Unit-1 : The Earth

1 Planet Earth in the Solar System

Formative Assessment (CCE Pattern)

1. Tick (3) the right answer :

Ans. a. iii. b. iii. c. ii.

2. Oral Questions :

Ans. a. Venus is called the morning star and also Earth's twin.

b. Earth's satellite is known as the moon. Its diameter is about one fourth of the Earth's diameter and it is about 3,84,000 km away from the Earth. It is Earth's closest neighbour in space. The moon is the largest and brightest object to be seen in the night sky. It has no light of its own. It reflects the Sun's light which reaches the Earth in one and a quarter seconds.

3. Identify the following :

Ans. a. Jupiter b. Mercury

c. Mars d. Akash Ganga

4. Fill in the blanks :

Ans. a. Light travels at a speed of **3,00,000** kilometres per second.

b. The nearest star to the Sun is **Proxima Centauri.**

c. **Uranus** and **Venus** rotates from east to west.

d. The first satellite launched by India in 1975 was named as **Aryabhatta.**

5. State whether the following statements are True or False :

Ans. a. False b. False c. False d. True.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. **a. Asteroids :** Between the Mars and Jupiter, there is a wide gap of more than 550 million km. This gap is filled by tiny heavenly bodies known as Asteroids or Planetoids. The largest of these tiny planets is Ceres which has a diameter of 768 km. Many scientists and astronomers believe that asteroids are fragments of a planet which exploded long time ago.

b. Meteors : These are shooting stars but are not stars in the real sense at all. These small pieces of solid mass move about in the space and go around the Sun. When they come near the Earth's atmosphere, as a result of friction they begin to glow and are called Meteors. It is believed that they are tails of comets. When such shooting stars are still in the solar system

but would enter the Earth's atmosphere, they are called meteoroids. After entering the Earth's atmosphere they may partly burn up and fragments that reach the ground are known as meteorites.

c. Sattelites : The word satellite means attendant or companion. A satellite moves round the planet in the same way as a planet moves round the Sun. In other words, while revolving round the planet, the satellites also revolve round the Sun. Our Earth has one satellite which we call Moon while Jupiter has 62 satellites. Mercury and Venus have no satellites. Satellites, like the planets, have no light or heat of their own. They reflect the light of the Sun. Planets revolve round the Sun, while the satellites revolve round the planets.

d. Solar system : The Sun and the eight planets that revolve round the Sun are members of the solar system. These eight planets areMercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Besides the Sun and the planets, there are some smaller celestial bodies as well in the solar system. These small bodies are called satellites. The satellites revolve round the planets in the same way as the planets revolve round the Sun. Our Earth has one satellite which we call the 'moon'.

2. Answer the following questions in short :

Ans. a. We see a large number of celestial bodies shining in the sky. Some of them produce their own light while others, like the moon, reflect the light received from the sun. Stars are celestial bodies which produce their own heat and light.

b. There are millions of stars in the sky. Some of the stars are found in groups. A constellation is a group of stars forming a certain shape. One such constellation is a group of seven stars which is called the Saptarishi. The Saptarishi forms a part of the constellation of the Big Bear, also known as Ursa Major in Latin.

c. We see a large number of celestial bodies shining in the sky. Some of them produce their own light while others, like the moon, reflect the light received from the sun. Stars are celestial bodies which produce their own heat and light. Stars are huge bodies made up of very hot gases, and they give out enormous amounts of heat and light.

Our sun is an ordinary, medium-sized star. It looks bigger than the other stars because it is closer to us than any other star. The star nearest to the sun is Proxima Centauri.

d. The word 'planet' is originally a Greek word which means 'wanderer'. Planets are so called because they are always in motion around the Sun in fixed orbits. They also rotate on their axes at different speeds. All planets are opaque bodies with no heat or light of their own. They are seen because they reflect the light of the Sun. Out of the eight planets of our solar system, the first four are inner planets, i.e., Mercury, Venus, Earth and Mars. They are made up of rocks and that is why, they are also called Terrestrial Planets.

The outer planets include Jupiter, Saturn, Uranus and Neptune. They are mainly gaseous in nature and are called Jovian Planets.

3. Answer the following questions in detail :

Ans. a. The Sun and the eight planets that revolve round the Sun are members of the solar system. These eight planets areMercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Besides the Sun and the planets, there are some smaller celestial bodies as well in the solar system. These small bodies are called satellites. The satellites revolve round the planets in the same way as the planets revolve round the Sun. Our Earth has one satellite which we call the 'moon'.

b. The earth is the fifth largest planet. It is a sphere which is slightly flattened at the poles. From a spacecraft, the land on Earth looks a mixture of green and brown. The oceans, which cover more area than the land, look blue. The Earth is therefore, called the Blue Planet.

c. Differences between Stars and Planets :

Stars

1. Stars have their own light.
2. Stars twinkle.
3. Stars are very big.
4. Stars are very hot.
5. There are millions of stars (in the universe).
6. The Sun is a star.

Planets

1. Planets receive their light and heat from the Sun.
2. Planets do not twinkle.
3. Planets are very small as compared to the stars.
4. Temperature of planets depends on their distance from the Sun.
5. There are eight planets (in our solar system).
6. Our Earth is a planet.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Globe : Latitudes and Longitudes

Formative Assessment (CCE Pattern)

1. Tick (✓) the right answer :

Ans. a. ii. b. ii. c. iii. d. iv. e. iii.

2. Oral Questions :

Ans. a. Arctic Circle.

b. The equator cuts the globe into two equal halves known as hemispheres.

c. Longitude.

