

The Constitution of India - An Introduction

Exercise

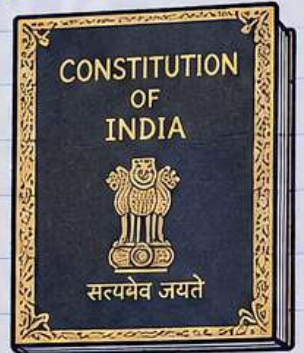


We the
People
of India

A. Very Short Answer Questions

Q1. Why did leaders include Fundamental Duties later in the Constitution?

Ans. When the constitution was written, leaders wanted a balance between what people could demand immediately and what the country should aim for in the future. This is why Fundamental Rights are enforceable in court, but Directive Principles are not.



Q2. Why were the words 'Socialist' and 'Secular' added to the Preamble?

Ans. These values are not only ideals but also practical goals that shape laws, policies and behaviour of citizens. They were added because 'Socialist' - Wealth should be equally shared and 'Secular' - there is no official religion of India.



Q3. How do Fundamental Rights and Duties work together?

Ans. Rights give freedoms to citizens and duties remind them of their responsibilities towards the country and society.

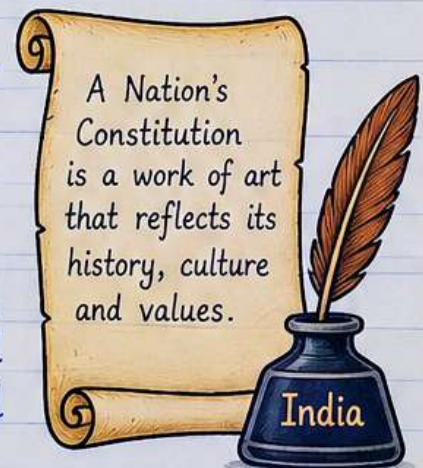


Q4. What does Article 38 of the Constitution promote?

Ans. Article 38 promotes social, political and economic justice.

Q5. Why is the Constitution also called a work of art?

Ans. The Constitution of India is not only a legal document but also a masterpiece of art. Calligrapher Prem Behari Narain Raizada wrote the entire text by hand in beautiful calligraphy. To bring it alive, the famous artist Nandalal Bose and his team filled its pages with scenes from the India's history and culture.



"The Constitution belongs to every Indian and it guides us to build a just, equal and united nation."

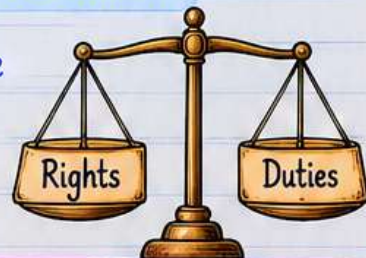
The Constitution of India - An Introduction

Our Constitution
Our Pride

Very Short Answer Questions

Q1. Why did leaders include Fundamental Duties later in the Constitution?

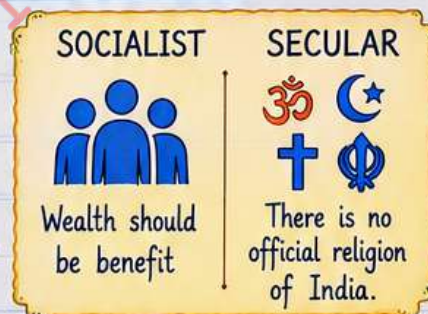
Ans-1 When the constitution was written, leaders wanted a balance between what people could demand immediately and what the country should aim for in the future. This is why Fundamental Rights are enforceable in court, but Directive Principles are not.



Balance for a Better India

Q2. Why were the words 'Socialist' and 'Secular' added to the Preamble?

Ans-2 Those values are not only ideals but also practical goals that shape laws, policies and behaviour of citizens. They were added because Socialist: wealth should be benefit and Secular: There is no official religion of India.



Q3. How do Fundamental Rights and Duties work together?

Ans-3 Duties ensure that rights are balanced with responsibilities. Some examples are:

- To defend the country and serve it when called upon.
- To value and preserve rich heritage of our culture.
- To protect the environment and show compassion for living creatures.

Rights + Duties

Stronger Together



Q4. What does Article 38 of the Constitution promote?

Ans-4 Article 38 promotes social, political and economic justice.

Social Justice
Political Justice
Economic Justice



Satyameva Jayate

"A just, equal and united India is our shared responsibility."

The Constitution of India - An Introduction

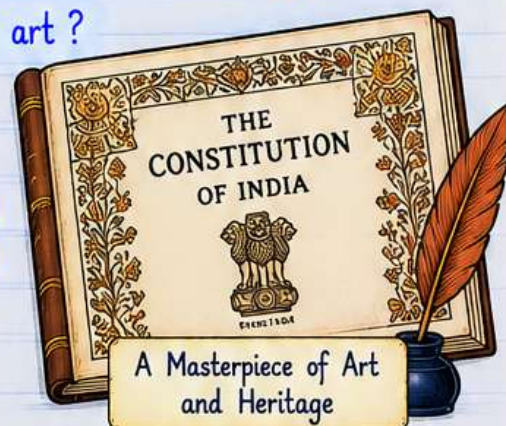
Exercise

Short Answer Questions

People's
Participation
Makes Democracy
Stronger

Q1. Why is the Constitution of India also called a work of art ?

Ans-1 The Constitution of India is not only a legal document but also a masterpiece of art. Calligrapher Prem Behari Narain Raizada wrote the entire text by hand in beautiful calligraphy. To bring it alive, the famous artist Nandalal Bose and his team filled its pages with scenes from India's history and culture.



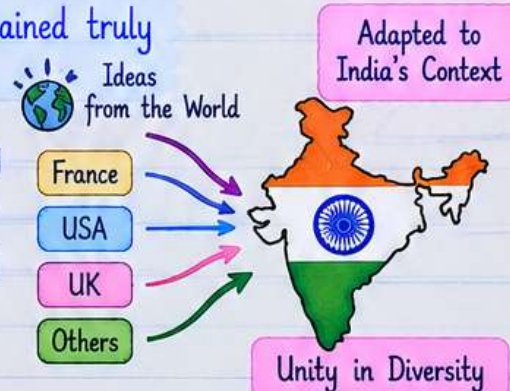
Q2. How does people participation make democracy stronger ?

Ans-2 The government sometimes asks citizens for their views on new laws. The figure shows an example where people could share their opinions on draft rules.



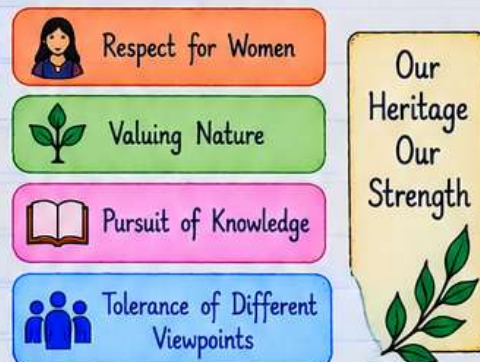
Q3. How did the makers ensure that the Constitution remained truly Indian despite global influences ?

Ans-3 The makers did borrow useful features, but they carefully adapted them to India's context. For example, while France gave the idea of fraternity, India gave it deeper meaning through cultural values of unity in diversity.



Q4. What values from India's civilisation heritage are reflected in the Constitution ?

Ans-4 The Constitution also drew from India's deep cultural traditions. Principles such as respect for women, valuing nature, pursuit of knowledge and tolerance of different viewpoints were part of India's civilisation for centuries.



"Our Constitution draws strength from India's rich civilisation."

The Constitution of India - An Introduction

Exercise

Rights
Duties
Stronger India

Q5. Who was Dr. B. R. Ambedkar and what was his role in the Constitution ?

Ans-5 The initial draft was prepared by the Drafting Committee, chaired by Dr. B. R. Ambedkar, who later became the first Law and Justice Minister of independent India.



Dr. B. R. Ambedkar
Chairman, Drafting Committee

Educate
Agitate
Organise
- B. R. Ambedkar

Q6. Why was it challenging to write India's Constitution ?

Ans-6 India's Constitution is the longest written Constitution in the world. At the time of adoption, it had about 145,000 words. This was because India's leaders wanted to cover every important detail, leaving little room for doubt or misuse.



The longest
written
Constitution
in the world
(about
145,000 words)

B. Long Answer Questions

Q1. Discuss how the Indian freedom movement influenced the Constitution.

Ans-1 The long Indian struggle for independence gave leaders valuable experience. Many of them were members of the Constituent Assembly and brought the ideals of the movement into the Constitution.

Key values that came from the freedom struggle included :

- Equality for all.
- Justice for all.
- Freedom and fraternity.
- Preservation of cultural heritage.

The movement also gave practical lessons.

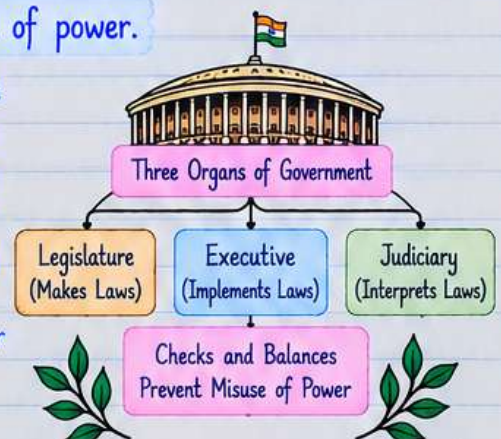


From
Freedom Struggle
to a
Stronger Constitution

"The ideals of the freedom movement
live on in our Constitution."

Q2. Explain how the Constitution protects citizens from misuse of power.

Ans-2 To stop misuse of power, the Constitution ensures that no single organ of government becomes too powerful. Each one can check the others. The Constitution protects the rights of citizens, such as equality and freedom. At the same time, it reminds people of their duties to the nation, like respecting the country and protecting the environment. The Constitution makes sure that legislature, executive and judiciary function independently and keep each other in check. This prevents misuse of power.



"A Constitution with checks and balances protects the rights of every citizen."

The Constitution of India - An Introduction

Long Answer Questions (Continue)

Diversity
is our Strength

Q3. Why does secularism remain vital in India's Constitution ?

Ans-3 Secularism remains vital in India's Constitution because it preserves national unity and guarantees equal respect, rights and protection for a deeply pluralistic population.

Protecting Diversity and preventing domination :

- The State treats all religions equally and does not establish any state religion.
- It prevents dominance of one religious majority over minority communities.
- Article 25-28 guarantee every citizen the freedom and right to profess, practice and propagate their faith – or no faith at all.
- Article 15 stops the government from discriminating against any citizen based on religion.
- Parliament cannot change constitutional amendments, so it can be called permanent pillar of Indian democracy.



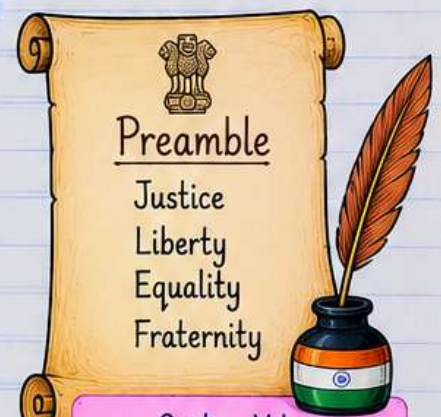
Different Faiths
One Nation
One Constitution

"Equal Respect
Equal Rights
A Stronger India"

Q4. How does the Preamble express the spirit of democracy ?

Ans-4 The Preamble is like the introduction to the Constitution. It explains core values and guiding principles that both the government and citizens are expected to follow. These values are seen across the Constitution, but the Preamble expresses them in a clear and simple way. Handwritten Preamble of the Constitution of India was adopted on 26 November 1949 and came into effect on 26 January 1950. Later in 1976, the words 'Socialist' and 'Secular' were added through the 42nd Constitutional Amendment.

Citizens enjoy equal political rights, elect their leaders and hold them accountable.



Guiding Values
for a Democratic India

"The Constitution is not just a book of laws,
but a reflection of the hopes and dreams of the people of India."



We, the People
Build a Better Tomorrow

Democracy
Justice
Equality
Fraternity

The Constitution of India - An Introduction

Our Constitution
Our Pride
Our Responsibility



"A
Constitution
gives a nation
its direction."

1. What is the Constitution ?

- ★ The Constitution is the supreme set of rules and principles by which a country is governed.
- ★ It lays down the rights and duties of citizens and the powers and functions of the government.
- ★ It helps in maintaining a just, equal and united India.

2. Important Words and Definitions

Word	Meaning (Simple)
Constitution	The supreme set of rules and principles by which a country is governed.
Preamble	The introduction to the Constitution that states its main ideals and values.
Democracy	A system in which people elect their representatives to govern the country.
Sovereign	India is free to make its own decisions without control by another country.
Socialist	Wealth and resources should be used for the benefit of all sections of society.
Secular	The State has no official religion and treats all religions equally.
Republic	A country where the head of the State is elected, not a hereditary ruler.
Justice	Fair treatment for everyone - socially, economically and politically.
Liberty	Freedom of thought, expression, belief, faith and worship.

Word	Meaning (Simple)
Equality	Equal rights, opportunities and treatment for all citizens.
Fraternity	A feeling of brotherhood, unity and belonging among citizens.
Fundamental Rights	Basic rights guaranteed to citizens by the Constitution.
Fundamental Duties	Responsibilities that citizens are expected to perform towards the nation.
Directive Principles	Guidelines for the government to promote welfare and social justice.
Constituent Assembly	The body of representatives that prepared India's Constitution.
Drafting Committee	The committee chaired by Dr. B. R. Ambedkar that prepared the draft Constitution.
Amendment	A formal change or addition made to the Constitution.
Federal System	A system in which powers are shared between the Central and State governments.
Independent Judiciary	A judiciary that works independently without improper control by other organs of government.
Checks and Balances	A system that prevents any one organ from becoming too powerful.
Unity in Diversity	Living together in unity despite differences in religion, language, culture and traditions.

"We, the People of India..."
... a stronger and brighter India
for future generations."



The Constitution of India - An Introduction

Important Facts for Exam

A. Important One-Liner Facts

- 1 The Constitution of India was adopted on 26 November 1949.
- 2 It came into effect on 26 January 1950.
- 3 It was prepared by the Constituent Assembly.
- 4 Dr. B. R. Ambedkar was the Chairman of the Drafting Committee.
- 5 Dr. B. R. Ambedkar later became the first Law and Justice Minister of independent India.
- 6 The original Constitution was handwritten by Prem Behari Narain Raizada.
- 7 Nandalal Bose and his team prepared the artwork and illustrations.
- 8 At the time of adoption, it had about 145,000 words - the longest written Constitution in the world.
- 9 The words 'Socialist' and 'Secular' were added to the Preamble in 1976.
- 10 They were added through the 42nd Constitutional Amendment.
- 11 The Preamble begins with "We, the People of India".
- 12 Article 38 promotes social, political and economic justice.
- 13 Articles 25-28 guarantee freedom of religion.
- 15 Article 15 prohibits discrimination on grounds of religion.
- 14 India has no official/state religion.
- 16 The Constitution provides a system of checks and balances between legislature, executive and judiciary.
- 17 India borrowed useful ideas from other countries but adapted them to its own context.



People's
Participation
Makes Democracy
Stronger

A Constitution
for a Just,
Equal and
United India

"Unity
in Diversity
is our Strength"



We, the People of India
Build a Better Tomorrow



B. Fill in the Blanks

- 1 The Constitution of India was adopted on _____.
- 2 It came into effect on _____.
- 3 The body that prepared the Constitution was the _____.
- 4 The Chairman of the Drafting Committee was _____.
- 5 The Preamble begins with "We, the _____ of India".
- 6 The original Constitution was handwritten by _____.
- 7 The artwork was prepared by _____ and his team.
- 8 The words 'Socialist' and 'Secular' were added in _____.
- 9 They were added through the _____ Amendment.
- 10 Article _____ promotes social, political and economic justice.
- 11 Articles _____ guarantee freedom of religion.
- 12 Article _____ prohibits discrimination on the grounds of religion.
- 13 India has no _____ religion.

C. Match the Following

Column A	Column B
1. Dr. B. R. Ambedkar	a. Handwritten Constitution
2. Prem Behari Narain Raizada	b. Chairman, Drafting Committee
3. Nandalal Bose	c. Artwork and illustrations
4. 42nd Amendment	d. Added Socialist and Secular
5. Article 38	e. Promotes social, economic and political justice

D. True or False

1. The Constitution of India is the shortest written Constitution in the world. ()
2. Dr. B. R. Ambedkar was the first Law and Justice Minister of independent India. ()
3. The words 'Socialist' and 'Secular' were added in 1976. ()
4. India has an official state religion. ()
5. Articles 25-28 guarantee freedom of religion. ()

"A strong Constitution leads to a strong, united and prosperous India."

The Constitution of India - An Introduction

Important Questions for Exams

A. Multiple Choice Questions (MCQs)

- When was the Constitution of India adopted ?
A) 15 August 1947 B) 26 November 1949
C) 26 January 1950 D) 2 October 1950
- Who was the Chairman of the Drafting Committee ?
A) Jawaharlal Nehru B) Rajendra Prasad
C) Dr. B. R. Ambedkar D) Sardar Patel
- Which words were added to the Preamble in 1976 ?
A) Justice and Liberty B) Equality and Fraternity
C) Socialist and Secular D) Democratic and Republic
- Article 38 promotes :
A) Religious education B) Social, political and economic justice
C) Elections D) Citizenship
- Which country gave the idea of an independent judiciary ?
A) UK B) USA C) Ireland D) France
- Who handwritten the original Constitution of India ?
A) Nandalal Bose B) Prem Behari Narain Raizada
C) Jawaharlal Nehru D) Rajendra Prasad

B. Very Short Answer Questions

- Who prepared the Constitution of India ?
- On which date did the Constitution come into effect ?
- Name the Chairman of the Drafting Committee.
- Which article prohibits discrimination on the grounds of religion ?
- What does Article 38 promote ?
- Name the ideas borrowed from the UK and Ireland.
- What is the meaning of the word 'Republic' ?
- What is the role of Fundamental Duties ?

