
- (c) It organizes programmes that aim towards encouraging delayed marriage and child-bearing.
- (d) It works to promote the education of adolescents about the risks of unprotected sex, making contraceptive services accessible and affordable, providing food supplements, nutritional services, and strengthening legal measures to prevent child marriage.

14. What were the main reasons for rapid increase in India's population since independence?

Ans. The main reasons for the rapid increase in India's population since independence are as follows:

- (a) The birth rate has gone high in India since independence. This has resulted in the population explosion. In India birth rate has always been on a higher side, due to lack of awareness of family planning, illiteracy.
- (b) There has been a decline in the death rates due to the availability of better health facilities.
- (c) International migration has largely impacted

the composition and distribution of population in India.

- (d) There has also been substantial growth in cities in terms of education and technology which has given rise to population.
- (e) Increase in population in the rural areas can be attributed to lack of family planning, increase in birth rate, illiteracy, lack of awareness.

Self-Assessment

Multiple-Choice Questions

1. Adolescents are grouped in the age group of
 - (a) 13–19 years.
 - (b) 15–29 years.
 - (c) 10–19 years.
 - (d) +60 years.

Ans. (c) 10–19 years.

2. The number of live births per thousand persons in a year is called
 - (a) growth rate.
 - (b) death rate.
 - (c) birth rate.
 - (d) none of these.

Ans. (c) birth rate.

3. Working population includes the people who fall in the age group of
 - (a) 16–59 years.
 - (b) 0–15 years.
 - (c) +60 years.
 - (d) 6–14 years.

Ans. (a) 16–59 years.

Assertion-Reason Type Questions

For question numbers 4 to 7, two statements are given as Assertion (A) and Reason (R). Read the statements and choose the correct option from (a), (b), (c) and (d) as given below.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

4. **Assertion (A):** In India, the first census was held in the year 1872.

Reason (R): The first complete census, however, was taken in the year 1881.

Ans. (b) Since 1881, census have been held regularly every tenth year. The Indian Census is the most comprehensive source of demographic, social and economic data.

5. **Assertion (A):** India is one of the most densely populated countries of the world.

Reason (R): Only Bangladesh and Japan have higher average population densities than India.

Ans. (b) The population density of India in the year 2011 was 382 persons per sq km. Density vary

from 1,102 persons per sq km in Bihar to only 17 persons per sq km in Arunachal Pradesh.

6. **Assertion (A):** According to the Census 2011, a person aged 9 years and above, who can read and write with understanding in any language, is treated as literate.

Reason (R): There has been a steady improvement in the literacy levels in India.

Ans. (d) According to the Census 2011, a person aged 7 years and above, who can read and write with understanding in any language, is treated as literate. The literacy rate in the country as per the Census of 2011 is 73 per cent; 80.9 per cent for males and 64.6 per cent for females.

7. **Assertion (A):** Sex ratio is defined as the number of females per 1000 males in the population.

Reason (R): The sex ratio in India has always remained favourable to females.

Ans. (c) Reason (R) is wrong because, the sex ratio in the country has always remained unfavourable to females.

Match the Following

8. Match the following items given in Column A with those in Column B. Choose the correct answer from the options given below:

Column A (States)	Column B (Distribution of Population)
A Punjab	1 2 per cent
B Rajasthan	2 6 per cent
C Karnataka	3 5 per cent
D Odisha	4 3 per cent

Codes:

	A	B	C	D
(a)	3	4	2	1
(b)	1	2	3	4
(c)	4	1	3	2
(d)	1	3	2	4

Ans. (b)

Find the Incorrect Option

9. (a) The population density of India in the year 2011 was 382 persons per km.
- (b) A census is an official enumeration of population held every tenth year.
- (c) There has been a significant increase in the number of million plus cities from 35 to 53 in 2001 to 2011.
- (d) Delhi has only 900 females per 1000 males according to Census 2011.

Ans. (d)

Find the Correct Sequence

10. Arrange the following states in ascending order of their population.
- West Bengal, Bihar, Uttar Pradesh, Maharashtra
 - Bihar, Uttar Pradesh, Maharashtra, West Bengal
 - West Bengal, Bihar, Maharashtra, Uttar Pradesh
 - Uttar Pradesh, Bihar, West Bengal, Maharashtra

Ans. (c)

Fill in the Blanks

11. Movement of people across regions and territories is called **internal migration**.
12. The numbers of literates per 100 persons is called **literacy rate**.
13. The **growth of population** of population refers to the numbers of persons added each year.

Very Short Answer Type Questions

14. Which two countries are the most populated countries of the world?

Ans. China and India are the most populated countries of the world.