3. Fill in the blanks :

Ans. a. **Torrid zone** is also known as Tropical zone.
b. **Arctic circle** lies 66½° N of the Equator.
c. Tropic of Cancer is located at **23½° N** degrees.
d. Distance between longitude decreases towards **poles.**
e. The **equator** cuts the globe into **two** equal halves.

4. State whether the following statements are True or False :

Ans. a. False b. True c. True d. False e. True f. True.

5. Answer in one sentence :

Ans. a. Globe.
b. Equator.
c. The equator cuts the globe into two equal halves known as hemisphere.
d. Prime meridian.
e. Grid.
f. International Standard Time.

6. Match the following :

Ans.

a. Equator	i. 23½° N
b. Tropic of Cancer	ii. Globe
c. Arctic Circle	iii. Tropical Zone
d. Model of the Earth	iv. 360°
e. Prime Meridian	v. 66½° N
f. Torrid zone	vi. London

7. Map Work

Ans. Do yourself.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. **a. Latitudes :** Latitudes are the imaginary lines that run parallel to equator.
b. Longitudes : Longitudes are imaginary lines running between the North and South Poles.
c. Equator : The Equator drawn in the middle of the globe, in exactly between North Pole and South Pole.
d. GMT : Greenwich Meridian Time is the Internation Standard Time.

2. Differentiate between the following :

Ans. **a. Latitude :** Latitudes are the imaginary lines that run parallel to equator.
Longitudes : Longitudes are imaginary lines running between the North and South Poles.
b. Torrid Zone : It lies between the Tropic of Cancer and Tropic of Capricorn. It is the hottest zone of the world.
Frigid Zone : Frigid zone lie between 661/2° and 90° north and south of the equator. There are the coldest zone of the world.

c. Local Time : Local time of a place is that time when the Sun is exactly above that meridian.

Standard Time : Standard time is the local time of a particular meridian which is adopted for the whole country.

d. Grid : Latitudes and Longitudes cut each other an angle of 90° and form a network on the globe called grid.

Great Circle : Any circle that divides the globe into two equal halves is known as the Great Circle. All other lines are small circles. Among latitudes only equator is the Great Circle.

3. Answer the following questions in short :

Ans. a. A globe is a three-dimensional model of the Earth in miniature (i.e., in a greatly reduced size). It is a true representation of the Earth. A globe is more accurate than a flat map, as it follows the curvature of the Earth. It also gives us the correct shape and size of continents and countries, and shows distances and directions without distortion.

b. The important parallels areEquator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle.

c. The Equator drawn in the middle of the globe, is exactly between North Pole and South Pole. The equator cuts the globe into two equal halves.

d. **Torrid Zone :** It lies between the Tropic of Cancer and Tropic of Capricorn. It is the hottest zone of the world.

e. **Longitudes :** The imaginary lines joining the two poles at regular distances are called the lines of longitudes or meridians. They are equal in length. Equator is a reference line for locating places in the north and south of it. In the same way we need a references line to locate places in the east and west directions. So it was decided that the line of meridian passing through British Royal Observatory at Greenwich (near London) be called the Prime Meridian (that is, the Chief Meridian). It is also known as Greenwich Meridian.

f. The Frigid Zone is the coldest area of the Earth because they lie beyond the Arctic Circle in the Northern Hemisphere and Antarctic Circle in the Southern Hemisphere. As the angle of the sun rays goes on decreasing towards the poles, the Sun never rises much above the horizon in there two zones. And there regions receive minimum solar energy.

g. **Local Time :** The local time of a place is 12 noon when the midday Sun is right above it. All places on the same meridian have noon at the same time if the watches are set according to the time of the overhead Sun at a particular meridian.

4. Answer the following questions in detail :

Ans. a. On the basis of the heat received, the Earth is divided into the following :

1. Torrid Zone : It lies between the Tropic of Cancer and Tropic of Capricorn and is also known as Tropical Zone (Torrid Zone). It is the

hottest zone of the world. At any point in this zone, the Sun is vertically overhead twice a year. Most of the southern half of India, lies in this zone.

2. Temperate Zones : The zone outside the Torrid Zone between 23½°N and 66½°N and 23½°S receives slanting rays of the Sun. This zone is neither too hot nor too cold i.e. it has moderate temperature. The belt between the Tropic of Capricorn and the Antarctic Circle is called the South Temperate Zone. The mid-day Sun is never overhead beyond the Tropic of Cancer or the Tropic of Capricorn.

3. Frigid Zones : These two zones the between 66½° and 90° north and south of the equator. They live beyond the Arctic Circle in the Northern Hemisphere and Antarctic Circle in the Southern. Hemisphere. As the angle of the sun rays goes on decreasing towards the Poles, the Sun never rises much above the horizon in these two zones. As the name indicates, these are cold regions and receive minimum solar energy.

b. Other than the Equator there are two important parallels of latitude in each hemisphere which correspond with dividing lines of heat zones of the Earth. Since the Earth rotates on its axis and follows a regular path around the Sun, certain parts of the Earth receive more solar energy than others and various other phenomena happen as a matter of routine. The important parallels are the following :

Tropic of Cancer : It is the parallel of 23½°N in the Northern Hemisphere. It passes through the middle of our country.

Tropic of Capricorn : It lies the parallel of 23½°S in the Southern Hemisphere.

Arctic Circle : It is 66½° N of the equator.

Antarctic Circle : It lies 66½°S of the equator.

c. The lines of longitude and latitude form a network on the globe. The longitudes and latitudes intersect each other at right angles forming a grid. Using the grid we can locate any place on Earth by referring to the point where latitudes and longitudes intersect. The parallels help us to locate a place north or south of the equator, while the Meridians do the same east or west of the Prime Meridian.