C. Assertion - Reason Questions

- Assertion (A) :** People of India enjoy equal rights.
Reason (R) : The Constitution guarantees equality to all citizens.
A) Both A and R are true and R correctly explains A.
B) Both A and R are true but R does not explain A.
C) A is true but R is false.
D) A is false but R is true.
- Assertion (A) :** India has no official religion.
Reason (R) : The State treats all religions equally.
A) Both A and R are true and R correctly explains A.
B) Both A and R are true but R does not explain A.
C) A is true but R is false.
D) A is false but R is true.

D. Short Answer Type Questions

- When was the Constitution adopted and when did it come into effect ?
- Why were the words 'Socialist' and 'Secular' added to the Preamble ?
- What is the importance of Fundamental Rights ?
- How does the Constitution protect citizens from misuse of power ?
- Why is secularism important for India ?

"Different Faiths
One Nation
One Constitution"



E. Important Concepts to Remember

- The Constitution is not just a book of laws, but a living document.
- It gives us rights as well as duties.
- It ensures justice, equality, liberty and fraternity.
- It protects citizens from the misuse of power.
- It promotes unity in diversity.
- It provides a system of checks and balances among the three organs of government.
- It can be amended to meet changing needs.
- It reflects the hopes and dreams of the people of India.



Strong
Institutions
Stronger
India

"We, the People of India ...
Together for a Better Tomorrow"

Justice | Liberty | Equality | Fraternity



Important Words and Definitions

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Secular	The State has no official religion and treats all religions equally.
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Justice	Fair treatment for everyone – socially, economically and politically.
Liberty	Freedom of thought, expression, belief, faith and worship.
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Fraternity	A feeling of brotherhood, unity and belonging among citizens.
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Checks and Balances	A system that prevents any one organ from becoming too powerful.
Unity in Diversity	Living together in unity despite differences in religion, language, culture and traditions.

Important Facts (One-Liners)

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- 4 Dr. B. R. Ambedkar was the Chairman of Drafting Committee.
- 5 He later became the first Law and Justice Minister.
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- 8 About 145,000 words – the longest written Constitution in the world.
- 9 Words 'Socialist' and 'Secular' added in 1976.
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- 13 Articles 25-28 guarantee freedom of religion.
- 14 Article 15 prohibits discrimination on grounds of religion.
- 15 India has no official/state religion.
- 16 Constitution provides checks and balances between legislature, executive and judiciary.
- 17 Ideas borrowed from other countries but adapted to Indian conditions.



Fill in the Blanks

- 1 The Constitution of India was adopted on _____.
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- 7 They were added through the _____ Amendment.
- 8 Article _____ promotes social, political and economic justice.



Multiple Choice Questions (MCQs)

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C) Elections D) Citizenship
- 5 Who handwritten the original Constitution ?
A) Nandalal Bose B) Prem Behari Narain Raizada
C) Rajendra Prasad D) Jawaharlal Nehru
- 6 Which country gave the idea of fraternity ?
A) USA B) UK C) France D) Ireland



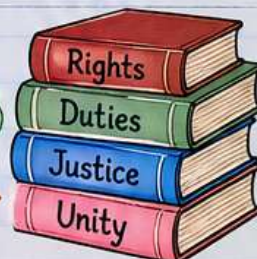
"Small Steps
Big Learning"

Key Values of the Preamble

Justice Fairness for all	Liberty Freedom for all	Equality Equal rights for all	Fraternity Unity and brotherhood
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"We, the People of India..."

"A Strong Constitution
Builds a Stronger Nation"



Understanding the Weather

Exercise Answers

"Weather Affects Our Life Everyday."



A. Multiple Choice Questions Choose the correct option.

Q1. Which of the following is NOT an element of weather ?

- (a) Temperature
- (b) Humidity
- (c) Atmospheric pressure
- (d) Latitude

Ans. (d) Latitude

Weather includes temperature, humidity, atmospheric pressure, wind and rainfall. Latitude is a geographical factor, not an element of weather.



Latitude = Location on Earth

Q2. Which instrument is used to measure atmospheric pressure ?

- (a) Hygrometer
- (b) Barometer
- (c) Anemometer
- (d) Rain gauge

Ans. (b) Barometer

A barometer is used to measure atmospheric (air) pressure, usually in millibars (mb).



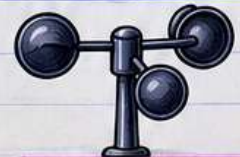
Barometer (measures air pressure)

Q3. Which instrument is used to measure wind speed ?

- (a) Wind vane
- (b) Anemometer
- (c) Hygrometer
- (d) Thermometer

Ans. (b) Anemometer

An anemometer is used to measure wind speed. Stronger the wind, the faster its cups spin.



Anemometer (measures wind speed)

Q4. Which instrument is used to measure humidity ?

- (a) Barometer
- (b) Hygrometer
- (c) Rain gauge
- (d) Wind vane

Ans. (b) Hygrometer

A hygrometer is used to measure the amount of water vapour (humidity) in the air.



Hygrometer (measures humidity)

Q5. Which instrument is used to measure rainfall ?

- (a) Rain gauge
- (b) Barometer
- (c) Thermometer
- (d) Anemometer

Ans. (a) Rain gauge

A rain gauge is used to measure the amount of rainfall, usually in millimetres (mm).



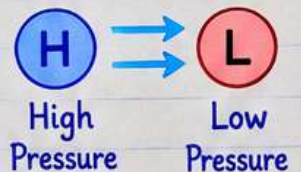
Rain Gauge (measures rainfall)

Q6. Winds generally move from :

- (a) Low-pressure areas to high-pressure areas
- (b) High-pressure areas to low-pressure areas
- (c) East to west only
- (d) North to south only

Ans. (b) High-pressure areas to low-pressure areas

Winds always move from areas of higher pressure towards areas of lower pressure.



Direction of Wind (High → Low)

"Better Weather Awareness for a Safer Tomorrow."

Understanding the Weather

Exercise Answers (Continued)

"Observe
Measure
Understand
Our Weather."



B. Assertion-Reason Questions

Choose the correct option.

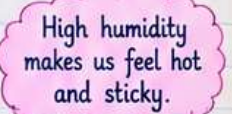
Q1. Assertion (A) : People feel breathless at high altitudes.
Reason (R) : The air at higher elevations contains less oxygen due to lower air pressure.
Ans. Both (A) and (R) are true, and (R) is the correct explanation of (A).



Q2. Assertion (A) : Winds always move from low-pressure to high-pressure areas.
Reason (R) : Pressure differences caused by unequal heating create air movements.
Ans. (A) is false, but (R) is true.



Q3. Assertion (A) : High humidity makes summers more comfortable for people.
Reason (R) : High humidity increases the evaporation of sweat, cooling the body.
Ans. Both (A) and (R) are false.



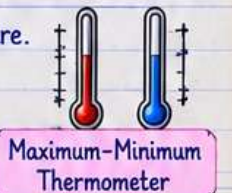
Q4. Assertion (A) : A wind sock is installed at airports to measure wind direction.
Reason (R) : Wind socks are often made of brightly coloured fabric for easy visibility.
Ans. Both (A) and (R) are true, but (R) does not correctly explain (A).



Q5. Assertion (A) : The Sun is the ultimate source of energy driving weather patterns.
Reason (R) : Unequal heating of the Earth by the Sun creates pressure differences and drives winds.
Ans. Both (A) and (R) are true, and (R) is the correct explanation of (A).



Q6. Assertion (A) : The maximum-minimum thermometer is used to calculate mean daily temperature.
Reason (R) : The average of maximum and minimum temperature gives a good idea of daily weather conditions.
Ans. Both (A) and (R) are true, and (R) is the correct explanation of (A).



C. Case-based Questions

Read the given passage and answer the questions.

Case Study 1 : Coastal Weather Warning

A coastal village has an Automated Weather Station (AWS). The data recorded over a day is shown below:

Time	6:00 AM	9:00 AM	12:00 PM	3:00 PM	6:00 PM
Humidity (%)	76	80	85	88	92
Wind Speed (km/h)	15	30	50	60	75



(a) Name any two weather elements that an Automated Weather Station can measure.
Ans. Temperature and humidity. (It can also measure wind speed, wind direction, precipitation and atmospheric pressure.)

(b) Looking at the AWS data, explain how humidity and wind speed changed from morning to evening.
Ans.

- Humidity increased from 76% at 6:00 AM to 92% at 6:00 PM.
- Wind speed increased from 15 km/h at 6:00 AM to 75 km/h at 6:00 PM.

 Both humidity and wind speed increased from morning to evening.

(c) Suggest any two safety measures the villagers should take after the IMD issued a red warning.
Ans.

- Stay indoors or move to a safe shelter and avoid unnecessary travel.
- Stay away from the coast, trees, electric poles and weak structures.



"Be Alert, Stay Safe, Weather Affects Everyone."



Understanding the Weather

Exercise Answers (Continued)

"Weather Affects Our Life Everyday."



Case Study 2 : Moisture in the Loom

(a) What was the humidity level recorded inside the textile factory ?

Ans. The hygrometer recorded a very high humidity level of around 90%.

(b) Why did cotton threads become sticky and break easily during weaving ?

Ans. During the monsoon, excess moisture in the air caused the cotton threads to absorb moisture. This made them sticky and affected their strength, causing them to break easily during weaving.

(c) Imagine you are the supervisor. Apart from machines, what steps would you take to reduce the effect of high humidity on workers and production ?

Ans. I would improve ventilation and air circulation, keep the workplace dry, regularly monitor humidity and provide workers with proper rest and drinking water. Cotton and other materials should also be stored in a dry place.



High humidity affects textile production

Case Study 3 : Riya's Cloudburst Experience

(a) Which type of precipitation did Riya experience on her way home ?

Ans. Riya experienced a cloudburst, which is extremely heavy rainfall occurring within a short period over a small area.

(b) Why did the barometer reading act as an early warning sign ?

Ans. A sudden fall in atmospheric pressure may indicate an approaching storm or cyclone. Therefore, the falling barometer reading was an early warning of severe weather.

(c) How do cloudbursts show the importance of accurate weather forecasting in hilly regions ?

Ans. Cloudbursts can cause sudden heavy rainfall, flash floods and landslides in hilly areas. Accurate weather forecasting provides early warnings so that people can move to safer places and loss of life and property can be reduced.



Cloudburst can cause flash floods and landslides

Case Study 4 : Weather Forecasting for Food Security

(a) What did the rain gauge measure at the community centre ?

Ans. The rain gauge measured the amount of rainfall, expressed as the depth of water in millimetres (mm).

(b) Why did farmers earlier lose their crops in this village ?

Ans. Farmers earlier lost their crops because they depended only on traditional signs, such as bird calls and animal behaviour, to predict rainfall. These signs were not always accurate.

(c) How can mobile technology help spread IMD warnings quickly in remote villages ?

Ans. Mobile technology can send IMD weather forecasts and warnings quickly through messages and alerts. This allows farmers in remote villages to take timely action, such as delaying sowing, planning irrigation or protecting crops from severe weather.



Weather forecast helps farmers protect crops

"Better Information Today, Safer Communities Tomorrow."

Understanding the Weather

Exercise Answers (Continued)

"Observe
Measure
Understand
Our Weather."



D. Fill in the Blanks

Fill in the blanks with the correct words.

1. The daily condition of the atmosphere at a particular place and time is called _____, whereas the long-term average is called _____.

Ans. weather, climate

2. The IMD, which gives weather forecasts in India, was established in the year _____.

Ans. 1875

3. A sudden fall in barometric pressure indicates a _____.

Ans. storm or cyclone

4. The opening and closing of pine cones are natural mechanisms driven by environmental changes in _____.

Ans. humidity

5. Automated Weather Stations (AWS) use _____ to record data automatically without human observers.

Ans. sensors



Weather and climate are different.



India Meteorological Department (IMD)



Fall in air pressure indicates a storm.



Pine cones open and close due to humidity.

E. State True (T) or False (F)

Write T for true and F for false.

1. Rainfall is measured in litres to ensure uniform comparison across regions.

Ans. F Rainfall is measured in millimetres (mm), not litres.

2. Winds move from areas of high pressure to areas of low pressure.

Ans. T

3. A hygrometer is used to measure atmospheric pressure.

Ans. F A hygrometer measures humidity, while a barometer measures atmospheric pressure.

4. A sudden fall in atmospheric pressure may indicate an approaching storm or cyclone.

Ans. T

5. The mean daily temperature is calculated by dividing the maximum temperature by the minimum temperature.

Ans. F It is calculated by adding the maximum and minimum temperatures and dividing the total by two.

Remember !

- Rainfall → millimetres (mm)
- Hygrometer → humidity
- Barometer → air pressure
- Wind → high to low pressure
- Mean temperature = $\frac{\text{Max} + \text{Min}}{2}$

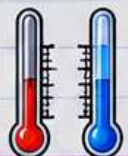
F. Very Short Answer Questions

Answer in one or two sentences.

- Q1. What is meant by daily mean temperature ?

Ans. The mean daily temperature is the average air temperature recorded over a 24-hour period. It is commonly calculated by adding the day's maximum (highest) and minimum (lowest) temperatures and dividing the total by two.

$$\text{Mean Daily Temperature} = (\text{Maximum Temperature} + \text{Minimum Temperature}) \div 2$$



Mean of maximum and minimum gives daily temperature.

- Q2. What is the role of the India Meteorological Department (IMD) ?

Ans. The India Meteorological Department is the national agency under the Ministry of Earth Sciences, Government of India. Established in 1875, it handles weather forecasting, meteorological observations, seismology and specialised regional cyclone warnings.

- Q3. Give one example of traditional knowledge used to predict the weather.

Ans. In rural India and many tropical regions, continuous and loud frog calling after a dry spell is used as a traditional sign of rainfall. Frogs become active and vocal because they sense rising humidity and a drop in air pressure before a storm.



Loud frog calls indicate rain.



"Knowledge of Weather Helps Us Plan a Better Tomorrow."



Understanding the Weather

Exercise Answers (Continued)

"Learn
Observe
Understand
Our Weather."



F. Very Short Answer Questions (Continued)

Q4. Mountaineers often need a few days' rest before climbing higher peaks. Why is this necessary ?

Ans. Mountaineers need rest days at lower camps because high-altitude air has lower atmospheric pressure, which means fewer oxygen molecules are available per breath. Rest allows the body to adapt gradually to the lower oxygen level and helps prevent altitude sickness.

The main reasons are :

- Lower oxygen level
- Physical exhaustion
- Risk of illness



Rest helps the body to adjust at high altitude.

Q5. Why are maximum-minimum thermometers important for meteorologists ?

Ans. Maximum-minimum thermometers, often called Six's thermometers, are important because they record the highest and lowest temperatures reached over a set period, typically 24 hours, without requiring an observer to watch the temperature continuously.



Maximum-Minimum Thermometer

G. Short Answer Questions

Answer in a few sentences.

Q1. What are the uses of a wind vane ?

Ans. A wind vane is a tool that shows the direction from which the wind is blowing. It points towards the direction from which the wind comes.

Its important uses are :

1. Weather and Science

- **Weather forecasting** : Meteorologists use wind-direction data to track storms and predict changes in weather.
- **Research** : Scientists study local wind patterns such as sea breezes and valley flows.

2. Travel and Work

- **Aviation** : Airports and pilots use wind-direction information to determine safe directions for take-off and landing.
- **Sailing** : Sailors use wind direction to set their sails correctly and steer.
- **Agriculture** : Farmers use wind data while spraying crops so that chemicals do not drift.

3. Other Uses

- **Outdoor sports** : Golfers and archers observe wind direction while aiming.
- **Decoration** : Traditional rooster-shaped wind vanes are also used on rooftops as architectural and cultural ornaments.



Wind Vane
(shows wind direction)

Key Point :

A wind vane points towards the direction from which the wind comes.

Q2. How is atmospheric pressure related to weather ?

Ans. Atmospheric pressure influences weather conditions.

1. High-pressure system (Anticyclones) :

- Air sinks towards the ground.
- Sinking air gets warmer, which prevents cloud formation.
- It generally brings clear, sunny, calm and stable weather.

2. Low-pressure system (Cyclones) :

- Air rises into the atmosphere.
- Rising air cools and water vapour condenses to form clouds.
- It generally brings clouds, rain and strong winds or storms.



Sinking air
Clear and sunny weather



Rising air
Cloudy and rainy weather

Low pressure → Clouds, rain and storms
High pressure → Clear and sunny weather

A rapid fall in atmospheric pressure may indicate that bad or stormy weather is approaching.

"Observe the Sky, Understand the Signs, Be Prepared."

Understanding the Weather

Exercise Answers (Continued)

"Weather Knowledge Builds a Safer Tomorrow."



Q3. How is rainfall measured ?

Ans.

Rainfall is measured as the depth of water in millimetres (mm) using an instrument called a rain gauge. The measurement shows how deep the water would be on flat, level ground if it could neither run away nor soak into the ground.

- **Manual Rain Gauge** : Rainwater falls into a wide funnel, which guides it into a narrow measuring cylinder. The water level is then read using marked lines or a scale.
- **Automated Rain Gauge** : It uses electronic signals to record and track the total rainfall in real time without manual checking.