15. How does migration play an important role in population change?

Ans. Migration is an important factor to know the dynamics of population of a country. It not only changes the population size but also the population composition of urban and rural populations in terms of age composition and gender composition.

16. Why is population distribution uneven in India?

Ans. India, has uneven distribution of population due to the following factors:

- Low birth and high death rates in a number of urban areas.
- Rugged terrain and unfavorable climatic conditions are primarily responsible for sparse population in states like Rajasthan and the hill states.
- Hilly, dissected and rocky nature of the terrain also has low population distribution.
- Areas which receive moderate to low rainfall and have shallow and less fertile soil are also responsible for lesser population.
- Places which have good fertile land, job opportunities, healthcare sector, and educational institutes have high population.

Short Answer Type Questions

17. Write about age composition in detail.

Ans. The age composition of a population can be defined as the number of people in different age groups in a country. It is one of the most basic characteristics of a population.

The population of a nation is divided into the following three categories:

- Children:** These are the human beings who are below the age of 15. They are economically unproductive and need to be provided with food, clothing, education and medical care. In urban sectors, they cannot contribute in the economy but in rural sectors they are a helping hand in the income of the family.
- Working age people:** These are the people who belong in the age group of 15 to 59. They are economically productive as they are the working sector of people. These people are also biologically reproductive and contribute in the population growth. They comprise the working population.
- Old or Aged:** These are the people who are above the age of 59. They can be economically productive though they may have retired. They may be working voluntarily but they are not available for employment through recruitment.

18. Explain the meaning of dependency ratio. Why is dependency ratio higher in India? Give two reasons.

Ans. The dependency ratio compares the number of available workers with the number of those considered to be dependent on the state. This ratio shows the measure of people with the number of dependents in the age group of 0-14 and over the age of 65 to the total population. The dependency ratio is higher in India because a large number of children (29.5%) and aged population (8%) are found dependent upon the working population which constitutes 62.5% of the total population. The economically unproductive population needs food, clothing, education and medical care which have to be provided by the working population.

19. Highlight the three major aspects of population study.

Ans. The three major aspects of about population study are:

- Population size and distribution.
- Population growth and processes of population change.
- Characteristics or qualities of the population.

20. 'Migration is an important determinant of population change'. Support the statement with suitable examples.

Ans. Migration is the movement of people from one area to another for better life. The above given statement is true because of the following reasons:

- People living in rural areas migrate to urban areas in search of job opportunities.

- The composition of urban population has changed due to the better education and medical facilities.
- The urban population has increased from 17.29 per cent in 1951 to 31.80 per cent in 2011 due to migration.

Paragraph Based Questions

21. Read the sources given below and answer the questions that follow:

Source A – Literacy Rates

Literacy is a very important quality of a population. Obviously, only an informed and educated citizen can make intelligent choices and undertake research and development projects. Low levels of literacy are a serious obstacle for economic improvement.

- (a) Why low level of literacy can be a serious obstacle for economic development?

Source B – Occupational Structure

The percentage of population that is economically active is an important index of development. The distribution of the population according to different types of occupation is referred to as the occupational structure.

- (b) What do you understand by ‘the distribution of the population according to different types of occupation’.

Source C – India’s Population Distribution by Density

Assam and most of the Peninsular states have moderate population densities. Hilly, dissected and rocky nature of the terrain, moderate to low rainfall, shallow and less fertile soils have influenced population densities in these areas.

- (c) Do you agree that hilly regions have low density of population? Give reasons.

Ans. (a) A low level of literacy can be a serious obstacle for economic development because:

- Only a well informed and educated citizen can make choices and make decisions.
- He can undertake research and development projects.
- He can share ideas and make reforms for the socio-economic development of the country.

The hope of the Nation lies in the educated youth. India has witnessed a steady improvement in the literacy levels since 2001.

- (b) The above given statement means that the population is distributed according to different types of occupation. Occupations are generally classified as primary, secondary and tertiary activities.

- (c) Yes, we do agree that hilly regions have low density of population. This is because of the hilly terrain where life is difficult in comparison to plain area, lack of education and medical facilities, lack of job opportunities, etc. Such conditions force people to migrate to urban areas.

Case Based Questions

22. Birth rate is a major component of growth because in India, birth rates have always been higher than death rates. The main cause of the rate of growth of the Indian population has been the rapid decline in death rates. The third component of population growth is migration. Migration is the movement of people across regions and territories. Migration can be internal (within the country) or international (between the countries). Internal migration does not change the size of the population, but influences the distribution of population within the nation. Migration plays a very significant role in changing the composition and distribution of population. In India, most migrations have been from rural to urban areas because of the “push” factor in rural areas. These are adverse conditions of poverty and unemployment in the rural areas and the “pull” of the city in terms of increased employment opportunities and better living conditions. Migration is an important determinant of population change. It changes not only the population size but also the population composition of urban and rural populations in terms of age and sex composition. In India, the rural-urban migration has resulted in a steady increase in the percentage of population in cities and towns.