The point of intersection of these lines gives the precise location of a place. For example, Haridwar in Uttarakhand lies at the point of intersection of 30°N and 78°E (longitude and latitude respectively).

d. As the local time differs by 4 minutes at every longitude, it would create a lot of confusion regarding time for any country as a whole which may stretch across several longitudes. Therefore, each country selects a central meridian and the local time of this meridian as the standard time of that country.

In India, there is a difference of about 30 degrees between the westermost and easternmost longitudes. To avoid confusion, the local time of 82½°E longitude is selected as the standard time for the entire country. Thus

82½°E is accepted as the Standard Meridian for India. It shows time (82½° × 4 minutes = 330 minutes or 5½ hours). Thus, when it is noon at Greenwich in England, it would be 5.30 p.m. in India. As the Earth rotates from west to east, places in the east see the Sun first while places in the west see the Sun later.

e. For the purpose of calculation, all measurements are done taking the Earth as a circle. The circle measures 360° in circumference. If we go from the equator to the North Pole or the South Pole we would go through a quarter (¼th) of a whole circle or 90°. Thus, from the equator to the pole we mark 90° divisions each forming one degree. The direction north or south of the equator is indicated by suffixing letter 'N' or 'S' as the case may be. For determining exact location of a place north or south of the equator, degrees are further subdivided into minutes and seconds.
Each degree is divided into 60 minutes written as ('). Each minute is further sub-divided into 60 seconds written as (").

Formative Assessment (CCE Pattern)

Ans. Do it yourself.

Motions of the Earth

Formative Assessment (CCE Pattern)

1. Tick (✓) the right answer :

Ans. a. i. b. ii. c. ii. d. i. e. ii. f. iv.

2. Oral Questions :

Ans. a. All the meridians meet at the North and the South Pole.
b. All the Poles, days and nights last for 6 months.
c. When Christmas is being celebrated in Delhi. Canberra in Australia will have summer reason.

3. Answer in the one sentence :

Ans. a. June
b. December
c. The distance between the Sun and the earth in June
d. The distance between the sun and the earth in June
e. Rotation and Revolution
f. Spring Equinox
g. Rotation
h. Leap year

4. Fill in the blanks :

Ans. a. The Earth spinning around its axis is called **rotation.**

b. 23rd September is known as **Autumnal Equinox.**
c. The direction of Earth is from **East** to **West.**
d. There are **24** hours in a day.
e. Leap day is added in the month of **February.**

5. Match the following :

Ans.

a. March 21st	i. Winter Solstice
b. 23rd September	ii. Spring Equinox
c. June 21	iii. 24 hours
d. 22nd December	iv. Summer Solstice
e. Day and Night	v. Autumnal Equinox

6. State whether the following statements are True or False :

Ans. a. True b. False c. True d. False e. True f. False g. True.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans.
a. **Rotation :** The movement of the earth on its axis is called it's rotation.
b. **Revolution :** The movement of the earth around the sun is called it revolution.
c. **Aphelion :** The distance between the Earth and the Sun to a minimum of roughly 152 million km in early June called the aphelion.
d. **Leap year :** To account for the quarter day more than a year that the Earth takes to go around the Sun, an extra day is added to February once in every four years. The resulting year with 366 days is called a leap year.

2. Distinguish between the following :

Ans.
a. The axis of the Earth, which is an imaginary line joining the North and South poles, is not vertical. It is tilted and makes an angle of 66½° with the plane of the Earth's orbit. This is known as the inclination of the Earth's axis. The inclination remains always in the same directions.
b. The Earth takes 365¼ days to complete one revolution around the Sun. For our convenience, we take only 365 days as a calendar year. The 6 hours (¼ day) that is left is added as one more day (6 × 4 = 24 hours) to February every fourth year. Such a year has 366 days and it is called a leap year. Thus every leap year has an extra day, and all leap years are divisible by four. Centenary years are leap years only if they are divisible by 400. Thus the year 1900 was not a leap year, though it is divisible by 4.
c. When the time of day and night varies, it is called Solstice and when the time of day and night is equal, it is called equinox.

3. Answer the following questions in short :

Ans.
a. Rotation of Earth causes a distinct day and night-12 hours day and 12 hours night. Since the shape of Earth is spherical, only half of it gets sunlight and the other half remains in darkness. Parts of the earth facing the Sun experiences day and the other half in shadow experiences night. A

part of the Earth's surface that emerges from darkness Experiences sunrise. Later, when it is obscured from the rays of Sun it experiences sunset.

b. The lengths of day and nights vary due to the revolution of the Earth and the inclination of the Earth's axis in a fixed direction.

c. If the Earth fails to rotate, the part of it facing sun would always have day and cause excessive heat. The other half would experience night with freezing temperatures.

d. A year is usually divided into four seasonsspring, summer, autumn and winter. Seasons change when there is change in the position of the Earth with reference to the Sun. These changes are due to :
   1. the revolutions of the Earth, and
   2. the inclination of the Earth's axis in a fixed direction.

e. **Spring Equinox :** Moving on its orbit the Earth reaches the position on 21st of March. On this day the Sun remains equidistant from the North Pole and the South Pole. Hence the Sun's rays fall vertically on the Equator. He days and nights become equal all over the world. This period in the Northern Hemisphere is Spring Equinox and in the Southern Hemisphere, Autumnal Equinox.

f. The axis of the Earth, which is an imaginary line joining the North and South poles, is not vertical. It is tilted and makes an angle of 661/2° with the plane of the Earth's orbit. This is known as the inclination of the Earth's axis. The inclination remains always in the same directions.