Rain Gauge
(measures rainfall)

Q4. What is humidity and how does it affect daily life ?

Ans.

Relative humidity is the percentage of water vapour present in the air compared with the maximum amount of water vapour the air can hold at that temperature.

For example, clothes dry more slowly in humid weather because the air already contains a large amount of moisture.



Clothes dry slowly
in humid weather

Q5. What is the role of Automated Weather Stations (AWS) ?

Ans.

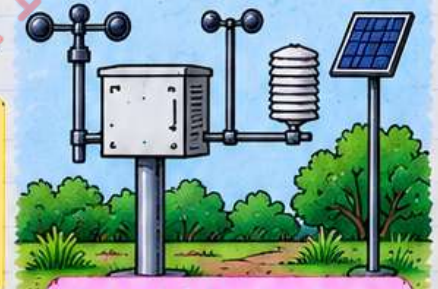
An Automated Weather Station (AWS) is a self-operating system. It has sensors that record data about :

- temperature,
- humidity,
- wind speed and direction,
- precipitation, and
- atmospheric pressure.

Uses :

- Agriculture
- Aviation
- Navigation
- Disaster management
- Environmental monitoring

It operates independently and provides accurate and timely are widely used in agriculture, aviation, navigation, disaster management and environmental monitoring.



Automated Weather Station
(AWS)

H. Long Answer Questions

Answer in detail.

Q1. Describe the importance of different weather instruments in forecasting.

Ans.

Meteorological instruments collect accurate, real-time data about atmospheric conditions. Different instruments are important in weather forecasting :

- **Thermometers** : Measure air temperature and help track heatwaves and cold conditions.
- **Barometers** : Measure changes in atmospheric pressure and help indicate approaching storms or clear weather.
- **Anemometers/Wind instruments** : Record wind speed and direction and help monitor storm movement.
- **Hygrometers** : Measure water vapour or humidity in the air and help predict rain and fog.
- **Rain gauges** : Measure the amount of precipitation and help forecast the possibility of local and regional flooding.

Apart from these, weather radars, weather satellites, weather balloons and computer models are used to make more accurate weather forecasts.



Thermometer
(temperature)

Barometer
(air pressure)

Anemometer
(wind speed)

Rain gauge
(rainfall)

Q2. Discuss the importance of meteorology in daily life.

Ans.

Meteorology is the study of the atmosphere and weather patterns. It shapes our daily lives in many ways :

- It guides us in choosing suitable clothes.
- It helps protect us from severe storms.
- It ensures safer travel.
- It helps farmers grow food.
- Weather forecasts help us plan outdoor activities.
- Early warnings for heavy rain, cyclones, floods and heatwaves help save lives and property.
- Farmers can choose the right time for sowing and irrigation and reduce the risk of crop failure.
- Pilots use weather information to avoid turbulence and poor visibility.
- Ships and sailors use forecasts about fog, strong winds and heavy precipitation to avoid accidents.

Thus, meteorology is important for safety, agriculture, transport, disaster management and our everyday activities.

"Accurate Forecasts Save Lives and Property."



"Understand Weather Today, Build a Better Tomorrow."

Understanding the Weather

Exercise Answers (Continued)

"Observe
Measure
Understand
Our Weather."



Q3. Why is studying air pressure considered more useful for predicting extreme events than only recording temperature and rainfall ?

Ans. Atmospheric pressure is an important indicator in weather forecasting because it shows whether weather conditions are becoming stable or unstable.

- High-pressure usually brings clear skies and calm conditions.
- Low-pressure systems are generally associated with clouds, rain and storms.
- A sudden fall in atmospheric pressure may provide an early warning of an approaching storm or cyclone.

Therefore, studying changes in air pressure can help meteorologists identify approaching extreme weather before it occurs, while temperature and rainfall mainly tell us about existing or recorded conditions.

A falling barometer reading can warn us about an approaching storm.



Barometer indicates changes in air pressure

Q4. Heavy rainfall triggered landslides in a hill station, stranding tourists. IMD had issued an orange warning earlier, but many ignored it. As a local administrator, how would you act differently next time to reduce such risks ?

Ans. As a local administrator, I would take IMD weather warnings seriously and act before the situation becomes dangerous. I would:

- Inform residents and tourists immediately about the IMD warning through mobile messages, announcements and local authorities.
- Restrict travel to landslide-prone and other dangerous areas.
- Evacuate people from high-risk areas to safe shelters when necessary.
- Keep emergency and rescue teams ready.
- Monitor rainfall, atmospheric pressure and other weather information continuously.
- Ensure that roads and drainage systems are checked before heavy rainfall.
- Spread awareness that orange and red weather warnings should never be ignored.

These measures would help reduce the risk of landslides, prevent tourists from becoming stranded and protect lives and property.



Be Prepared
Be Safe



Quick Revision Notes

- ★ Weather - daily condition of the atmosphere.
- ★ Climate - long-term average of weather.
- ★ IMD - established in 1875.
- ★ Weather elements - temperature, air pressure, humidity, wind, precipitation.
- ★ Important instruments - thermometer, barometer, anemometer, wind vane, hygrometer, rain gauge.
- ★ AWS - records data automatically using sensors.
- ★ Winds move from high pressure to low pressure.
- ★ Low pressure - clouds, rain and storms.
- ★ High pressure - clear and sunny weather.
- ★ Rainfall is measured in millimetres (mm).
- ★ Mean daily temperature = $(\text{Max} + \text{Min}) \div 2$.
- ★ Weather forecasting helps in agriculture, travel, disaster management and daily life.



Key Words

Word	Meaning
Weather	Daily condition of the atmosphere.
Climate	Long-term average of weather.
Atmospheric pressure	Weight of air above a place.
Humidity	Amount of water vapour in the air.
Precipitation	Water falling from the sky.
Thermometer	Measures temperature.
Barometer	Measures air pressure.
Anemometer	Measures wind speed.
Wind vane	Shows wind direction.
Hygrometer	Measures humidity.
Rain gauge	Measures rainfall.
AWS	Automated Weather Station.



"Same Sky, Same Earth, Brighter and Safer Days."



Understanding the Weather

Exam-Time Revision Notes

Important Points / One-Liner Facts

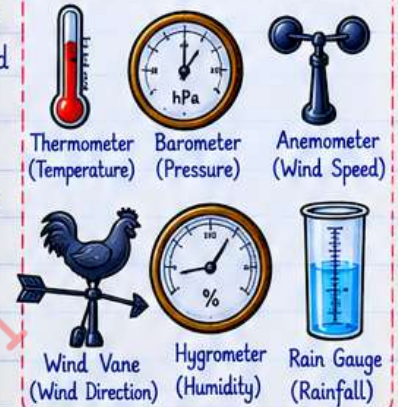
1. Weather is the daily condition of the atmosphere at a particular place and time.
2. Climate is the long-term average of weather conditions.
3. The India Meteorological Department (IMD) was established in 1875
4. IMD is the national agency under the Ministry of Earth Sciences, Government of India.
5. The main elements of weather are temperature, atmospheric pressure, humidity, wind and precipitation.
6. The Sun is the ultimate source of energy driving weather patterns.
7. Unequal heating of the Earth by the Sun creates pressure differences and drives winds.
8. Winds generally move from areas of high pressure to areas of low pressure.
9. A wind vane shows the **direction from which** the wind is blowing.
10. An anemometer measures wind speed.
11. A thermometer measures air temperature.
12. A barometer measures atmospheric pressure.
13. A hygrometer measures humidity.
14. A rain gauge measures the amount of rainfall in millimetres (mm).
15. The maximum-minimum thermometer (Six's thermometer) records the highest and lowest temperatures over a set period, usually 24 hours.
16. $\text{Mean daily temperature} = (\text{Maximum Temperature} + \text{Minimum Temperature}) \div 2$
17. A sudden fall in barometric pressure may indicate a storm or cyclone.
18. High-pressure systems (Anticyclones) bring clear, sunny and calm weather.
19. Low-pressure systems (Cyclones) bring clouds, rain and strong winds or storms.
20. High humidity makes us feel uncomfortable because sweat evaporates more slowly.
21. Pine cones open and close due to changes in humidity.
22. Automated Weather Stations (AWS) use sensors to record data automatically without human observers.
23. AWS can measure temperature, humidity, wind speed and direction, precipitation and atmospheric pressure.
24. Traditional signs such as frog calling, bird behaviour and animal activity are used to predict weather, but they are not always accurate.
25. Accurate weather forecasting helps in agriculture, travel, disaster management and our daily life.

"Small Steps of Knowledge Lead to a Brighter Tomorrow."

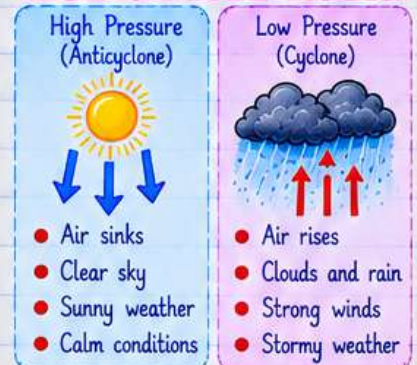


Know the Weather
Be Better Prepared !

Weather Instruments



Types of Weather Systems



Key Takeaways

- Observe the sky and understand the signs.
- Use scientific information for accurate forecasts.
- Follow IMD warnings and take timely action.
- Be prepared for extreme weather events.
- Weather knowledge helps build safer and stronger communities.

"Understand Today
Adapt Tomorrow
Live Safer Always."

Better Weather Knowledge → A Safer, Happier Future

Understanding the Weather

Summary and Concept Map

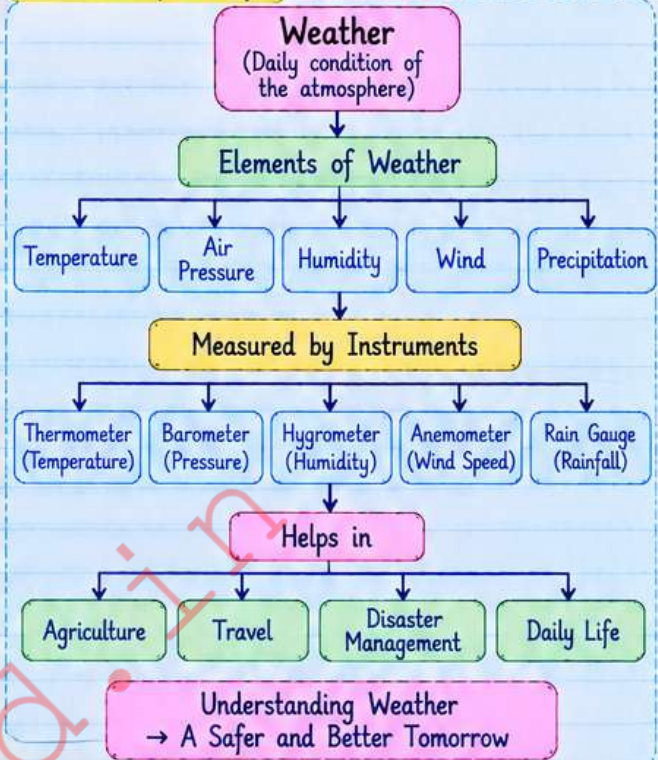
"Weather Affects Us All
Be Aware,
Be Prepared."



A. Chapter Summary

- Weather is the daily condition of the atmosphere at a particular place and time.
- Climate is the long-term average of weather conditions.
- The India Meteorological Department (IMD) was established in 1875.
- Weather is influenced by the Sun, air pressure, wind, humidity and precipitation.
- Meteorological instruments like thermometer, barometer, anemometer, hygrometer and rain gauge help in measuring weather elements.
- Winds move from high-pressure areas to low-pressure areas.
- High-pressure systems bring clear and stable weather (anticyclones), while low-pressure systems bring clouds, rain and storms (cyclones).
- Automated Weather Stations (AWS) use sensors to record weather data.
- Weather knowledge helps in agriculture, travel, disaster management and daily life.
- We should observe the sky, understand the signs and follow warnings to stay safe.

B. Concept Map



C. Important Definitions

Term	Meaning
Weather	Daily condition of the atmosphere at a place and time.
Climate	Long-term average of weather conditions.
Atmospheric pressure	Weight of air above a place.
Humidity	Amount of water vapour in the air.
Precipitation	Water falling from the sky (rain, snow, hail).
Temperature	Measure of how hot or cold the air is.
Barometer	Instrument to measure air pressure.
Thermometer	Instrument to measure temperature.
Anemometer	Instrument to measure wind speed.
Wind vane	Shows the direction from which the wind is blowing.
Hygrometer	Instrument to measure humidity.
Rain gauge	Instrument to measure rainfall.
AWS	Automated Weather Station.
Anticyclone	High-pressure system (clear and sunny weather).
Cyclone	Low-pressure system (cloudy, rainy and stormy weather).

D. Signs in the Sky

- Dark clouds → May bring rain or a storm
- Red sky in the evening → Usually fair weather
- Red sky in the morning → Rain may come
- Falling air pressure → Bad or stormy weather may be approaching
- Rising air pressure → Clear and stable weather
- Loud frog calls → Rain may come
- Birds flying low → Rain may come
- Increase in humidity → Higher chance of rain
- Calm winds and clear sky → Fair weather
- Strong winds → May indicate an approaching storm



E. Do's and Don'ts

✓ Do's

- Check weather forecast regularly.
- Follow IMD warnings.
- Be prepared for extreme weather.
- Keep emergency essentials ready.
- Observe changes in the sky and nature.
- Use weather information for planning travel and outdoor activities.

✗ Don'ts

- Do not ignore weather warnings.
- Do not take unnecessary risks during heavy rain or storms.
- Do not venture into flood-prone areas.
- Do not rely only on traditional signs (they may not always be accurate).

F. Real-Life Uses of Weather Information

Farmers plan sowing and harvesting times.

Pilots use weather data for safe take-off and landing.

Ships and sailors use forecasts to avoid storms.

Helps in disaster management and saving lives.



Remember !

- Weather can change quickly.
- Be alert, be prepared, be safe.
- Knowledge of weather helps us live better and protect our environment.

Observe • Understand • Prepare • Stay Safe • Build a Brighter Tomorrow

Chapter - 3 Climates of India

A. Very Short Answer Questions

"Different climates
Different lives
One Incredible India."

Q1. Define microclimate with one example from nature.

Ans. A microclimate is a small, localised area where the climate conditions—like temperature, moisture and light—differ significantly from the wider surrounding region. This miniature climate zone can range from just a few inches to several miles wide.

Example : Inside a dense forest, the tree canopy blocks direct sunlight and slows down the wind.



Inside a dense forest, the tree canopy blocks direct sunlight and slows down the wind.

Q2. What role does topography play in the rainfall pattern of the Western Ghats ?

Ans. Topography causes the Western Ghats to act as a massive physical barrier that forces moisture-laden winds from the Arabian Sea to rise, cool rapidly and drop heavy orographic rainfall on the windward western slopes while creating a dry rain-shadow on the leeward eastern side.



Q3. State one way in which urbanisation increases the risk of flooding.

Ans. Urbanisation increases flood risk by covering natural land with hard, waterproof surfaces like concrete and asphalt. This prevents rainwater from soaking into the ground.



Q4. Mention one way in which climate influences Indian clothing style.

Ans. Climate influences Indian clothing by requiring lightweight, breathable fabrics like cotton to stay cool and comfortable during the hot and humid summer months across most of the Indian landmass.



Q5. What is meant by sustainable lifestyle in the context of climate change ?

Ans. A sustainable lifestyle in climate change means shifting daily habits to reduce our personal impact on the planet (Earth). This change focuses on using fewer natural resources, creating less waste and protecting the environment for the future.



"Small steps today for a greener tomorrow."



Chapter - 3 Climates of India

Complete Exercise Questions & Answers

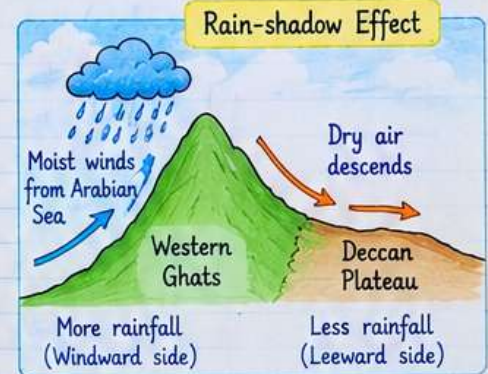
"Climate shapes land, life and livelihoods."



E. Short Answer Questions

Q1. Why does the Deccan Plateau receive less rainfall compared to the Western Ghats?

- Ans. The Deccan Plateau receives less rainfall because it sits in a rain-shadow area.
1. The Western Ghats block the wet winds coming from the Arabian Sea.
 2. As the wet air goes up the western side of the mountains, it cools and drops heavy rain.
 3. The Deccan Plateau sits on the eastern, leeward side where the dry air goes down and brings very little rain.



Q2. How do plants, animals and humans show adaptation to different ritus or seasons?

- Ans. Plants, animals and humans adapt to different ritus through biological, behavioural and lifestyle changes that maintain balance and survival.
- i) Grishma : Trees drop leaves to stop water loss. Animals drink more water and humans feel comfortable in cotton outfits, have fruits, as it is available during this season.
 - ii) Winter or Shishira : This is the time when plants go dormant and thick bark protects stems from cold. Humans feel comfortable in woollen outfits to keep warmth inside.
 - iii) Monsoon or Varsha : Seeds sprout quickly in wet soil. Amphibians (frogs, as example) are very active now. Humans eat fresh, clean vegetables and take good care of their health as waterborne diseases are very common now.