22.1 Which of the following problems cannot be said to have been created by migration?

- (a) uneven sex ratio in urban and rural areas
- (b) widening gap between urban and rural population numbers
- (c) increased poverty in urban areas
- (d) age composition of urban and rural areas remains the same

Ans. (c) increased poverty in urban areas

22.2 What was the major reason for the rate of growth of Indian population?

- (a) rapid decline in birth rate
- (b) rapid decline in death rate
- (c) rapid growth in migration
- (d) rapid growth in death rate

Ans. (b) rapid decline in death rate

22.3 Which of the following does not contribute to population growth?

- (a) increasing deaths
- (b) increasing births
- (c) increasing migration
- (d) decreasing deaths

Ans. (a) increasing deaths

22.4 Which of the following is/are a “push” factors in rural areas?

- (a) unemployment
- (b) poverty
- (c) pure living conditions
- (d) only (a) and (b)

Ans. (d) only (a) and (b)

23. The percentage of population that is economically active is an important index of development. The distribution of the population according to different types of occupation is referred to as the occupational structure. An enormous variety of occupations are found in any country. Occupations are, generally, classified as primary, secondary and tertiary. Primary activities include agriculture, animal husbandry, forestry, fishing, mining and quarrying, etc. Secondary activities include manufacturing industry, building and construction work, etc. Tertiary activities include transport, communications, commerce, administration and other services. The proportion of people working in different activities varies in developed and developing countries. Developed nations have a high proportion of people in secondary, and tertiary activities. Developing countries tend to have a higher proportion of their workforce engaged in primary activities. In India, about 64 per cent of the population is engaged only in agriculture. The proportion of population dependent on secondary and tertiary sectors is about 13 and 20 per cent respectively. There has been an occupational shift in favour of secondary and tertiary sectors because of growing industrialisation and urbanisation in recent times.

23.1 What is the function of occupational structure?

- (a) it classifies the population on the basis of sector engagement
- (b) it defines the growth of a nation
- (c) it categorises the population on the basis of occupation
- (d) it separates the working population from the non-working class

Ans. (c) it categorises the population on the basis of occupation

23.2 What percentage of people in India are engaged in agriculture alone?

- (a) 56 per cent
- (b) 64 per cent
- (c) 33 per cent
- (d) 50 per cent

Ans. (b) 64 per cent

23.3 How can developed countries be differentiated from developing countries?

- (a) developing countries have majority of the population engaging in primary sector
- (b) developing countries have majority of the population engaging in tertiary sector
- (c) developed countries have majority of the population engaging in primary sector
- (d) developed countries have least amount of the population engaging in tertiary sector

Ans. (a) developing countries have majority of the population engaging in primary sector

23.4 Complete the statement: The percentage of population that is economically active is an important index of

- (a) progress.
- (b) development.
- (c) growth.
- (d) achievement.

Ans. (b) development.

Long Answer Type Questions

24. State the advantages a nation has because of a healthy population.

Ans. Healthy population develops a healthy nation. Ill health affects the economics and dynamics of a nation. A healthy person is a productive person.

- (a) Good health systems are a marker of a fair and just society.
- (b) A healthy person is an asset to the country, is more productive and helps in the progress of the country.
- (c) A healthy person is able to earn more and improve his or her standard of living.
- (d) Even the non-productive age group needs to be healthy to reduce the burden of health care.
- (e) All the people in all the age groups would be more energetic and would pay less medical bills.
- (f) Health care industry would bloom but at the same time other industries would grow also.

25. Highlight the point of differences between population growth and population change.

Ans.

	Population growth	Population change
1.	Population growth refers to the change in the number of people of a country during a specific period of time.	Population change is due to the birth rates, death rates, and migration.
2.	This can be represented in terms of absolute numbers or in percentages.	If the birth rate is high and death rate is low, then there will be a change in the population. Population will increase.
3.	This can be determined by the difference between birth rate and death rate plus migration per year.	Population change is determined by the difference between the sizes of the population from the beginning to the end of a certain time period.
4.	This is an increase in population.	This can be either an increase or a decrease in population.
5.	Population growth does not alter the population composition.	Population change can alter the population composition.