4. Answer the following questions in detail :

Ans. a. **Summer Solstice :** On 21st of June the Sun's rays fall vertically on the Tropic of Cancer (23½°N) as the North Pole remains inclined towards the Sun and South Pole remains inclined towards the Sun and South Pole is away from it. A larger portion of the Northern Hemisphere gets light (and heat) from the Sun. Thus, it is summer for places north of the Equator. The longest day and shortest night at these places occur on June 21. In the southern Hemisphere, all these conditions are reversed. It is winter season there. The nights are longer than the days.

At this time, at the North Pole and in the whole area of North of Arctic Circle, there is a complete 24 hours period of continuous daylight. In summer, this region is popularly known as the 'Land of Midnight Sun'. Thus during this period, daylight goes on increasing from 12 hours at the Equator to 24 hours at the North Pole. This time, when Sun reaches it maximum distance from the Equator (21st June), is known as Summer Solstice.

b. **Winter Solstice :** On 22 December, rays of the sun fall directly on Tropic of Capricorn (23½°S). As the South Pole is inclined towards the sun, it has six months of day, and the North Pole has six months of night, as it remains away from the sun. During winter solstice, days are longer in the

southern hemisphere, the longest day being on 22 December. Most part of the northern hemisphere has winter season and southern hemisphere has summer during this period.

c. The different inclination of the Sun's rays cause different amount of heating. On 21st of June the Sun's rays fall vertically on the Tropic of Cancer as the North Pole remains inclined towards the Sun and South Pole in away from it. A larger portion of the Northern Hemisphere gets light from the Sun. Thus, it is summer for places north of the Equator. In the southern Hemisphere, there is winter reason.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Formative Assessment (CCE Pattern)

1. Tick (✓) the right answer :

Ans. a. i. b. i. c. iii. d. i. e. ii.

2. Oral Questions :

Ans. a. Political Map.
b. Tital, Scale, Direction and Legend or key.

3. Answer in one sentence :

Ans. a. Ptolemy.
b. The maps can be carried out easily.
c. Atlas.
d. Tital, Scale, Direction and Legend or key.

4. Fill in the blanks :

Ans. a. A map is the **graphical** representation on a **flat** surface.
b. Maps are and easy to handle.
c. The **legend** or **key** of a map explains the symbols used in it.
d. **Topographic** map show a small area of the Earth in great detail.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. a. **Atlas :** The book of maps is called atlas.
b. **Scale of a map :** Maps are down to scales. Scale is the ratio between the distance between on the map and the actual distance on the ground.
c. **Sketch :** A map without a scale is known as a sketch.

2. Answer the following questions in short :

Ans. a. A map is a representation of the Earth's surface or part of it on a flat surface, drawn according to scale.

b. We need maps to know the location of a particular place.

c. Thematic maps show specific information. They deal with a single time like distribution of rainfall, population, industries, crops, temperature, vegetation, roadways, railways networks etc.

d. Title, distance, direction, legends and grid system are the essentials of a map.

3. Answer the following questions in detail :

Ans. a. **A map Compared with a Globe :** A map has some advantage and some disadvantage as compared to a globe. Maps cannot be as accurate as globes. Globe is a small model of the Earth. A globe is round in shape, so it is quite easy to show the shapes and sizes of the continents and oceans on the globe quite accurately. But these things cannot be shown accurately on a map because it is drawn on a flat surface. As it is quite impossible to flatten a round shape completely, so the northern and southern portions of the Earth are stretched out of proportion on a map.

But maps have special advantages of their own. They can be carried and handled easily. They can be collected together in a book form. When maps, drawn on a small scale, are put together in the form of a book, it is called an Atlas. Such features as landforms, roads, railways, towns and villages, etc. can be show betteron maps as compared to a globe.

b. **Advantages of the Maps**

Maps are important and useful due to certain advantages :

- Maps can be drawn for smaller as well as larger areas.
- They are portable and easy to handle which serve many purposes.
- Maps provide us a lot of information. A variety of information can be represented on the following maps :
- Political and Physical Minerals
- Vegetation and Wildlife Climate
- Industries

c. **Types of Maps**

- Maps are of many types.
- The most commonly used maps are :

1. Political Maps : These maps show boundaries of countries and of the states within the countries. They also show the locations of cities and towns.

2. Physical Maps : These maps show geographical features such as mountains, hills, plateaus, plains and water bodies such as rivers, lakes, seas. Climatic conditions can also be represented on such maps.

3. Thematic Maps : Thematic maps show specific information. They deal with a single theme like distribution of rainfall, population,

industries, crops, temperature, vegetation, roadways, railway networks, etc.

4. Topographic Maps or Survey Maps : Topographical maps show great details of the natural features of a small area including rivers, lakes, mountains, etc., along with man-made areas like parks, wells, cities and towns.

d. **Sketch :** A map without a scale is known as a sketch.
Plan : A plan is a large scale drawing showing a small part of the Earth's surface in greater detail.
Map : A map is a representation of the Earth's surface on a part of it on a flat surface according to a scale.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

5 The Four Realms of the Earth

Formative Assessment (CCE Pattern)

1. Tick (✓) the right answer :

Ans. a. iii. b. iii. c. ii. d. i.

2. Oral Questions :

Ans. a. 'Litho' in Greek means 'rock' and the world lithosphere refers to solid rock and soil. The solid outer crust of the Earth, composed of rocks and minerals, is called the lithosphere. It includes all types of land masses found on the surface of the Earth. It covers about 29 per cent of the Earth's total surface area.

b. A plateau is a large area of fairly level land rising much above the surrounding areas.