Adaptation in Different Seasons

Summer 	Trees shed leaves Humans wear cotton Animals drink more water
Winter 	Plants go dormant Humans wear woollen Animals seek warm places
Monsoon 	Seeds sprout Frogs are active Fresh vegetables are eaten

Q3. Why are eastern coastal regions of India more prone to cyclones than the western coast?

- Ans. The eastern coastal region of India experiences roughly four times as many cyclones as the western coast because :
1. The Bay of Bengal has warmer sea-surface temperature, a land-locked shape that traps heat and remnants of storms shifting from the Pacific Ocean.
 2. The Bay of Bengal is about 2°C warmer throughout the year while the Arabian Sea is cooler. Most of the storms that do form in the Arabian Sea travel north or north-west towards Oman, missing the northwest coast.
 3. The eastern coastal plains are wide and flat, lacking high mountain walls to block incoming winds.

Cyclones are more frequent in the Bay of Bengal



Q4. How does climate change pose challenges to small-scale industries in India?

- Ans. Climate change threatens small-scale industries in India through extreme weather events, rising temperatures and water scarcity, which damage physical infrastructure, disrupt supply chains, reduce labour productivity and increase operating costs for vulnerable local businesses.
1. Floods and cyclones destroy factory buildings, machinery and raw-material stocks.
 2. Power outages from damaged grids halt production schedules.
 3. Repair costs drain the limited cash reserves of small business owners.
 4. Insurance coverage is unavailable or too expensive.
 5. Frequent illness among workers leads to higher absenteeism.
 6. Higher transport and material costs squeeze profit margins.



♦ "Stronger climate action supports stronger communities."



Climates of India

Complete Exercise Questions & Answers

"Our Climate,
Our Responsibility."



F. Long Answer Questions

Q1. Describe the mechanism of the southwest and northeast monsoons, highlighting the role of temperature and pressure.

Ans. Monsoons are massive seasonal wind reversals driven by differential heating and pressure gradients between landmass and adjacent oceans.

(A) South-West Monsoon (June to September)

- From May to June, high solar radiation intensely heats the Indian landmass, the Thar Desert and the Tibetan Plateau.
- Land warms much faster than water, creating a deep low-pressure trough over India and Tibet.
- The Southern Indian Ocean near the Mascarene Islands remains cool, maintaining a high-pressure cell.
- Air rushes from the high-pressure ocean to the low-pressure land.
- As the trade winds cross the equator, the Coriolis force deflects them to the right, forming moisture-laden south-west monsoon winds.
- These winds strike the Western Ghats and eastern ranges, rising, cooling and condensing to give heavy rainfall.

(B) North-East Monsoon (October to December)

- From October to December, the Northern Hemisphere tilts away from the Sun, causing rapid cooling on the Asian landmass and the Tibetan-Siberian region.
- Land temperatures drop below ocean temperatures, creating a high-pressure system over the continent.
- The equatorial Indian Ocean and Bay of Bengal remain warmer, creating a low-pressure zone.
- The pressure gradient reverses and dense, cold air flows from land to sea.
- These winds, after picking up moisture from the Bay of Bengal, bring rainfall to southeastern peninsular regions like Tamil Nadu and southern Andhra Pradesh.

Q2. Assess the role of the Himalayas in shaping India's climate. How would India's weather be different if the Himalayas did not exist?

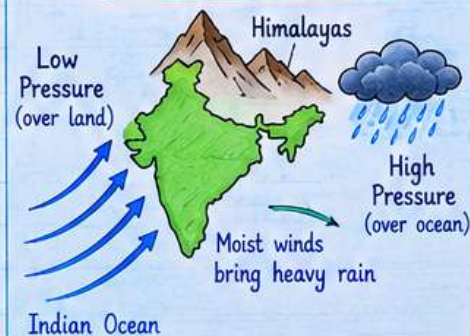
Ans. The Himalayas shape India's climate by acting as a giant wall. They block freezing Siberian winds in winter and trap moisture-laden south-west monsoon winds, forcing them to drop heavy rain across the subcontinent.

If the Himalayas did not exist :

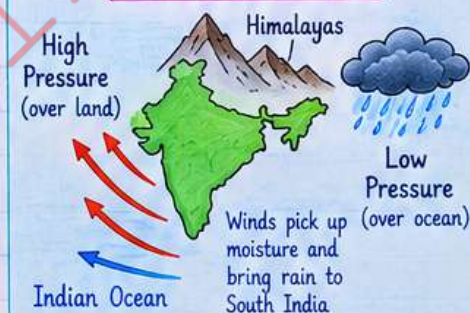
- India would be cold, dry and largely an arid desert.
- Winter temperatures on the Indo-Gangetic Plain would make it a dry scrubland desert.
- Rivers would vanish, destroying regional water security.
- Predictable seasonal monsoon would collapse, leading to widespread drought.
- Jet stream would not be deflected, so western disturbances would not bring winter rainfall to North India.

Monsoon Mechanism

South-West Monsoon (June - September)



North-East Monsoon (October - December)



Key Point :

- Monsoon is caused by differential heating and pressure.
- Winds change direction with seasons.
- Himalayas play an important role.



The Himalayas - India's Natural Shield



Role of the Himalayas :

- Block cold winds from Central Asia.
- Trap monsoon winds.
- Help in rainfall and river systems.
- Maintain moderate climate.
- Support rich biodiversity.

"Mountains protect, Monsoons nourish - Together they make India unique."



Climates of India

Complete Exercise Questions & Answers

"Climate influences our food, clothing, houses and culture."

G. Long Answer Questions (Continued)

Q3. Compare the impact of cyclones, floods and forest fires on people, economy and environment.

Ans. Cyclones bring destructive winds and storm surges; floods cause prolonged water submersion and contamination; forest fires release massive heat and toxic smoke rapidly.

1. Impact on People

- Cyclones cause sudden injuries and deaths from flying debris and collapsing structures, leading to massive short-term displacement.
- Floods trigger waterborne diseases like cholera, trap populations and isolate communities for days and weeks.
- Forest fires cause severe burns, respiratory disturbances and smoke inhalation and sudden evacuation of entire towns.

2. Impact on Economy

- Cyclones destroy critical infrastructure like power grids, ports and coastal buildings, costing billions in immediate repairs.
- Floods ruin agriculture, submerge industrial machinery and disrupt supply chains for extended periods.
- Forest fires burn valuable timber resources, damage tourism revenue and destroy rural residential properties.

3. Impact on Environment

- Cyclones uproot mature coastal trees, erode beaches and destroy saltwater and mangrove habitats.
- Floods leak toxic chemicals into waterways, cause severe soil erosion and suffocate plant roots.
- Forest fires incinerate vast wildlife habitats and release massive quantities of carbon dioxide.

Q4. "Festivals, music and architecture in India reflect the country's diverse climates." Discuss the statement with examples from at least three regions.

Ans. India's diverse climates directly shape its cultural landscape. Architecture, music and festivals adapt closely to local weather patterns, geography and seasonal changes.

Rajasthan (Hot and Dry Climate)



- **Architecture:** Thick stone walls, small windows, high ceilings and courtyards (chowks) keep interiors cool. Hawa Mahal uses honeycomb lattice to allow cool breezes.
- **Music:** Folk songs like Kesariya Balam are slow and soulful. Instruments like sarangi, kamayacha and khartal.
- **Festival:** Desert Festival in Jaisalmer celebrates the cooler winter season.

Kerala (Tropical Wet Climate)



- **Architecture:** Steep sloping tiled roofs, wide overhanging eaves and open verandas to shed heavy rain and allow sea breezes.
- **Music:** Sopana Sangeetham is soft devotional music sung near temple shrines, matching the calm, humid monsoon setting.
- **Festival:** Onam marks the end of monsoon harvest. Boat races (Vallam Kali) celebrate the water that feeds the green land.

Jammu & Kashmir (Cold Climate)



- **Architecture:** Traditional Taq buildings with timber frames and sloping roofs to withstand heavy snow.
- **Music:** Sufiyana Kalam uses quiet string instruments like santoor and saz.
- **Festival:** Hemis Festival takes place in winter. Monks wear warm woollen masks and robes and dance to celebrate life during freezing months.

Impacts at a Glance

Cyclone



- Strong winds
- Storm surges
- Damage to life, property and environment

Flood



- Water submersion
- Diseases
- Crop loss
- Infrastructure damage

Forest Fire



- Destroys forests
- Kills wildlife
- Releases smoke and carbon dioxide
- Damages property

"Natural disasters remind us to respect nature and live more sustainably."



Chapter - 3 Climates of India

Complete Exercise Questions & Answers

"Our actions today
can protect the climate
tomorrow."



Q5. Discuss two ways in which climate influences Indian food habits.

Ans. Climate influences Indian food habits in many ways. Two important ways are :

- 1 Use of spices and cooling foods :** In hot and humid regions, people use spices like cumin, coriander, mint and fennel which help to cool the body. Water-rich fruits, buttermilk and curd are also commonly consumed to stay cool and hydrated.
- 2 Seasonal food practices :** In the monsoon season, people prefer fried foods and make pickles to prevent spoilage. In cold regions, warm and high-calorie foods are eaten to keep the body warm.

Climate and Food Habits

Hot Climate



Buttermilk and mint
keep us cool.

Monsoon Season



Fried foods and pickles
are common in monsoon.

Q6. What is meant by a sustainable lifestyle in the context of climate change? Give examples.

Ans. A sustainable lifestyle means adopting daily habits that reduce our impact on the environment and help in conserving natural resources. It aims to meet our present needs without harming the ability of future generations to meet their needs.

Examples :

- Using public transport or bicycles to reduce air pollution.
- Saving electricity and water.
- Reducing, reusing and recycling waste.
- Planting more trees and protecting natural habitats.

Steps Towards a Sustainable Lifestyle



Plant trees



Save energy



Save water



Reduce, Reuse,
Recycle



Use public
transport



Keep our
environment clean

Q7. How does urbanisation increase the risk of flooding?

Ans. Urbanisation increases the risk of flooding in the following ways :

- 1** Natural land is covered with concrete and asphalt, which prevents rainwater from soaking into the ground.
- 2** Drainage systems get overloaded due to increased population and waste.
- 3** Destruction of wetlands and lakes reduces the natural capacity to hold excess water.

Urbanisation and Flooding



Concrete surfaces
prevent water
from soaking.



Heavy rainfall leads
to waterlogging
in cities.

Q8. Why is traditional knowledge important in predicting the monsoon in India? Give examples from different regions.

Ans. Traditional knowledge is important because it helps farmers and local communities to understand natural signs and forecast the monsoon. It is based on long observation of the environment and is simple, cost-free and reliable for local areas.

Examples :

- **Rajasthan :** Flowering of the Roheda tree and nesting habits of lapwings (Titodi).
- **Kerala :** Observation of wind patterns, cloud formation and arrival of migratory birds like the Asian koel.
- **Assam :** Behaviour of ants moving their eggs and blooming of bamboo and orchids.

Nature Gives Clues



Lapwing
(Rajasthan)



Bamboo
(Assam)



Asian Koel
(Kerala)

Q9. How can we prepare for extreme weather events like cyclones, floods and heatwaves?

Ans. We can prepare for extreme weather events by :

- Keeping emergency supplies ready (food, water, medicines, torch, etc.).
- Following early warnings from IMD and local authorities.
- Building strong and safe houses.
- Avoiding unnecessary travel during extreme weather.
- Taking community action such as plantation, clean drainage and proper planning.

Be Prepared, Be Safe



Emergency
kit



Follow
warnings



Stay in
safe places



Chapter - 3 Climates of India

Complete Exercise Questions & Answers

"Different climates,
One India,
A shared home."



H. Higher Order Thinking Skills (HOTS)

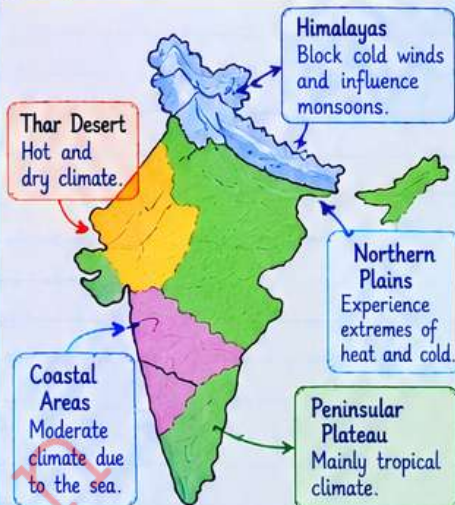
- Q1.** Why do you think India experiences such a variety of climates in a relatively small area compared to many other countries?
- Ans.** India experiences a variety of climates because of its large latitudinal spread, diverse physical features (Himalayas, deserts, plains, coastal areas), distance from the sea, varying altitude and the seasonal monsoon winds.
- Q2.** How does the monsoon act as a unifying factor for India?
- Ans.** The monsoon brings rainfall to almost the entire country, supports agriculture, recharges rivers and lakes, and influences the lives, festivals, culture and economy of people across different regions. It connects India's people through a shared climatic experience.
- Q3.** Suppose the Himalayas were lower in height. How might this change the climate of India?
- Ans.** If the Himalayas were lower, the cold winds from Central Asia would enter India easily, making the northern part much colder. The monsoon winds might also be weaker, leading to less rainfall and drier conditions in many parts of India.
- Q4.** In what ways can human activities worsen the impact of climate-related disasters? Give examples.
- Ans.** Human activities like deforestation, unplanned construction, blocking drainage systems and over-extraction of natural resources can increase the impact of disasters.
- Examples :**
- Cutting trees increases the risk of floods and landslides.
 - Building on floodplains causes greater damage during heavy rainfall.
 - Polluting rivers reduces their capacity to hold excess water.
- Q5.** Suggest measures that can help communities adapt to the changing climate in your region.
- Ans.** Measures include :
- Planting more trees and conserving green areas.
 - Using water wisely and harvesting rainwater.
 - Building homes and infrastructure suitable for local climate conditions.
 - Keeping emergency supplies ready.
 - Promoting clean and renewable energy sources.
 - Spreading awareness about climate change and disaster preparedness.

I. Map Based Question

- Q1.** On the given outline map of India, shade and label the following :
- Hot and dry climate region
 - Tropical wet climate region
 - Mountain climate region
- Ans.** Do it on the map as shown.
(Use different colours and make a legend)

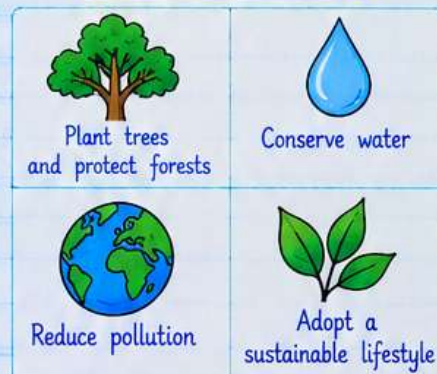
Index	
	Hot and dry climate
	Tropical wet climate
	Mountain climate

Physical Features and Climate



India's diverse physical features create diverse climatic conditions.

Our Responsibility



"A balanced environment
today ensures a better
tomorrow."





Chapter - 3 Climates of India

Complete Exercise Questions & Answers

Page No. : 1

Date : _____

"Different climates
Different lives
One Incredible India!"

A. Multiple Choice Questions (MCQs)

1. Which of the following regions has a cold mountain climate?
(a) Rajasthan (b) Kerala (c) Ladakh (d) Tamil Nadu

Ans. (c) Ladakh

2. The Western Ghats receive heavy rainfall due to
(a) rain shadow effect (b) location near the equator
(c) orographic rainfall (d) high temperature

Ans. (c) orographic rainfall

3. Which wind brings rainfall to most parts of India?
(a) Trade wind (b) Westerlies (c) South-West monsoon (d) North-East monsoon

Ans. (c) South-West monsoon

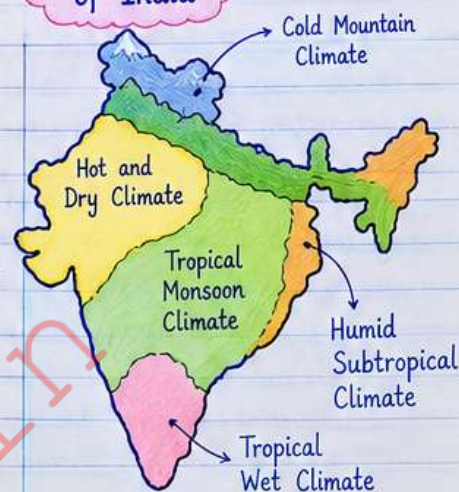
4. Which of the following is an element of weather?
(a) Relief (b) Latitude (c) Humidity (d) Soil

Ans. (c) Humidity

5. The Bay of Bengal is warmer than the Arabian Sea, so the eastern coast experiences
(a) less rainfall (b) more cyclones (c) high pressure (d) dry weather

Ans. (b) more cyclones

Different Climates of India



Variety of Climates
Variety of Life

B. Fill in the Blanks

1. The Indian Meteorological Department (IMD) was established in _____.
Ans. 1875.

2. The long-term average of weather conditions is called _____.
Ans. climate.

3. The winds that bring rain to India are called _____ winds.
Ans. monsoon.

4. The amount of water vapour in the air is called _____.
Ans. humidity.

5. The Western Ghats receive heavy rainfall due to _____ rainfall.
Ans. orographic.

Weather
changes daily,
Climate shapes
our future.



C. True or False

1. Climate does not affect the lives of people. Ans. False
2. The Deccan Plateau receives more rainfall than the Western Ghats. Ans. False
3. India has mainly six major types of climates. Ans. True
4. Weather remains the same throughout the year. Ans. False
5. Cyclones are more frequent on the western coast than on the eastern coast. Ans. False

Observe
Understand
Be Prepared

D. Very Short Answer Questions

- Q1. Define microclimate with one example from nature.