26. Read the extract and answer the questions that follow:

The most significant feature of the Indian population is the size of its adolescent population. It constitutes one-fifth of the total population of India. Adolescents are, generally, grouped in the age group of 10 to 19 years. They are the most important resource for the future. Nutrition requirements of adolescents are higher than those of a normal child or adult. Poor nutrition can lead to deficiency and stunted growth. But in India, the diet available to adolescents is inadequate in all nutrients. A large number of adolescent girls suffer from anaemia. Their problems have so far not received adequate attention in the process of development. The adolescent girls have to be sensitised to the problems they confront. Awareness among them can be improved through the spread of literacy and education.

- (a) Why adolescents are the most important resource for the future?
(b) Is it true to say that adolescents in India suffers from malnourishment?
(c) What is the size of adolescent population in India?

Ans. (a) Adolescents are considered as the most important resource for the future because they are the youth of the nation. They are the youngest and most energetic, grouped in the

age group of 10 to 19 years. In India, there is a significant number of adolescent, it constitute one fifth of the total population of India.

- (b) Yes, it is true that adolescents are mostly malnourished in India. Nutrition requirements of adolescents are higher than those of a normal child or adult. Poor nutrition can lead to deficiency and stunted growth. But in India, the diet available to adolescents is inadequate in all nutrients. A large number of adolescent girls suffer from anaemia.
(c) The adolescents population constitutes one-fifth of the total population of India.

Let's Compete

Multiple-Choice Questions

1. The union territory having the highest density of population is
(a) Chandigarh.
(b) Daman and Diu.
(c) Delhi.
(d) Puducherry.

Ans. (c) Delhi.

2. NPP stands for
(a) National Population Programme.
(b) National Population Project.
(c) National Population Policy.
(d) National Population Production.

Ans. (c) National Population Policy.

3. The economically productive and biologically reproductive age group is
(a) below 15 years of age. (b) above 59 years.
(c) 15–59 years. (d) none of these.

Ans. (c) 15–59 years.

4. The decline in death rates and increase in life expectancies at birth rate is because of
(a) literacy rates. (b) health facilities.
(c) occupational structure. (d) sex ratio.

Ans. (b) health facilities.

5. The number of people in different age group is referred to as
(a) age composition. (b) adolescents.
(c) occupational structure. (d) sex ratio.

Ans. (a) age composition.

6. Which of the following States has the lowest sex ratio?
(a) Haryana (b) Bihar
(c) Punjab (d) Rajasthan

Ans. (a) Haryana

7. Life expectancy at birth according to 2011 Census is

- (a) 63 years.
- (b) 74 years.
- (c) 67.9 years.
- (d) 64.6 years.

Ans. (c) 67.9 years.

8. The official enumeration of population for census can be carried out in how many years?

- (a) 5 years
- (b) 2 years
- (c) 1 year
- (d) 10 years

Ans. (d) 10 years

9. International migration is

- (a) movement of people from one village to another.
- (b) movement of people within the country.
- (c) movement of people from rural to urban areas.
- (d) movement of people from one country to another country.

Ans. (d) movement of people from one country to another country.

10. According to 2011 Census, the sex ratio of India is

- (a) 929
- (b) 933
- (c) 943
- (d) 946

Ans. (c) 943

———— Value-based Questions ———— (Optional)

1. Mention the values reflected by a healthy population.

Ans. Human health is an important factor in determining the growing economy of a nation. The values reflected by the healthy population are as follows:

- (a) A healthy person has more stamina to do the work than an unhealthy person so he or she can work for many hours without any fatigue.
- (b) If the population of a country is healthy then by giving its more and more time in production it can increase the national income of that country.

(c) Healthy citizens of a nation have the ability to think more efficiently, positively and intellectually. They will then have the ability and knowledge to select good and qualitative leaders for the nation who can run their country more efficiently.

(d) Healthy citizens can raise the national income of a country thereby the standard of living of the population can be reformed.

(e) In the development or growth of an economy healthy population plays a vital role in every respect.

2. In a government's priority list, the improvement in the health status of the population holds most important position. Mention three factors responsible for it.

Ans. The improvement in the health status of the population is an important part of any government activity. The factors responsible for this decision are:

(a) People are the resources for a country. If the population is unhealthy the resources will eventually get wasted. So, to avoid the wastage of resources, the government has undertaken the initiatives to improve the health facilities of a country.

(b) The health of a person helps him to realise his potential and the ability to fight illness. An unhealthy person becomes a liability for an organisation. Health is an indispensable basis for realising one's well-being. Henceforth, improvement in the health status of the population has been the priority of the country.

(c) The national policy of our country is also aimed at improving the accessibility of health care, family welfare and nutritional service with special focus on underprivileged segment of population.