3. Answer in one sentence :

Ans. a. Australia
b. Rock
c. Antarctica
d. 11,022 metres

4. Fill in the blanks :

Ans. a. The Earth's zones include lithopshere **hydrosphere** atmosphere and **biosphere**.
b. The smallest continent is **Australia**.
c. **North America** is the third largest continent on the Earth.
d. The densest and closest layer of atmosphere to the Earth is **Tropsophere**.
e. The atmosphere consists of 78% of **nitrogen**.

5. State whether the following statements are True or False :

Ans. a. False b. False c. False d. True e. True.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. **a. Relief :** The surface of the Earth is neither uniform nor regular everywhere. At some place, it is elevated while at others it is levelled. This variation is called relief.

b. Ocean currents : Ocean currents are the horizontal movements of sea water caused by many factors including wind and the Earth's movement.

c. Tides : Tides are periodic rising and falling of the water, caused by the gravitational attraction of the Moon and Sun acting upon the rotating Earth.

d. Waves : Waves are the rising and falling movements of surface sea water caused by the force of the winds.

2. Answer the following questions in short :

Ans. a. The solid outer crust of the Earth, composed of rocks and minerals, is called the lithosphere.

b. The three major realms of the Earth are the lithosphere, hydrosphere and atmosphere.

c. Pressure and temperatures caused by the heat of the Sun cause air to move.

d. Atmospheric air is a mixture of various gases and dust particles. It is mainly composed of gases78% nitrogen, 21% oxygen and 1% consisting of argon, carbon dioxide and other gases.

e. The Earth is called 'watery planet' because the Earth is only one planet which have water. About 71% of the Earth's surface is covered by water.

3. Answer the following questions in detail :

Ans. a. **Landforms :** The surface of the Earth is neither uniform nor regular everywhere. At some places, it is revealed while at others it is levelled. This variation is called relief. The relief features on the Earth's surface are broadly grouped into mountains, plateaus and plains. These are called the major landforms.

1. Mountains : When the Earth was in its beginning stage, mountains were not there. A mountain is any natural elevation of the Earth's surface. Mountains are high hills, which rise to a height above 600 metres from the ground. Mountains are of different heights. They also vary in size, age and shape. Some are very old, some are very young.

All mountains are made by internal movements of the Earth. Our Earth is made up of various systems of plates. These plates float on the liquid mass of rock below. They sometimes collide or go past each other that may compress or break parts of two or more plates. This compression may cause uplift and folding of the rock. This goes on happening for over

millions of years. The mountains like the Himalayas in India, Alps in Europe and Rockies in North America have been grown up in this way. Different parallel chains called ranges also appear.

2. Plateaus : A plateau is a large area of fairly level land rising much above the surrounding areas. A plateau may have step slopes on one or more sides. A plateau may be higher than a mountain but its almost flat upper surface does not have a peak. Like mountains, some plateaus are old, while others are comparatively new. Old plateaus are lower, and stretch over greater areas. The Deccan plateau of India and the plateaus of Brazil, Australia and Africa are some of the major old plateaus of the world.

The plateaus of Tibet to the north of the Himalayas is the highest plateau in the world. Its height ranges between 40,000 and 6,000 metres above sea level.

3. Plains : A relatively flat and low-lying vast expanse of land is called a plain. They are also called lowlands. The general slope of the land is gradual, but never abrupt.

Some plains are gently sloping or may even be hilly. Most of them have been formed by rivers, like the Northern Plains of India. While flowing down the steep mountain slopes, rivers carry stones, sand and silt with them. When the rivers slow down, they deposit this material in the valleys. Plains with fertile soils are formed by these deposits. That is why they are very thickly populated. Of all the landforms, plains are most suitable for human habitation.

Some plains are near the sea coast, while others are in the interior of the continents.

b. The hydrosphere is composed of water present on Earth in all its forms. Hudor is a Greek word which means water. Our Earth looks blue from the space, so, it is also known as the blue planet.

About 71 per cent of the Earth's surface is covered by water which includes oceans, seas, rivers, lakes, gulfs and boys. The oceans are larger water bodies. The seven continents are separated by the oceans. The ocean floor is generally flat but at some parts of the ocean floor deep trenches are also found, the Mariana Trench in the Pacific Ocean is such an example. There are five major oceans according to their size. Those are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean and the Southern Ocean. About 97 per cent of the total water on the surface of the Earth is in oceans and less than one per cent is fresh water.

Like lithosphere, the ocean floor also has various types of relief features, such as ridges, trenches, sea-plains, basins, canyons, peaks, etc.

The average depth of the ocean water is about 3,800 metres while the average height of the land is about 840 metres. The greatest depth in the oceans is at Mariana Trench on the eastern side of the Pacific Ocean. It is about 11,022 metres deep.

c. **Importance of the Atmosphere :** The atmosphere surrounding the Earth helps us in many ways.

Oxygen is a life-giving gas. It helps in the process of burning. As mentioned earlier, atmosphere has water vapour (3% to 4%) which makes weather phenomenon like rain and snow possible. The atmosphere is a blanket of air which acts like a glasshouse and keeps the Earth warm. It allows the Sun's radiation to heat the Earth, but it does not allow all the incoming solar heat to return to space immediately. This phenomenon is called greenhouse effect.

The atmosphere protects us from the harmful solar radiation, especially ultraviolet rays, because it has ozone in the stratosphere. Unequal heating of the atmosphere on the Earth causes differences in temperatures and pressure. When air moves in a horizontal direction from an area of high pressure to an area of low pressure, it is called wind. This results in a flow of air from areas of high pressure to areas of low pressure.

d. Atmospheric air is mixture of various gases and dust particles. It is mainly composed of gases78% nitrogen, 21% oxygen and 1% consisting of argon, carbon dioxide and other gases.