Ans. A microclimate is a small, localised area where the climate conditions like temperature, moisture and light differ significantly from the wider surrounding region. This miniature climate zone can range from just a few inches to several miles wide.

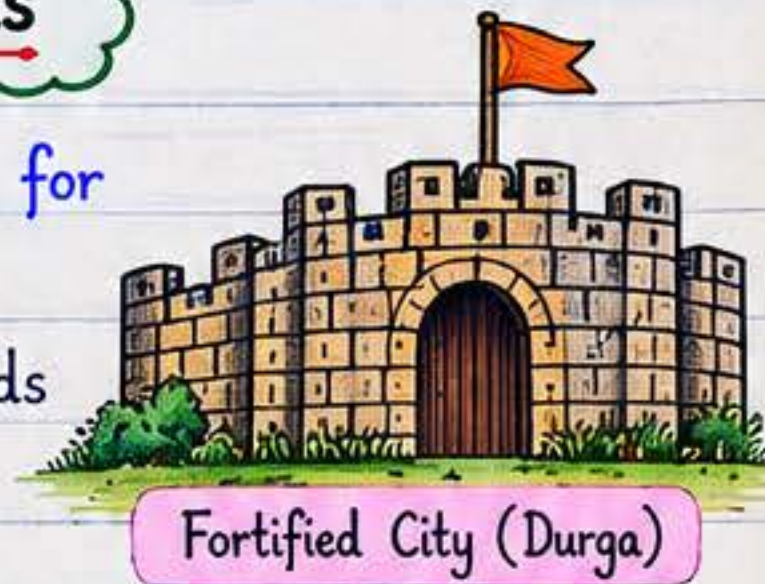
Example: Inside a dense forest, the tree canopy blocks direct sunlight and slows down the wind.

Small Changes
Big Impact
Climate Matters!

Very Short Answer Questions

Q1. Mention one reason why fortified cities were important for rulers during ancient times.

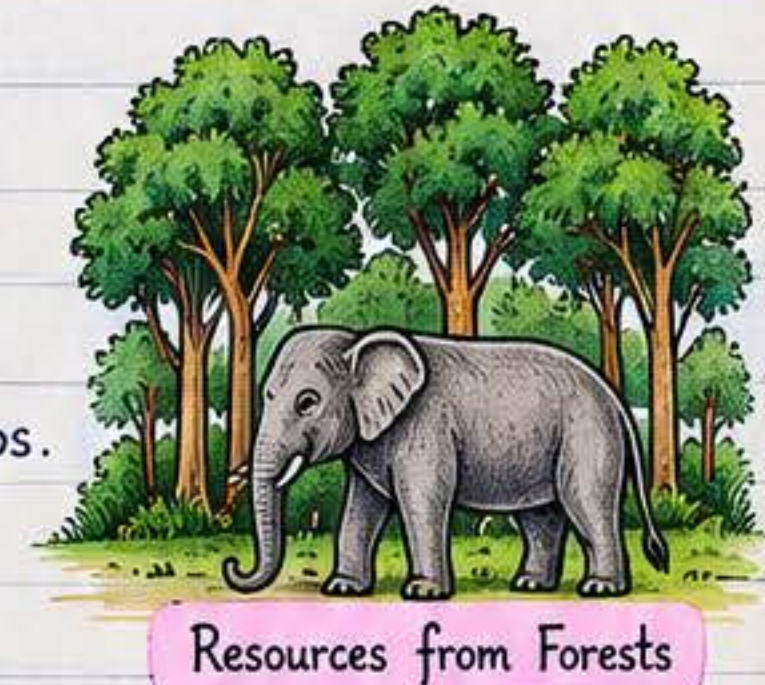
Ans. Durga (Fortified Towns and Cities) – Forts and strongholds to protect against invasions.



Q2. Name any two resources obtained from forests that strengthened Magadha's power.

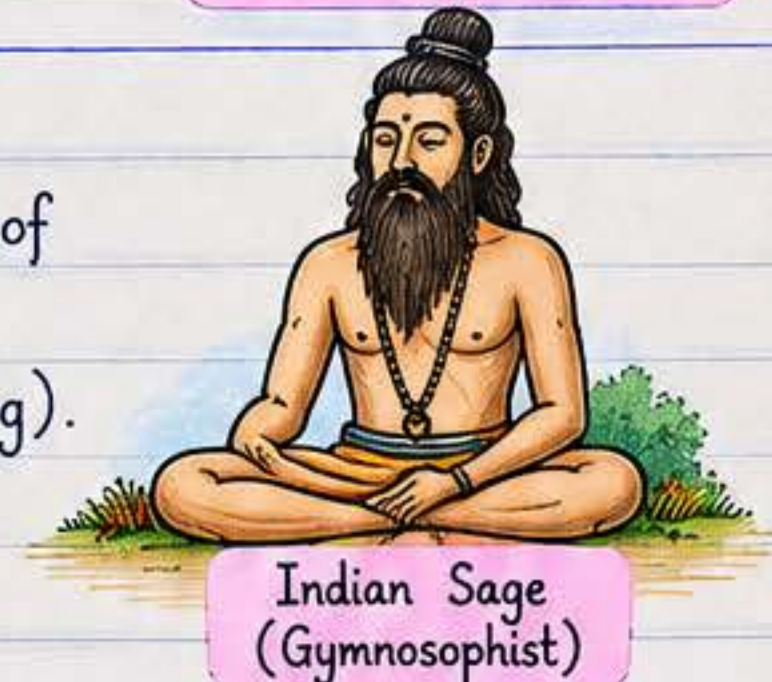
Ans. Magadha's rise was not accidental. Its geography and resources gave it many advantages.

- Fertile land of the Ganga plains → Produced abundant crops.
- Thick forests nearby → Provided timber for construction and elephants for the army.



Q3. What does the term "Gymnosophists" mean?

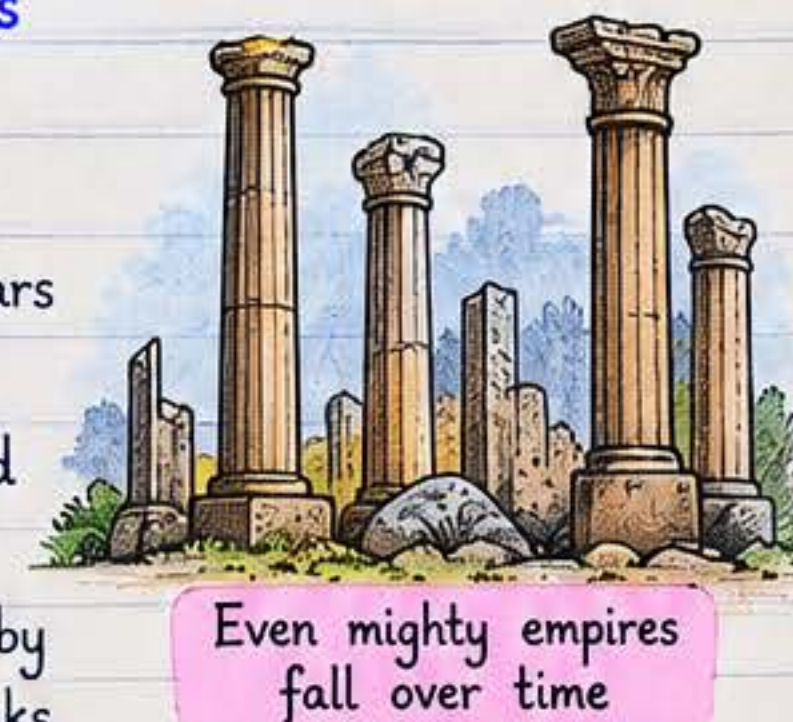
Ans. During his time in India Alexander heard about a group of Indian sages whom the Greeks called Gymnosophists or "naked philosophers" (because they wore very little clothing). These sages were famous for their wisdom and fearless way of living.



Q4. What does the decline of the Mauryan Empire teach us about governance?

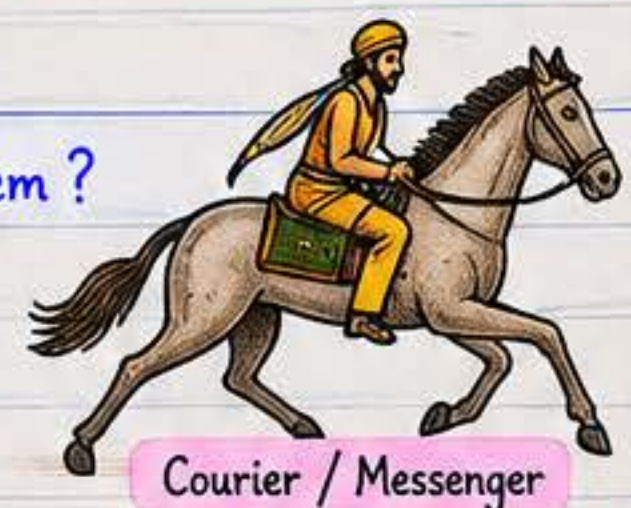
Ans. Empires are, therefore, a paradox:

- They often brought political unity and peace, reducing wars between small kingdoms.
- They encouraged prosperity by promoting trade, roads and cultural exchange.
- Yet, because they were built on conquest and maintained by force, they remained fragile at their core. Over time, cracks appeared and even the mightiest empires eventually fell apart.



Q5. What was the role of couriers in the Mauryan communication system?

Ans. Ashoka sent emissaries far and wide to Sri Lanka and parts of mainland Southeast Asia to spread the message of peace, compassion and non-violence.



"Strong Administration Builds a Strong Empire."

The Rise of Empires

Short Answer Questions

Q1. What evidence do we have to show that trade flourished under the Mauryas ?

Ans. These were not carved designs like modern coins but punch marks made using tiny punches and dies. Each mark carried meaning : some represented royal authority, while others showed control over trade or resources.



Punch-marked Coin

Evidence that trade flourished under the Mauryas include:

- (i) Arthashastra mentions trade, merchants, markets, taxes and officials they supervised commerce.
- (ii) Punch-marked coins were widely used, showing the growth of commercial transactions.
- (iii) Megasthenes describes Pataliputra as a large and prosperous city with active economic life.
- (iv) The Mauryan Empire had a well-developed roads and routes, ports and trade routes, helping merchants travel and transport goods.

Q2. How did Kautilya's ideas balance morality with state control ?

Ans. Kautilya balanced morality and state control in the Arthashastra by treating dharma (moral social duty) as the ultimate while allowing systematic tactics (Upaya) as a practical tool to preserve the state security, order and survival.



Kautilya (Chanakya)

Q3. How did Mauryan rulers use art and architecture to display authority and values ?

Ans. Mauryan rulers used art and architecture to show their powers and values they built large palaces, pillars, stupas and caves. The Ashoka's pillar beautiful carvings and animal figures showing strength and justice. He used inscriptions to spread the ideas of peace and dharma.



Ashoka's Pillar

Q4. How do Ashoka's edicts help us understand his concept of justice and governance ?

Ans. Emperor Ashoka's 33 rock and pillar edicts revolutionized ancient state craft by replacing military conquest with Dharma. He re-defined justice and governance to be based care, religious pluralism and the protection of all living being.



Rock Edict

Q5. What does the Sohgaura inscription tell us about the nature of Mauryan administration ?

Ans. The Sohgaura copper plate talks about famine relief. It shows that the Mauryan government set food granaries and helped people during disaster times. This means the administration cared about public welfare.



Sohgaura Copper Plate

"Trade, Art, Dharma and Good Governance made the Mauryan Empire Strong."

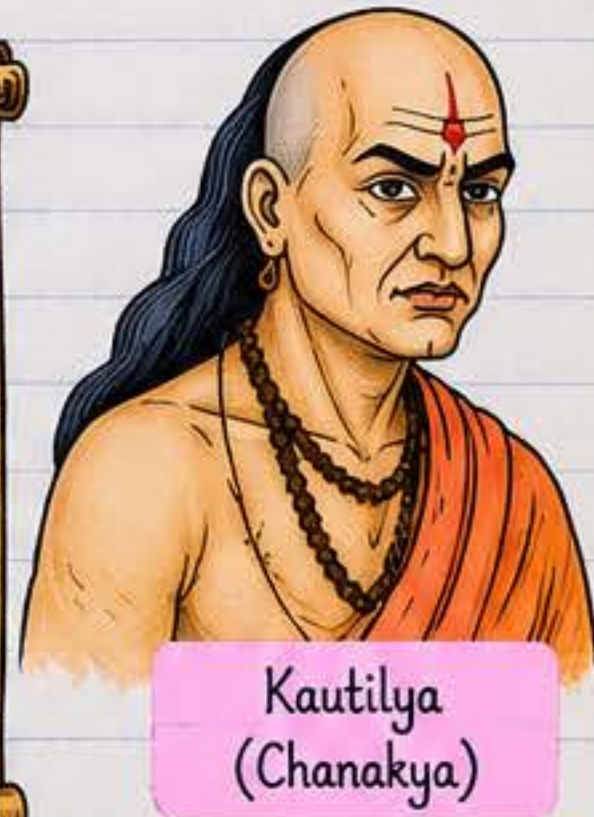
The Rise of Empires

Long Answer Questions

Q1. Discuss Kautilya's Saptanga theory of the state and how it reflected the realities of governance.

Ans. According to Kautilya's saptanga theory that is mentioned in Arthashastra was the seven part of state :-

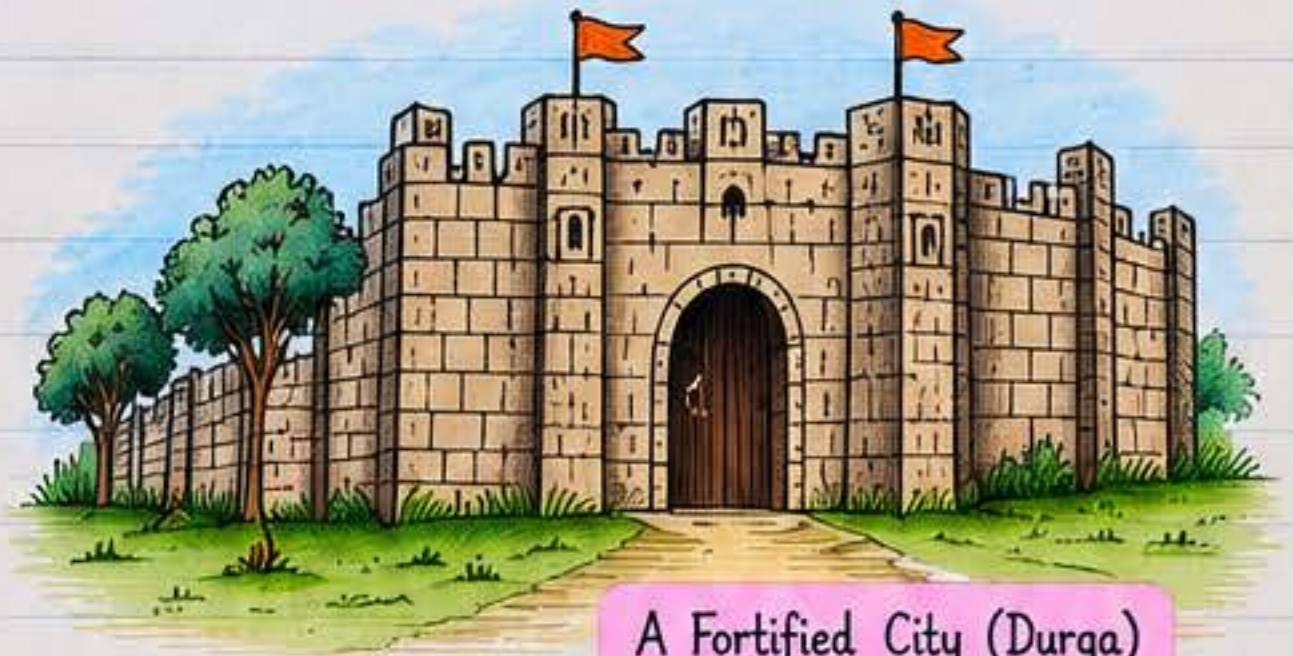
1. **Swami** - The king
2. **Amatya** - The minister and officials
3. **Janapada** - people or territory
4. **Durga** - fort
5. **Kosha** - treasury
6. **Danda** - army
7. **Mitra** - allies



Chanakya said : "If these all 7 are strong when they come together the state will be strong."

This matched Mauryan empire reality :-

- A powerful king
- Big army
- Collected taxes
- Built fort
- Made alliances to run the large empire.