The atmospheric gases are essential for life. Nitrogen is required in various forms to maintain the fertility in required in various forms to maintain the fertility of the soil. This helps plants, which provide us food, to grow. Oxygen is used for breathing. Carbon dioxide helps plants to manufacture food in the presence of sunlight. It also helps to keep the Earth warm. A very small quantity of another gas, called ozone, is found in the atmosphere. Ozone protects us from certain harmful rays present in sunlight.

Apart from these gases, there are many others which are found in even smaller quantities. But all of them are important. You know that without this there would be no rain or snowfall. Dust particles in the atmosphere are also important because they act as cores around which water vapour condenses.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

6 Major Relief Features of the Earth

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. i. b. iii. c. iii. d. iv. e. iv.

2. Oral Questions :

Ans. a. The Earth's surface is rebuilt by laying down the rock materials of the process called deposition.

b. Chota Nagpur.

3. Answer in one sentence :

Ans. a. Fold mountains are formed on a result of collision between there plates leading to folding and the upliftment of large areas. The upfolds are called anticlines.

b. The Himalayas are young fold mountains.

c. The Alps, the Rockies and the Himalayas are the examples of young fold mountains.

d. The Aravalli range in India. Appalachian in North America and Urals in Europe.

e. Trenches are the deep gaps in the sea bed.

f. The steep slope that links the continental shelf to the sea floor is called the continental slope.

4. Fill in the blanks :

Ans. a. A block of land subsided between the faults, form a **Graben.**

b. Mt. Kilimanjaro in Africa is an example of **volcanic mountain.**

c. Mariana Trench is located near **Philippines.**

d. Most of the landforms in **Tibet** are plateaus or tablelands.

e. The **Mariana Trench** is the deepest trench.

5. State whether the following statements are True or False :

Ans. a. True b. True c. False d. False e. True.

6. Match the following :

Ans.

a. Mt. Kea	i. Europe
b. Roof of the world	ii. Hawaii
c. Urals Range	iii. India
d. Jog Falls	iv. Tibet
e. Ganga Plains	v. Karnataka

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. **a. Mountains :** A mountains is defined as a natural elevation of the Earth's surface with a peak or summit, which is small in proportion to its base.

b. Trench : There are vast plateaus and deep valleys between mountain ranges on the ocean floor. At places, there are very deep gaps called trenches in the sea bed.

c. Ocean Trench : Trenches are the deep gaps in the sea bed.

d. Alluvial Plains : The plains are formed by alluvium containing silt and land which is carried along by rivers and streams flowing down-stream from mountains and plateaus.

2. Give reasons for the following :

Ans.

a. Plains are fertile because they are formed by alluvium containing silt and sand, carried along by rivers.

b. Continental shelf provides as excellent area for fishing because of the shallow depth of the water near it.

c. Aravalli mountains are called old fold mountains because Aravalli ranges have rounded taps with decreasing height due to erosion caused by the forces of nature such as wind and water.

d. Trenches are the deep gaps in the sea bed so they are also known as ocean deeps.

e. Mining is commonly practised in plateaus because plateaus are storehouse of minerals.

3. Answer the following questions in short :

Ans.

a. Landforms change with time. Over the continents numerous landforms with varying height are found.

b. Young fold mountains have step slopes and sharp peaks while old fold mountains have rounded tops with decreasing height.

c. Plains are very fertile for vegetation. There are plenty of water in plains.

d. Mauna Loa, Mt. Vesuvius, Mt. Kilimanjaro and Mt. Fuji are volcanic mountains.

e. Alluvial plains are so fertile because there plains are formed by alluvium containing silt and sand carried by rivers.

4. Answer the following in detail :

Ans.

a. On the basis of their origin mountains are generally classified into four types.

1. Fold Mountains : The Earth's crust is divided into a number of plates. These plates carry both mountains and oceans. Plates are not static but move in all directions over semi-liquid molten rocks called magma. This magma comes out during volcanic eruptions as lava.

Fold mountains are formed as a result of collision between these plates leading to folding and the upliftment of large areas. The upfolds are called anticlines and the downfolds are called synclines.

There are two types of fold mountains Young fold mountains and old fold mountains. As the name suggests young fold mountains are comparatively younger in terms of origin. These have steep slopes and sharp peaks. Most of these mountains have peaks covered with snow. Volcanic activities are very common with snow. Volcanic activities are very common in such mountains because the crust of the earth here is still unstable. Most of the lofty mountain ranges of the world are young fold mountains. These are all rising mountains, with lofty peaks, parallel ranges and deep gorges.

Old fold mountain ranges have rounded tops with decreasing height due to erosion caused by the forces of nature such as wind and water. The Ural mountains and the Aravallis are the examples of the old fold mountains.

2. Block Mountains : These are formed by the horizontal forces of compression, i.e., faulting or cracking in the Earth followed by uplift or sinking along the faults. The uplifted block forms a horst or a block mountain. If a block of land subsides between the faults, it forms a Trench called a Rift Valley or Graben. Satpura and Vindhyas in India are the Block mountains while the Narmada Valley and Tapi Valley are the Rift valleys. The Black Forest Mountains and the Vosages are best examples of block mountains. River Rhine flows in a rift valley between these two block mountains.

3. Volcanic Mountains : Sometimes, conical or dome-shaped structures are formed as a result of magma escaping to the surface of the Earth through surface of the Earth through an opening which is called a vent. These are called volcanic mountains or volcanoes. Magma that reaches the surface of the Earth is called lava.

The hot lava flows over the surface of the Earth, cools and then hardens to forms lava sheets. Over thousand of years, several layers of such lava sheets. Over thousands of years, several layers of such lava sheets are deposited on top of each other to form volcanic mountains. If the magma is thin and flows easily, gently sloping mountains are formed, such as Mauna Loa in Hawaii. However, if the lava is thick and viscious, the mountains formed are cone-shaped with steeply sloping sides, for example, Mt. Vesuvius in Italy, Mt. Kilimanjaro in Africa and Mt. Fuji in Japan.

4. Residual Mountains : Over millions of years, such high mountains got eroded by wind, rain, glaciers and running water. Eventually, they became old, worn out highlands like the Aravalli range in India, Appalachians in North America and Urals in Europe. Such old remains of mountains are called residual mountains.

Mountains are the storehouses of snow, ice and water. Many rivers flow here from glaciers. They have fertile terraces and valleys suited to the cultivation of crops and fruit trees. They are also rich in wildlife and forests. People use mountainous areas for tourism and adventure sports.

The world's two longest mountain ranges are the Andes (South America) and Rocky Mountains (North America). The lengths of these ranges are about 4500 km and 3000 km, respectively. The Himalayas with a length of about 2400 km are at third place in terms of length.

b. **Sub-Marine Relief :** The ocean basins have the counterparts of almost all the major landforms such as mountains, ridges, Plateaus, plains, crayons etc. Some of the relief features of the oceans (sub-marine reliefs) are given below through the ocean profile :

Sea Mount : A single mountain on the ocean floor is called a sea mount. It may rise from the ocean floor above the level or sea water and become an island. In the island of Hawaii. Mt. Mauna Kea is actually the top part

of a sub-marine mountain which is even higher than Mt. Everest on the land.

Ocean Trench : There are vast plateaus and deep valleys between mountain ranges on the ocean floor. At places, there are very deep gaps called trenches in the sea bed. Ocean trenches are believed to formed due to faulting on the ocean floor. These trenches are formed every deep on the ocean floor. The deepest trench is the Mariana Trench about 11022 metres deep in the Pacific Ocean. It is located near Philippines. Trenches are often known as ocean deeps.

c. Young fold mountains are comparatively younger is terms of origin. There have steep slopes and sharp peaks. Most of there mountains have peaks covered with snow. Volcanic activities are very common in such mountains because the crust of the earth here is still unstable. Most of the lofty mountain ranges of the world are young fold mountains.

d. The landforms change with time. These relief features are the result of processes taking place inside and outside the Earth's surface. Thus, we classify these processes as :

a. Internal processes They lead to rising and sinking of land surfaces. The processes include earthquakes, volcanic eruptions and earth movements.

b. External processes involve the continuous process of wearing down and rebuilding of Earth's surface.

Wearing away of Earth's surface is called erosion which lowers down the higher surfaces, e.g., by rivers, winds and moving ice.

The Earth's surface is rebuilt by laying down the rock materials by the process called deposition.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

7 India-Location, Physical Features and Climate

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. b. c. iii. d. iii. e. ii.

2. Oral Questions :

Ans. a. Monsoon is the life line of our country because in India agriculture depend on monsoon rain.

b. India is located in the north hemisphere.

c. The Godavari, Mahanadi, Krishna and Kaveri are the important rivers of the Deccan Plateau.

3. Fill in the blanks :

Ans. a. Our country covers an area of **3.28 million** sq. km.
b. The southern part of our country is in the **tropical** zone and northern half is in the **sub-tropical** zone.
c. The height of Mt K2 is **8,811** m.
d. The **Ganga Basin** forms 1/4 of the total area of India.
e. The Southern part of the Coastal plants is called **Malabar.**

4. State whether the following statements are True or False :

Ans. a. False b. True c. Fales d. True e. True.

5. Answer in one sentence :

Ans. a. Cocomandel Coast.
b. The Himalayas.
c. Animalai.
d. The Andaman and Nicobar.
e. India is called a peninsula because south India is triangular in shape.

Summative Assessment (CCE Pattern)

1. Define the following :

Ans. a. **Delta :** Delta is the land lies between two rivers.
b. **Peninsula :** The land which is surrounded by the water by three sides.
c. **Glacier :** Glacier are the sliding molten ice blocks.

2. Distinguish between the following :

Ans. a. **Greater Himalayas :** It lies to the extreme north to India. They are snow covered for most of the year, being 6,000 m above sea level on a average.
Middle Himalayas : It lies to the south of the Himadri. They are covered with forests on their slopes. There mountains are about 4,000 to 5,000 m above sea level in height.
b. **Peninsular plateau :** To the south of the northern plains, lies the peninsular plateau.
Indian desert : Indian desert lies in the west of the Indian mainland. The weather is dry in the Indian desert.
c. **Indo-Ganga plain :** This plain is very fertile. The plain is made fertile by the rivers.
Coastal plain : The coastal plain is made by the sea waves.
d. **Andaman and Nicobar Islands :** Andaman and Nicobar Islands lie in the Bay of Bengal.
Lakshadweep Islands : Lakshadweep islands lie the Arabian sea.

3. Answer the following questions in short :

Ans. a. Pakistan, Sri Lanka, China, Bhutan, Nepal, Bangladesh and Mayanmar.
b. The three parallel ranges of the Himalayas :
(i) Himadri (ii) Himachal (iii) Shvalik.
c. Ganga basin is very fertile for growing crops.

d. Our climate is called a monsoon climate because the Himalayan wall in the North and prevailing monsoons exert strong influence to bring about a sort of uniformity in the Indian climate.

e. The Bay of Bengal and the Arabian sea make India a Peninsula.