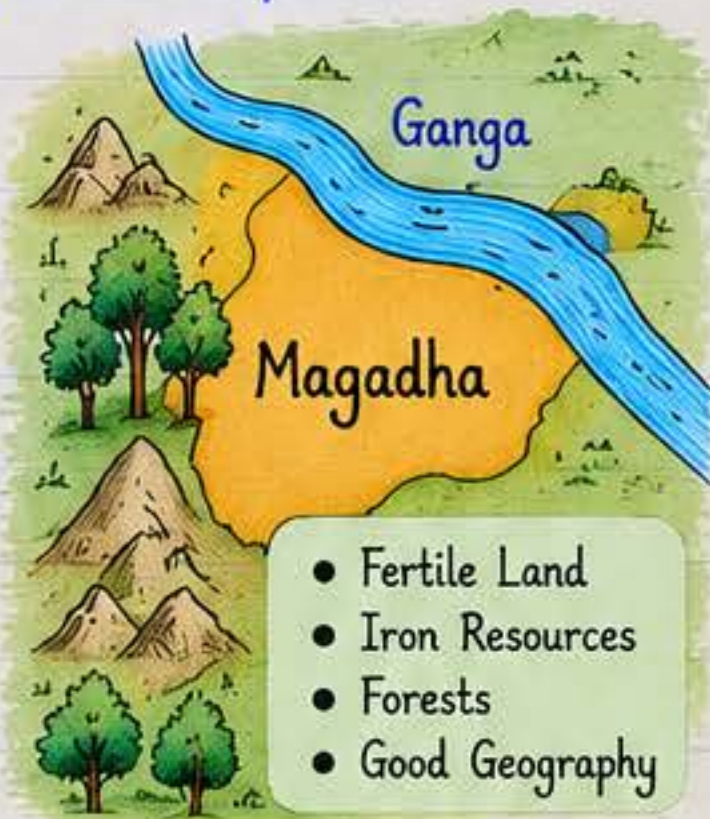
A Fortified City (Durga)

Q2. Explain how natural resources, technology and geography together helped Magadha emerge as the nucleus of early empire building.

Ans. 1. Natural Resources - The fertile land in the valleys of Ganga and iron ore for weapons and forests for elephants and timber.

2. Technology - The iron ore axes were made to cut the wood and clear the forest to do agriculture and made very advanced weapons for better and strong armies.

3. Geography - Magadha was located near the Ganga. The Ganga provided fertile land and water for agriculture and also helped in trade.



Magadha - Key to Empire Building

"Nature + Technology + Geography = A Stronger Magadha."

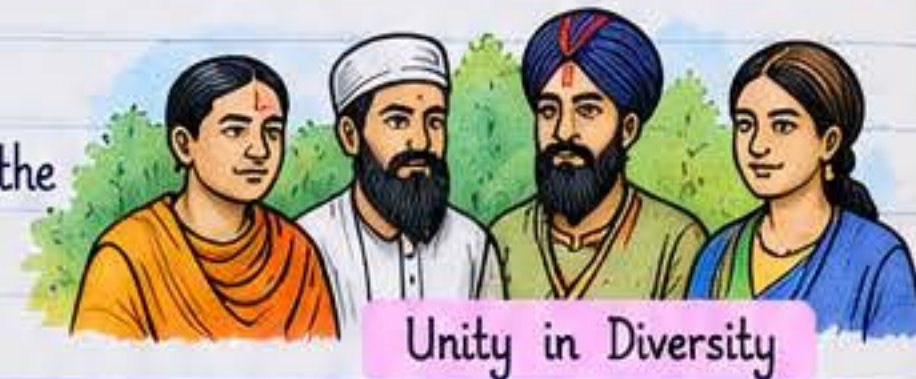
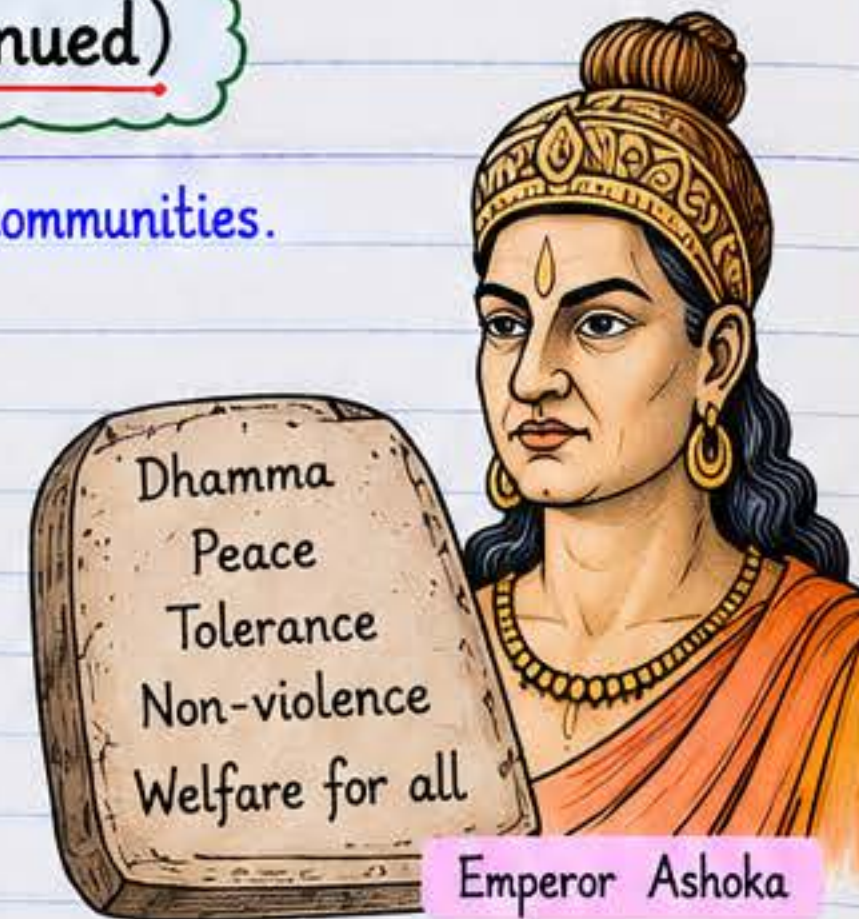
The Rise of Empires

Long Answer Questions (Continued)

Q3. Evaluate how Ashoka's dhamma promoted unity among diverse communities.

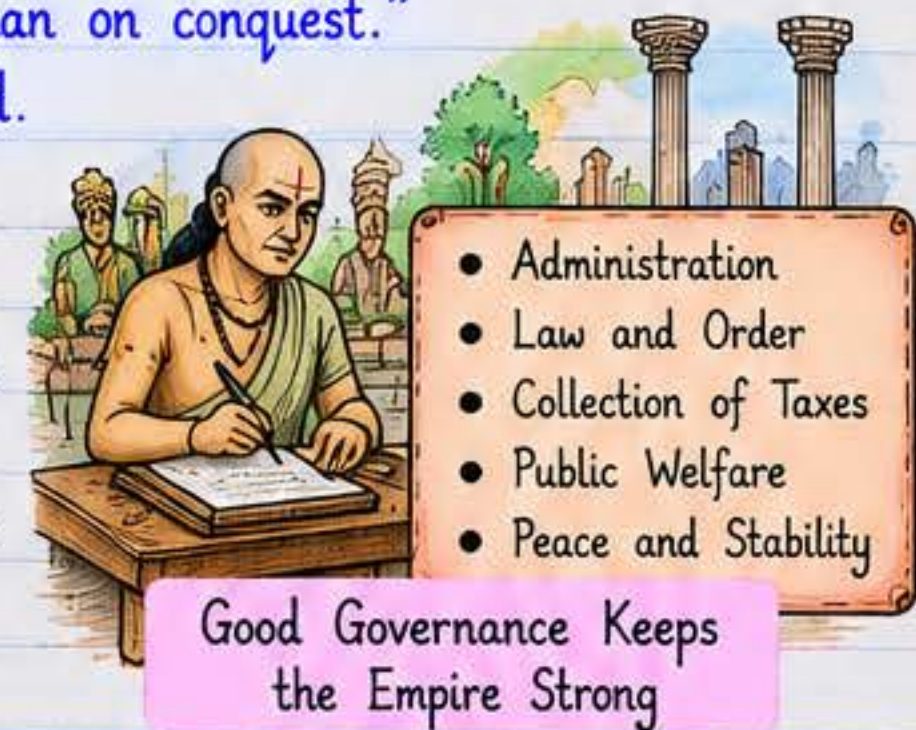
Ans. After Kalinga battle with Maurya's Empire the Ashoka followed Dhamma (Dharma). He promoted unity among diverse communities in the following ways :

1. **Religious tolerance** - Respected all religions.
2. **Public welfare** - Built hospitals, roads, wells for everyone.
3. **Moral values** - Told people to follow truth, non-violence and compassion.
4. **Use of local languages** - Edicts were written in local languages so all people could read.
5. **Unity without force** - Dhamma united people of different regions and religions without violence, so the empire remained peaceful.



Q4. "The strength of an empire depends more on governance than on conquest." Explain this statement with reference to the Mauryan period.

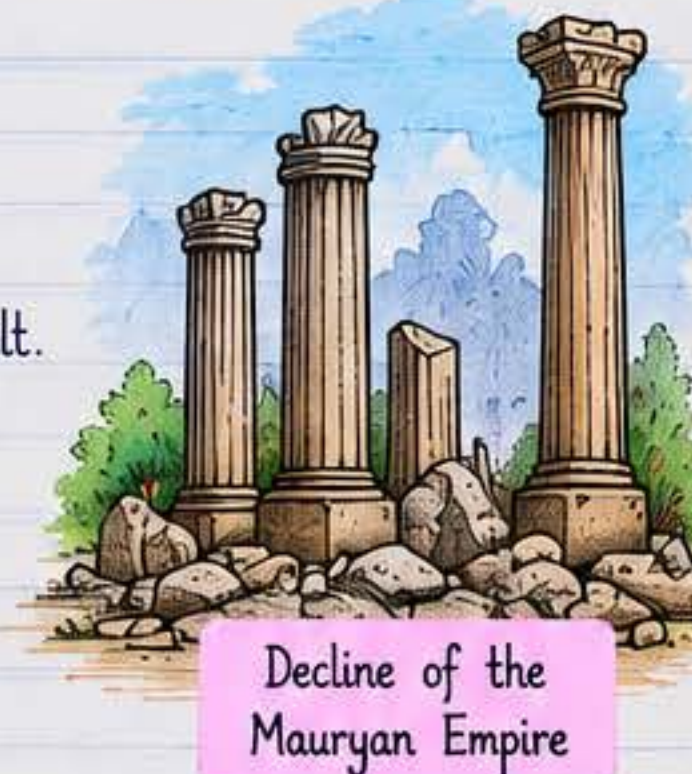
Ans. Conquest can make an empire larger, but good governance keeps it strong. The Mauryan Empire needed a proper administration to control its large territory. Officials collected taxes and maintained law and order. Ashoka also focused on the welfare of his people and promoted peace. Therefore, good governance was more important than conquest for maintaining the empire.



Q5. Describe the factors responsible for the decline of the Mauryan Empire and explain why large empires were inherently fragile.

Ans. The Mauryan Empire declined after the death of Ashoka. Later, rulers were weaker and the huge empire became difficult to control. There were also several problems such as :

1. **Weak central administration** - Control over distant regions became difficult.
2. **Financial pressure** - Large army and administration were costly.
3. **Conflicts among rulers** - After Ashoka, rulers were not strong.
4. **Difficulty in controlling distant regions** - Communication and administration became difficult.
5. **Empire gradually divided** - The empire became smaller and split into different independent kingdoms.



Large empires were inherently fragile because it was difficult to govern distant territories, maintain communication and control different groups from one centre. A strong ruler could keep such an empire united, but after a weak ruler came to power, different regions became independent. Thus, the decline of the Mauryan Empire shows that large empires need strong administration and stable leadership to survive.



"Empires may be mighty, but they are not immortal."



The Rise of Empires

Key Notes for Exams

Learn → Revise → Score

- ✓ Definitions
- ✓ Fill in the Blanks
- ✓ MCQs
- ✓ Important Facts

1. Fortified Cities (Durga)

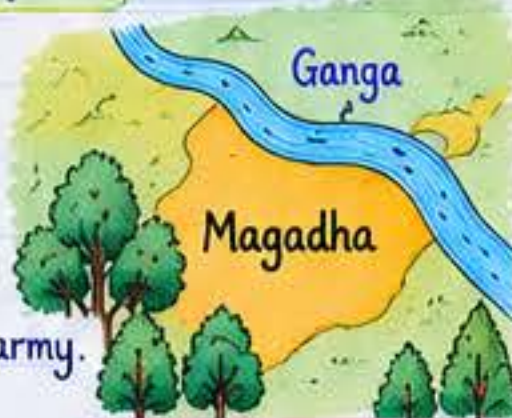
- **Durga** means fortified towns and cities (**forts**) built to protect against invasions.
- Forts and strongholds were important during ancient times.



Fort (Durga)

2. Why Magadha became powerful?

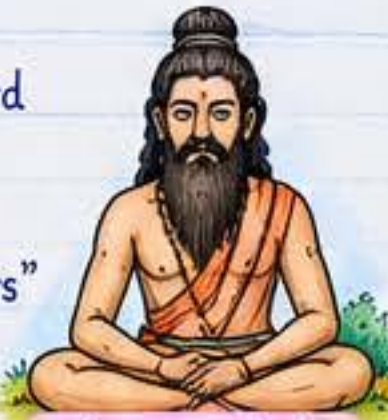
- Located in the Ganga plains.
- Fertile land → abundant crops.
- Forests → timber and elephants.
- Thick forests provided timber for construction and elephants for the army.



Magadha and the Ganga

3. Meaning of Gymnosophists

- During his time in India, Alexander heard about a group of Indian sages called Gymnosophists.
- These sages were called "naked philosophers" (because they wore very little clothing).
- They were famous for their wisdom and fearless way of living.



Gymnosophist (Indian Sage)

4. Trade and Economy under the Mauryas

- Arthashastra mentions trade, merchants, markets, taxes and officials.
- Punch-marked coins were widely used.
- These coins show the growth of commercial transactions.
- Megasthenes described Pataliputra as a large and prosperous city.
- Well-developed roads, routes, ports and trade routes helped in the movement of goods.



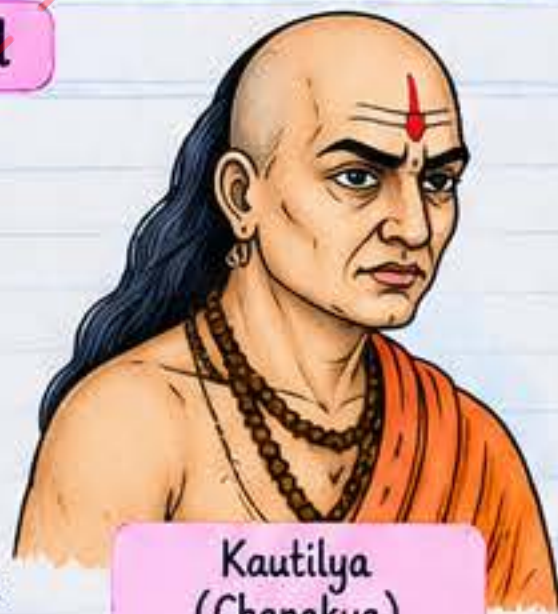
Punch-marked Coin



Pataliputra (as described by Megasthenes)

5. Kautilya and State Control

- Kautilya wrote the Arthashastra.
- He balanced morality and state control by using:
 - **Dharma** - moral social duty.
 - **Upaya** - practical tactics to preserve state security, order and survival.
- His ideas helped in running the state more effectively.



Kautilya (Chanakya)

"Dharma for a just society,
Upaya for a strong state."

"Strong Administration Builds a Strong Empire."

6. Mauryan Art and Architecture

- Mauryan rulers used art and architecture to show their power and values.
- They built large palaces, pillars, stupas and caves.
- Ashoka's pillar had beautiful carvings and animal figures like the lion.
- Inscriptions were used to spread ideas of peace and dharma.



Ashoka's Pillar (Sarnath)

7. Ashoka's Dhamma

- After the Kalinga battle, Ashoka adopted Dhamma (Dharma) instead of military conquest.
- He promoted religious tolerance and respected all religions.
- He built hospitals, roads and wells for public welfare.
- He encouraged people to follow truth, non-violence and compassion.
- His edicts were written in local languages so that everyone could read and understand.
- He sent emissaries to Sri Lanka and parts of Southeast Asia to spread the message of peace.



Emperor Ashoka

Peace
Non-violence
Religious Tolerance
Welfare for all

8. Sohgaoura Inscription

- The Sohgaoura copper plate talks about famine relief.
- It shows that the Mauryan government set food granaries and helped people during disaster times.
- This means the administration cared about public welfare.



Sohgaoura Copper Plate

9. Reasons for the Decline of the Mauryan Empire

- After Ashoka's death, later rulers were weaker.
- Huge empire became difficult to control.
- Weak central administration.
- Financial pressure due to large army and administration.
- Conflicts among rulers.
- Difficulty in controlling distant regions.
- Communication and administration became difficult.
- Empire gradually divided into smaller kingdoms.



Large empires can be strong but also fragile.

10. Saptanga Theory (Seven Parts of State)

1. **Swami** - The king
2. **Amatya** - Ministers and officials
3. **Janapada** - People or territory
4. **Durga** - Fort
5. **Kosha** - Treasury
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7. **Mitra** - Allies

If all 7 are strong,
the state will be strong.

Key Strengths of Mauryan Empire

- Powerful king
- Big army
- Collected taxes
- Built fort
- Made alliances

From Conquest to Compassion
- The Mauryan Legacy Lives On!

Important Facts with Images

Remember →
Facts → Questions
→ Good Marks !

1. Natural Resources of Magadha

- Magadha had fertile land in the Ganga plains.
- Abundant crops were produced.
- Thick forests provided timber and elephants.
- Iron ore was available.
- Iron axes were used to cut forests and clear land for agriculture.
- Timber was used for construction.
- Elephants were used in the army.
- Natural resources gave Magadha a great advantage.



Fertile land of the Ganga plains



Forests - Timber and Elephants



Iron ore and axes

2. Geography of Magadha

- Magadha was located near the Ganga.
- The Ganga provided fertile land, water and easy routes for trade.
- Its geographical location helped in the growth of agriculture, trade and cities.



Location of Magadha

3. Trade, Economy and Urban Life

- Arthashastra mentions trade, merchants, markets, taxes and officials.
- Punch-marked coins were widely used.
- These coins show the growth of commercial transactions.
- Megasthenes described Pataliputra as a large and prosperous city.
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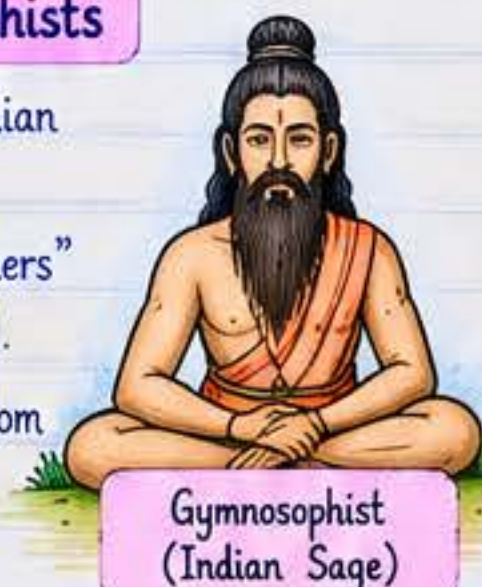
Punch-marked coins



Pataliputra (as described by Megasthenes)

4. Alexander and the Gymnosophists

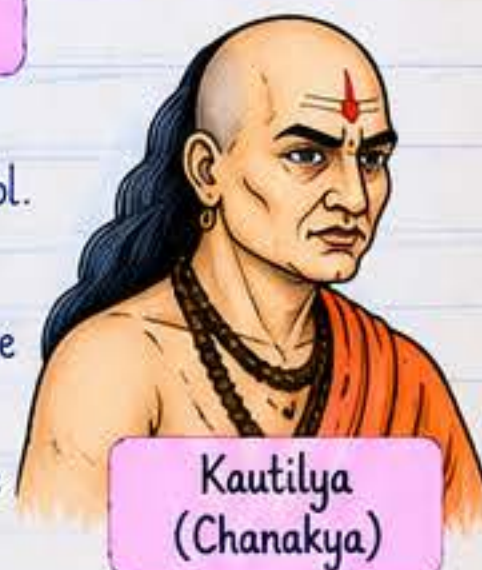
- Alexander heard about a group of Indian sages called Gymnosophists.
- The Greeks called them "naked philosophers" (because they wore very little clothing).
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Gymnosophist (Indian Sage)

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Kautilya (Chanakya)

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Lion Capital (Sarnath)

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Emperor Ashoka

Dhamma Means :

- Peace
- Non-violence
- Religious Tolerance
- Welfare for all

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Sohagaura Copper Plate

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- Communication and administration became difficult.
- Empire gradually divided into smaller kingdoms.



Large empires are also fragile.

"Good Governance, Natural Resources and Unity
Can Build a Strong Empire."

Learn the Past
for a Better Future !

Chapter 7

The Gupta Era: An Age of Timeless Creativity

"A golden age
of knowledge,
art and culture"

Very Short Answer Questions (1 to 5)

1 Q. Who is believed to have built the **Kevala Narasimha Temple** and why?

Ans. The 5th century **Kevala Narasimha Temple** in Ramtek, Maharashtra, is believed to have been built by a daughter such as **Prabhavati Gupta**. According to the site's damaged Sanskrit inscription, it was constructed to honour and commemorate her mother, celebrating her lineage and devotion to **Lord Vishnu**.



Kevala Narasimha Temple
(Ramtek, Maharashtra)

2 Q. Name one **Buddhist institution** patronised by the Gupta rulers.

Ans. The ancient **Nalanda Mahavihara** in Bihar was established and patronised by Gupta emperors, notably beginning with **Kumaragupta I** in the 5th century CE.



Nalanda Mahavihara
(Bihar)

3 Q. Name two important **Ayurvedic texts** compiled during the Gupta age.

Ans. Two important Ayurvedic texts from the Gupta age are the **Ashtanga Hridaya** by **Vagabhata** and **Siddhasara** by **Ravigupta**.



Ayurveda

4 Q. Who supported the construction of the **Ajanta Caves**?

Ans. The construction of the Ajanta Caves was supported by the **Satavahana dynasty** during the 2nd century BCE to 1st century CE and heavily patronised by the **Vakataka dynasty**, most notably Emperor **Harishena**, along with other rulers, royal officials and Buddhist monks during the later phase (5th century CE).



Ajanta Caves

5 Q. What were **Ghatikas** and why were they important?

Ans. Ghatikas were ancient and medieval Indian educational institutions, primarily centred in South India under dynasties like the **Pallavas**, **Chalukyas** and **Gangas**. They served as elite hubs for higher learning, Vedic scholarship and philosophical debate.



Ghatika
(Educational Institution)

"The Gupta period laid the foundations of India's enduring legacy."

Chapter 7

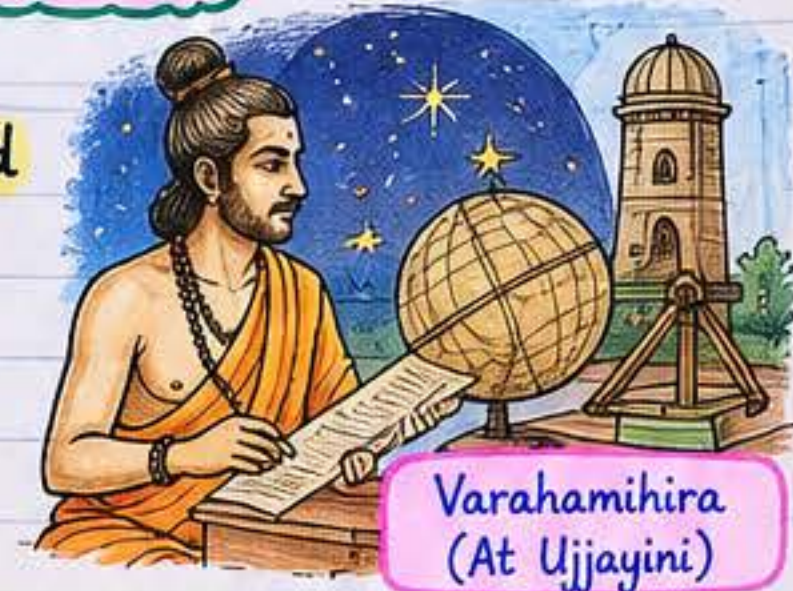
The Gupta Era: An Age of Timeless Creativity

"Great rulers create not just a kingdom, but a culture."

Very Short Answer Questions (6 to 10)

6 Q. Who was the famous mathematician, astronomer and astrologer based in Ujjayini?

Ans. **Varahamihira** was the famous mathematician, astronomer and astrologer based in Ujjayini.



Varahamihira
(At Ujjayini)

7 Q. What was Varahamihira's famous encyclopedic work?

Ans. His famous encyclopedic work was the **Brihat Samhita**.



Covers astronomy, architecture, town planning, weather forecasting, farming and natural sciences.

8 Q. What subjects did Brihat Samhita cover?

Ans. Brihat Samhita covered astronomy and astrology, architecture and town planning, weather forecasting, farming and natural sciences.



Astronomy



Architecture



Weather



Farming.

9 Q. Who was one of the greatest Sanskrit poets and dramatists of this period?

Ans. **Kalidasa** was one of the greatest Sanskrit poets and dramatists of this period.



Kalidasa
(Great Sanskrit Poet)

Famous works :

- Abhijnanasakuntalam
- Meghadutam
- Kumarasambhavam
- Raghuvamsam
- Ritusamhara

10 Q. Which famous poem was written by Kalidasa?

Ans. **Meghadutam** (The Cloud Messenger) was written by Kalidasa.



Meghadutam - A yaksha sends a message to his beloved through a cloud.

KEY WORDS

- Varahamihira** - A famous astronomer and author of Brihat Samhita.
- Brihat Samhita** - An encyclopedic text on many subjects.
- Kalidasa** - A great Sanskrit poet and dramatist.
- Meghadutam** - A famous poem by Kalidasa.

Quick Fact

"Meghadutam" is one of the most beautiful love poems in Sanskrit literature."

Learn the Past,
Build a Brighter Future.

Chapter 7

The Gupta Era: An Age of Timeless Creativity

"Knowledge, art and power flourished together in the Gupta age."

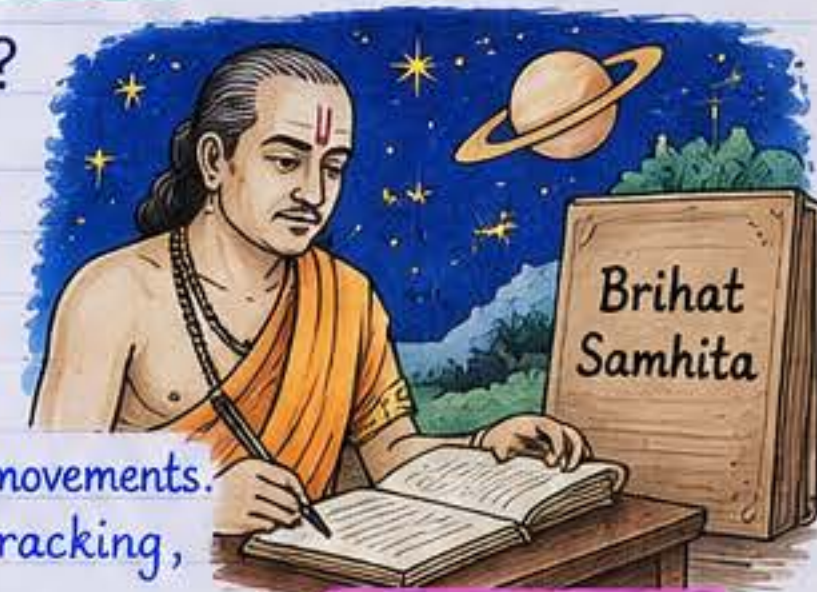
Short Answer Questions (1 to 4)

1 Q. What makes Varahamihira's **Brihat Samhita** distinctive?

Ans.

Brihat Samhita, written by Varahamihira in the 6th century, is distinctive because it is an encyclopaedic compendium of ancient Indian knowledge, rather than a narrow treatise on astrology.

- **Vast subject matter** : Over 106 chapters covering architecture, meteorology, agriculture, gemology and planetary movements.
- **Practical sciences** : Methods for water divination, ecological tracking, underground water, and perfume manufacture.
- **Art and architecture** : Offers foundational guidelines on temple design.
- **Sanskrit poetry** : Uses at least 63 different poetic metres.



Varahamihira

2 Q. How did **marital diplomacy** strengthen Gupta power?

Ans.

Marital diplomacy, allowed the Gupta rulers to build political power, gain high social status and expand their lands without fighting costly wars. It secured their borders and established dominance across ancient India.

- **Lichchhavi alliance (Chandragupta I)** : married Kumaradevi of the powerful Lichchhavi clan. Their son Samudragupta called himself Lichchhavi-dauhitra.
- **Naga alliance (Chandragupta II)** : married the Naga princess Kuberanaga, neutralised a strong regional power.
- **Vakataka alliance (Chandragupta II)** : married his daughter Prabhavati Gupta to the Vakataka king Rudrasena II.



Gupta ruler and his queen

"Marriages were a tool of statecraft in the Gupta age."

3 Q. Explain the political message of the **Ashvamedha** under Samudragupta.

Ans.

Samudragupta performed the Ashvamedha (horse sacrifice) to proclaim absolute imperial sovereignty and paramount authority.

- **Undisputed sovereignty** : The sacrificial horse challenged any rival.
- **Vedic legitimacy** : Aligned military conquests with divine sanction.
- **Imperial integration** : Cemented transition to a pan-Indian empire.
- **Dynastic propaganda** : Gold coins inscribed with titles like "Lord of the Earth".



Ashvamedha Horse

4 Q. Why is **Socotra** archaeologically important to Gupta-age trade?

Ans.

Socotra is important because the Hoq Cave on the island contains a large collection of Brahmi inscriptions, drawings of Indian ships and trade graffiti. These prove that the island served as a crucial mid-ocean maritime hub and safe harbour for Indian merchants during the Gupta period.



Socotra (Maritime Trade)

Key Takeaways

- Brihat Samhita - encyclopaedia of knowledge.
- Marital alliances - strengthened Gupta power.
- Ashvamedha - symbol of imperial sovereignty.
- Socotra - important for Indian maritime trade.

"The Gupta period shows how knowledge, diplomacy and power can shape a golden age."

Long Answer Questions (1 to 2)

1 Q. Evaluate Samudragupta's statecraft using the Prayaga Prashasti and coin types.

- Ans.** Samudragupta's statecraft combined ruthless military expansion with a wise and flexible policy. In the Prayaga Prashasti, his poet and minister **Harisena** described it.
- **Digvijaya (differential policy of conquest)** : Harisena outlined a geography-based strategy.
 - **Defeated rulers in Aryavarta** : Nine rulers were exterminated.
 - **Defeated rulers in Dakshinapatha** : Twelve rulers were defeated but reinstated as tributaries.
 - **Subjugation and tribute** : Imposed vassalage on frontier kingdoms in Assam, Bengal and Nepal.
 - **Diplomatic hegemony** : Foreign powers like Kushanas, Shakas and the king of Ceylon (Sri Lanka) offered submission and marriage alliances.
 - **Relic kingship** : The inscription compares him to Vedic deities like Kubera, Indra and Yama.
 - **Coins** : Tiger-slayer coins show him as an invincible warrior; Ashvamedha coins show the horse sacrifice; veena-playing coins show his love for arts.
 - **Cultural patronage** : He was a musician and patron of arts.
 - **Economic and political transition** : Kushana weight standards were adapted with an indigenous Garuda standard.



Prayaga Prashasti
(Allahabad Pillar)



Tiger-slayer coin



Ashvamedha coin



Veena-playing coin

"Samudragupta was a great warrior, a skilled statesman and a lover of arts."

2 Q. Discuss the contributions of **Aryabhata**, **Varahamihira** and **Kalidasa** in the Gupta age. How did their works reflect the intellectual and cultural brilliance of this period?

Ans. Aryabhata (Mathematics & Astronomy)	Varahamihira (Astronomy & Sciences)	Kalidasa (Literature & Poetry)
 • Introduced place value system and zero. • Wrote <i>Aryabhatiya</i> at the age of 23. • Stated that the Earth rotates on its axis. • Explained lunar eclipses. • Calculated π accurately. Aryabhata	 • Wrote <i>Brihat Samhita</i>. • Summarised five astronomical systems in <i>Pancha Siddhantika</i>. • Calculated planetary motions and star charts. • Covered weather, plant life, architecture and geography. Varahamihira	 • Wrote masterpieces like <i>Abhijnanasakuntalam</i>, <i>Meghadutam</i>, <i>Kumarasambhavam</i>, <i>Raghuvamsam</i> and <i>Ritusamhara</i>. • His works show refined taste, humanism and aesthetic brilliance. Kalidasa

Together, their works reflect the **intellectual and cultural brilliance** of the Gupta age, where science, mathematics, literature and arts flourished under a stable and prosperous rule.



Important Facts

- Aryabhata introduced zero.
- Varahamihira wrote *Brihat Samhita*.
- Kalidasa is called the 'Shakespeare of India'.
- Gupta age is a golden age of knowledge and culture.

Key Terms

- Digvijaya - conquest of directions
- Tributary - ruler who pays tribute
- Vassalage - subordination
- Paramount authority - highest power



Do you know?

- Samudragupta's coins show him playing the veena, which shows his love for music and arts.

The Gupta Era: An Age of Timeless Creativity

"Their legacy
lives on in our
knowledge, art
and culture."

Long Answer Questions (3 & 4)

- 3 Q. Describe the main causes of the decline of the Gupta Empire. How did other kingdoms like the Pallavas and Kamarupa rise during this period?

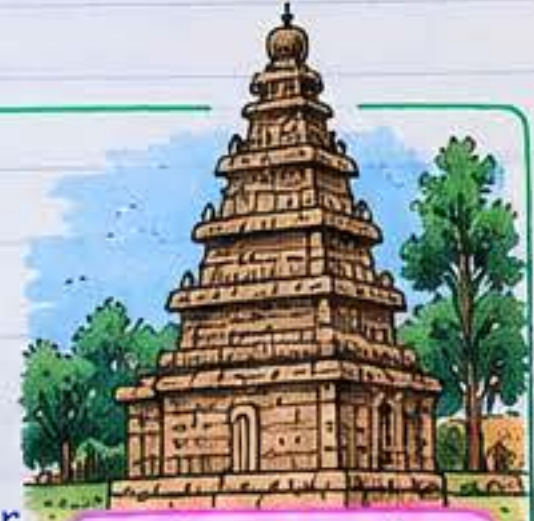
Ans.

Causes of the Decline of the Gupta Empire

- **Huna invasions** : Constant attacks by the White Hunas drained the military resources.
- **Rise of feudatories** : Local governors and feudatories gained power and stopped obeying the central king.
- **Loss of trade** : The decline of trade with the Roman Empire reduced wealth and economy.
- **Administrative strain** : Giving large land grants to priests and officials reduced the state income.

Rise of the Pallavas

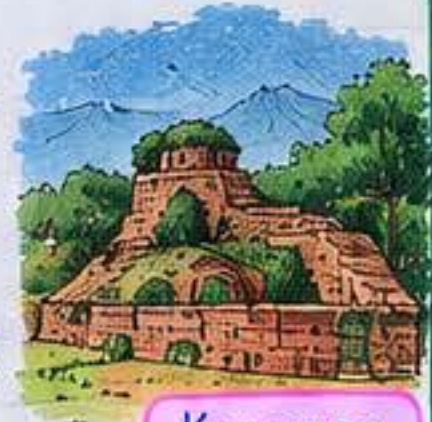
- The fall of the Satavahanas weakened southern powers.
- Kings like Simhavishnu and Mahendravarman I built a powerful army and navy.
- They expanded their rule over parts of Tamil Nadu and Andhra Pradesh.



Pallava Temple
(Mamallapuram)

Rise of Kamarupa

- Kamarupa grew after the decline of the Varman dynasty.
- It emerged as a centre of power and trade due to its strategic location in the Brahmaputra Valley (present-day Assam).
- Pushyavarman expanded its borders and formed alliances with regional powers.
- **Cultural growth** : They took advantage of the political split in north India to build a strong, independent state.



Kamarupa
(Assam)

"The decline of the Guptas led to the rise of powerful regional kingdoms across India."

- 4 Q. Discuss the contributions of Aryabhata, Varahamihira and Kalidasa in the Gupta age. How did their works reflect the intellectual and cultural brilliance of this period?

Ans.

Aryabhata (Mathematics and astronomy)

- Introduced the decimal system and the concept of zero.
- Wrote Aryabhatiya at the age of 23.
- Stated that the Earth rotates on its axis.
- Explained lunar eclipses, moving away from myths.
- Calculated π (pi) accurately.



Aryabhata

Varahamihira (Astronomy and Sciences)

- Wrote Brihat Samhita.
- Summarised five astronomical systems in Pancha Siddhantika.
- Calculated planetary motions and star charts.
- His Brihat Samhita covered weather, plant life, architecture and geography.



Varahamihira

Kalidasa (Literature and Poetry)

- Wrote masterpieces like Abhijnanasakuntalam, Meghadutam, Kumarasambhavam, Raghuvamsam and Ritusamhara.
- His works show refined taste, humanism and aesthetic brilliance.



Kalidasa

How their works reflect the brilliance of this period?

- Their works were based on observation, logic and creativity.
- Stable Gupta rule provided wealth and peace for the growth of science, literature and arts.
- Together they show the intellectual and cultural brilliance of the Gupta age.

"The Gupta age produced great minds whose work continues to inspire the world."

Chapter 7

The Gupta Era: An Age of Timeless Creativity

"A glorious past
that still inspires
a brighter
tomorrow."

Extra Important Points (For Exams)

1 Important Rulers

- **Chandragupta I** - Founder of Gupta power (married Kumaradevi).
- **Samudragupta** - Greatest ruler, performed Ashvamedha.
- **Chandragupta II** - Known as Vikramaditya, expanded empire, patron of art & literature.
- **Kumaragupta I** - Patronised Nalanda.
- **Skandagupta** - Fought against the Hunas.

2 Major Achievements of the Gupta Age

- Growth of trade and urban life.
- Development of science, mathematics, astronomy and medicine.
- Patronage to literature, art and architecture.
- Construction and patronage of temples, caves and universities.
- Use of gold coins with beautiful designs.
- Spread of Sanskrit and classical culture.



Gupta Gold Coin

3 Important Places

- **Pataliputra** - Early centre of power.
- **Ujjayini** - Associated with Varahamihira.
- **Nalanda** - Great Buddhist learning centre.
- **Ajanta Caves** - Patrons included Vakatakas (later phase).
- **Sarnath** - Important Buddhist site.
- **Sanchi** - Stupa and Buddhist art.
- **Socotra** - Evidence of maritime trade.



Sanchi Stupa

5 Universities and Education

- **Nalanda** - Famous Buddhist university.
- **Ghatikas** - Centres of higher learning in South India.
- Focus on Vedic studies, philosophy, grammar, medicine and sciences.

6 Trade and Economy

- Active trade with Southeast Asia, West Asia and the Roman Empire (earlier).
- Use of sea routes; Socotra as an important stop.
- Gold coins show a prosperous economy.

4 Art and Architecture

- Beautiful temples with intricate carvings.
- Rock-cut caves like Ajanta.
- Sculptures showing grace and realism.
- Influence of Gupta art seen in later periods too.



Ajanta Caves (Gupta Period)

7 Decline of the Gupta Empire

- Invasions by the Hunas.
- Rise of powerful feudatories.
- Loss of trade and economic resources.
- Weak leadership and internal conflicts.
- Emergence of regional kingdoms like Pallavas and Kamarupa.



Ruins - A changing time



Important Words & Meanings

- **Encyclopaedia** - A comprehensive work on many subjects.
- **Feudatory** - A local ruler under a larger king.
- **Vassalage** - Subordination or dependent rule.
- **Paramount** - Highest in rank or authority.
- **Digvijaya** - Conquest of directions.
- **Tributary** - A ruler who pays tribute.
- **Iconography** - Study of images and symbols in art.
- **Humanism** - Focus on human values and culture.



Quick Revision (One Line Facts)

- ✓ Varahamihira wrote Brihat Samhita.
- ✓ Aryabhata introduced the decimal system and zero.
- ✓ Kalidasa wrote Meghadutam.
- ✓ Samudragupta performed Ashvamedha.
- ✓ Nalanda was patronised by Gupta rulers.
- ✓ Ajanta Caves were patronised by the Vakatakas.
- ✓ Socotra has Brahmi inscriptions of Indian traders.
- ✓ Pallavas and Kamarupa rose after the decline of Guptas.

"The legacy of the Guptas lives on in our knowledge, art and culture."

Study the past,
shape a better future!

Chapter 7

The Gupta Era : An Age of Timeless Creativity

"Learn from
the past,
create a better
tomorrow."

Quick Revision Notes & Exam Practice

Important Dates / Time Line

- | | |
|------------------------|---|
| • c. 320 CE | • ChandraGupta I became the ruler. |
| • c. 335-375 CE | • Samudragupta's reign. |
| • c. 375-415 CE | • Chandragupta II (Vikramaditya). |
| • 5th century CE | • Kumaragupta I. |
| • c. 455-467 CE | • Skandagupta (fought the Hunas). |
| • 5th-6th century CE | • Growth of art, literature, science and education. |
| • Later 5th century CE | • Vakataka patronage of Ajanta Caves (Harishena). |

Key Places

- **Pataliputra** - early centre of power.
- **Ujjayini** - associated with Varahamihira.
- **Nalanda** - great Buddhist learning centre.
- **Ajanta Caves** - patronised by the Vakatakas (later phase).
- **Sarnath** - important Buddhist site.
- **Sanchi** - Stupa and Buddhist art.
- **Socotra** - evidence of maritime trade.



Ajanta Caves

Multiple Choice Questions (MCQs)

- Who wrote the Brihat Samhita ?
(a) Aryabhata (b) **Varahamihira**
(c) Kalidasa (d) Vagabhata
- Nalanda was associated with which field ?
(a) Art (b) **Education**
(c) Trade (d) Agriculture
- Who performed the Ashvamedha ?
(a) Chandragupta I (b) **Samudragupta**
(c) Chandragupta II (d) Skandagupta
- Which poet wrote Meghadutam ?
(a) Aryabhata (b) **Kalidasa**
(c) Varahamihira (d) Ravigupta
- Socotra is important for evidence of :
(a) Land trade (b) **Maritime trade**
(c) Agriculture (d) Temple building

Answers : 1-(b) 2-(b) 3-(b) 4-(b) 5-(b)

Famous Works and Their Authors

Work	Author
Aryabhatiya	Aryabhata
Brihat Samhita	Varahamihira
Panchasiddhantika	Varahamihira
Abhijnanasakuntalam	Kalidasa
Meghadutam	Kalidasa
Kumarasambhavam	Kalidasa
Raghuvamsam	Kalidasa
Ritusamhara	Kalidasa
Ashtanga Hridaya	Vagabhata
Siddhasara	Ravigupta



"Books are the
eternal companions
of a great civilisation."

Key Terms and Definitions

- **Encyclopaedia** - A comprehensive work on many subjects.
- **Feudatory** - A local ruler under a larger king.
- **Vassalage** - Subordination or dependent rule.
- **Paramount** - Highest in rank or authority.
- **Digvijaya** - Conquest of directions.
- **Tributary** - A ruler who pays tribute.
- **Iconography** - Study of images and symbols in art.
- **Marital diplomacy** - Political alliance through marriage.

Fill in the Blanks

- _____ was a famous mathematician and astronomer of the Gupta age.
- _____ wrote the play Abhijnanasakuntalam.
- The Ashvamedha was performed by _____.
- _____ was a great centre of Buddhist learning.
- Socotra provided evidence of _____ trade.

Answers : 1. Varahamihira 2. Kalidasa 3. Samudragupta
4. Nalanda 5. Maritime

Write True (T) or False (F)

- Kalidasa was a mathematician. ()
- Varahamihira's Brihat Samhita covered over 100 chapters. ()
- The Gupta rulers did not patronise Buddhism. ()
- Samudragupta performed the Ashvamedha. ()
- Socotra is important for evidence of land trade. ()

Answers : 1. F 2. T 3. F 4. T 5. F

"The more you know about your past,
the better you can build your future."



Keep Learning
Keep Growing!



Chapter 7

The Gupta Era : An Age of Timeless Creativity

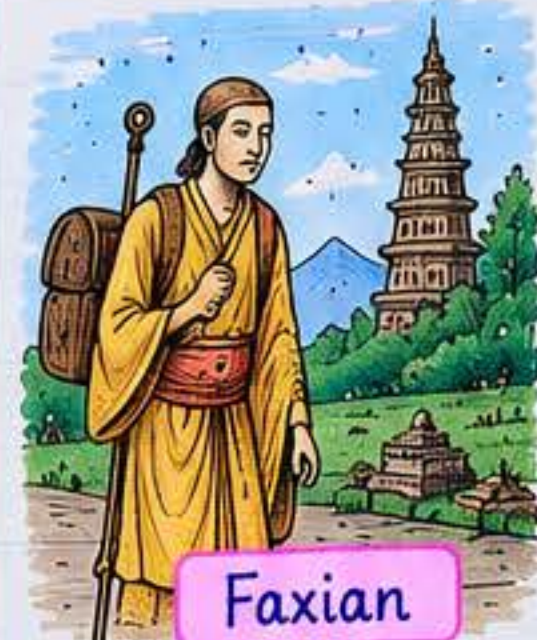
"A glorious past that inspires a brighter tomorrow."

Fill in the Blanks (1 - 20)

- The Chinese traveller _____ visited India in the early 5th century CE.
- Faxian came to India to visit sacred _____ sites and collect manuscripts.
- The Prayaga Prashasti was written by the court poet _____.
- The Prayaga Prashasti records the achievements of _____.
- Samudragupta was the father of _____.
- Samudragupta is shown playing the _____ on one of his coins.
- The goddess _____ appears on the reverse of a Samudragupta coin.
- Chandragupta III was also known as _____.
- Chandragupta III married the Naga princess _____.
- Prabhavati Gupta was the daughter of _____.
- Prabhavati Gupta married into the _____ kingdom.
- After her husband's death, Prabhavati Gupta became a _____.
- Gupta rulers adopted grand titles such as Maharajadhiraja, Samrat and _____.
- The main source of Gupta revenue was _____ tax.
- India traded with the Mediterranean world, Southeast Asia and _____.
- India exported textiles, spices, ivory and _____.
- _____ Island was an important stop in the Indian Ocean trade network.
- Aryabhata lived in _____ near present-day Patna.
- Aryabhata's famous work was called _____.
- Aryabhata stated that the Earth _____ on its axis.

Ans.

Faxian
Buddhist
Harisena
Samudragupta
Chandragupta III
Veena
Lakshmi
Vikramaditya
Kubera
Chandragupta II
Vakataka
Regent
Chakravartin
Land
China
Gemstones
Socotra
Kusumapura
Aryabhatiya
Rotates



Faxian



Samudragupta (coin)

"The Gupta period is remembered for great achievements in many fields."



Aryabhata

Study the past,
Build a brighter
tomorrow!

"Great minds from the past light the path for a better future."

Chapter 7

The Gupta Era : An Age of Timeless Creativity

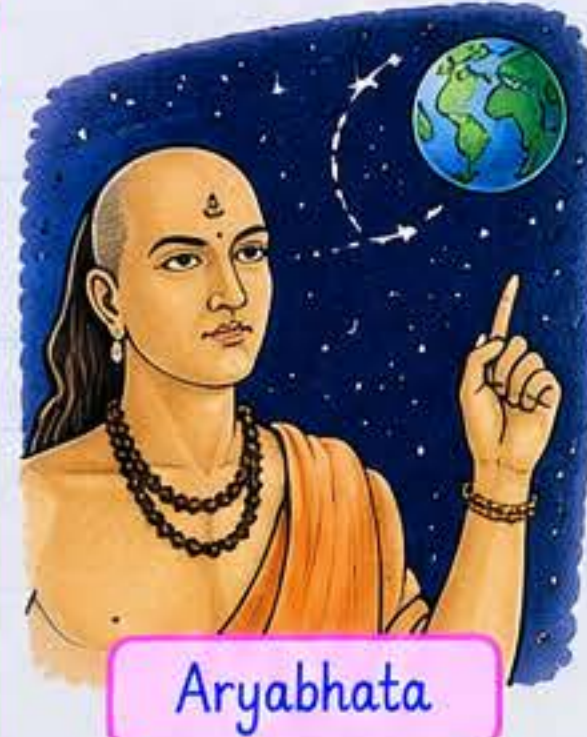
Fill in the Blanks (21 - 40)

"The more you know about your past, the better you can build your future."

21. Aryabhata correctly explained solar and _____ eclipses.
22. _____ was a mathematician, astronomer and astrologer based in Ujjayini.
23. Varahamihira's famous work was the _____.
24. _____ was one of the greatest Sanskrit poets and dramatists of the period.
25. Kalidasa wrote _____, also known as The Cloud Messenger.
26. In Meghadutam, a _____ sends a message to his beloved through a cloud.
27. The traditional system of medicine codified during the Gupta period was _____.
28. Two medical texts mentioned in the book are the Charaka Samhita and _____.
29. _____ became famous for its exquisite sculptures of the Buddha.
30. The _____ Caves contain some of India's oldest surviving murals.
31. Ajanta paintings used natural pigments such as red ochre, lapis lazuli and _____.
32. The famous mural of Bodhisattva _____ is shown in the book.
33. The _____ Caves in Madhya Pradesh contain carvings of deities and epic stories.
34. The Dashavatara Temple is located at _____ in Uttar Pradesh.
35. Ganga is shown standing on a _____.
36. Yamuna is shown upon a _____.
37. By the _____ century CE, the Gupta Empire began to weaken.
38. The _____ were a Central Asian tribe that repeatedly invaded the Gupta Empire.
39. The _____ became an important ruling power in southern India.
40. The capital of the Pallavas was _____.

Ans.

Lunar
Varahamihira
Brihat Samhita
Kalidasa
Meghadutam
Yaksha
Ayurveda
Sushruta Samhita
Sarnath
Ajanta
Charcoal
Padmapani
Udayagiri
Deogarh
Makara
Tortoise
6th
Hunas
Pallavas
Kanchipuram.



Aryabhata

"Science, art and culture flourished during the Gupta age."



Bodhisattva Padmapani (Ajanta Caves)



Dashavatara Temple (Deogarh)



"Our heritage is a gift from the past and a responsibility for the future."

Keep Learning
Keep Growing!

Chapter 7

The Gupta Era : An Age of Timeless Creativity

Fill in the Blanks (41 - 60)

"History helps us understand the present and shape a better tomorrow."

41. Kanchipuram was known as the "city of a _____ temples."
42. The Pallavas established educational centres called _____.
43. The kingdom of _____ flourished in the Brahmaputra valley.
44. Kamarupa was ruled by the _____ dynasty.
45. The ancient name of the Kamarupa region was _____.
46. Pragjyotisha is mentioned in the Ramayana and the _____.
47. The Mahabharata mentions King _____ of Pragjyotisha.
48. The Gupta period is remembered for achievements in science, mathematics, literature, medicine, art and _____.
49. The Gupta period (c. 320 - 550 CE) is often called a "_____ Age".
50. The decline of the Gupta Empire was due to external invasions and _____ weaknesses.
51. The _____ invasions dealt a major blow to the Gupta Empire.
52. The Gupta rulers patronised centres of learning such as Nalanda and _____.
53. The Ajanta caves are located in the state of _____.
54. The Udayagiri caves are located in _____ Pradesh.
55. The Dashavatara Temple is an example of early _____ architecture.
56. The Gupta period saw the development of a refined style of _____ and sculpture.
57. Indian traders during this period had contacts with the Roman _____.
58. Socotra is present near the coast of modern-day _____.
59. The study of the stars and planets is called _____.
60. The legacy of the Gupta age continues to inspire the world _____.

Ans.

Thousand
Ghatikas
Kamarupa
Varman
Pragjyotisha
Mahabharata
Bhagadatta
Architecture
Golden
Internal
Taxila
Maharashtra
Madhya
Nagara
Art
Empire
Yemen
Astronomy
Today

Famous Quote

"The achievements of the Guptas in science, art, literature and culture continue to inspire the world today."



Pallava Temple
(Kanchipuram)



Ajanta Caves



Key Takeaways

- ✓ The Gupta period was a time of great political stability, economic prosperity and cultural achievements.
- ✓ Remarkable progress was made in science, mathematics, astronomy, medicine, literature, art and architecture.
- ✓ Indian trade expanded to many distant regions.
- ✓ Despite the decline, the legacy of the Gupta age continues to inspire the world.

Remember Always

- ★ Learn from the past
- ★ Value our heritage
- ★ Be curious and keep exploring
- ★ Knowledge builds a brighter future

"A rich past gives us strength for a brighter future."

Keep Learning
Keep Growing!