4. Answer the following questions in detail :

Ans. a. **The Indian Island :** The Indian territory extends of the mainland into the Arabian Sea and Bay of Bengal forming two island groups, the Lakshadweep and the Andaman and Nicobar Islands.

The Andaman and Nicobar Islands located in the Bay of Bengal are scattered islands of volcanic origin. There are about 550 islands. India's only active volcano is situated on the Barren Islands. The Ten Degree Channel separates the Andaman Islands from the Nicobar Islands. The Andaman and Nicobar Islands are larger than the Lakshadweep Islands. These islands have a rich forest cover.

The Lakshadweep Islands are situated in the Arabian Sea. The Laccadive, Mincoy and Amindive Islands were renamed as the Lakshadweep group of islands in 1979. These islands are of coral origin. These islands are mostly inhabited by the tribal people.

b. **The Great Mountains of the North :** This consists of the Karakoram and Himalayas ranges. The Karakoram range enters India in Kashmir and moves estward into Tibet where it is known as the Kailash range. It includes the plateau of Aksaichin. It has lofty mountains including Mt. K2 (8,811 metres) which is the second highest peak in the world after Mt. Everest. The Siachen and Baltoro are important glaciers here. The Ladakh and Zaskar ranges lie to the south of Karakoram, on either side of river Indus as it flows from the northeast to the northwest.

The Himalayas : The Himalayas extend from the river Indus in the west to the Brahmaputra in the east. They cover a distance of about 2,500 km in the shape of an arc. They vary in width from 400 km in the west to 100 km in the east. They are higher in the east where some of the world's very high peaks are located. Mt. Everest is Nepal is the highest peak in the world while Kanchenjunga is the highest peak in India.

Some important low-lying gaps or passes in the Himalayas serve as important land routes into China and Tibet. Some of the important passes are Shipkila in the Satluj valley in Himachal Bomdila in Arunachal Pradesh and Nathula in Sikkim. (The world 'La' means 'pass' in the Chinese language).

From north to south, the Himalayas consists of three parallel ranges, namely, the Himadri, Himachal and Shivalik.

a. Himadri or Greater Himalayas lie to the extreme north of India. They are snow-covered for most of the year, being 6,000 m above sea level on an average. Melting snow from the peaks provides water for the great rivers of the Northern plains all the year round.

b. Himachal or the Lesser Himalayas, lie to the south of the Himadri. They are covered with forests on their slopes. These mountains are about 4,000 to 5,000 m above sea level in height. Man important hill-stations such as Shimla, Nainital, Mussoorie, Dalhousie and Darjeeling are located in the Himachal range. Some important valleys in the Lesser Himalayas are Kullu, Kashmir, Kangra and Dehra Dun. They are known for their scenic beauty and cool climate. The Lesser Himalayas are also well known for their forest reserves.

c. Shivalik or the Outer Himalayas is the southern-most Himalayan range. On an average, it is 900 to 1,100 m above sea level. Being made up of mud, silt and stones, it is prone to earthquakes and landslides. The region at the base of Shivaliks is known as the terai. Recently, the forests in the terai region have been cleared for cultivation. This region of the Himalayas is famous for the presence of longitudinal valleys or duns. In fact, Dehra Dun is one such dun, located in this range.

The northern extension of the Himalayas is called 'Purvanchal'. They are not as high as the Himalayas and they run in a north-south direction through the states of Arunachal Pradesh, Nagaland and Mizoram. Another extension stretches along the Bangladesh-India border marked by the Garo, Khasi and Jaintia hills.

2. The Great Plains of the North : The Northern Plains lie to the south of the Himalayas. They are extensive, low and flat. They are formed by the deposition of alluvium brought down and deposited by the rivers from the Himalayas and the Tibetan Plateau. These plains are mainly developed by Rivers Indus, Ganga, Brahmaputra and their tributaries. Three main rivers basis can be identified in the Northern Plains. They are the Indus basin, the Ganga basin and the Brahmaputra basin.

a. The Indus Basin is mainly located in the states of Jammu and Kashmir, Himachal Pradesh and Punjab. This basin is drained by the river Indus and its tributaries. Indus originates beyond the Himalayas and drains into the Arabian Sea. Its tributaries are the Jhelum, Chenab, Ravi, Beas and Satluj. The bulk part of this basin lies in Pakistan.

b. The Ganga Basin form 1/4 of the total area of India. Many large streams contribute their waters to Ganga and Yamuna which join at Allahabad. The Ganga basin is very fertile, hence a variety of crops are cultivated here. The river water is utilised for navigation by boats. Water is also used for agriculture through a dense network of canals. Many old trading towns and big cities are located on the banks of rivers in the Ganga Basin. For instance, Kolkata is located on the banks of river Hooghly which is a distributary of Ganga. As the land in the Ganga Basin is flat, there is an excellent network of roads and railways in the Northern Plains. Agro-based and many other industries also flourish in the Ganga basin. For all these reasons, this river basin is densely populated.

c. The Brahmaputra Basin is drained by the river Brahmaputra and its tributaries. The Brahmaputra originates in Lake Mansarovar in Tibet and flows through three countriesChina, India and Bangladesh. In India it drains the states of Arunachal Pradesh and Assam. This river is known as Tsanpgo in China. In Bangladesh it is joined by the Ganga (known here as Padma) and flows through Bangladesh as Meghna or Jamuna. Tista is an important tributary of Brahmaputra. As it rains heavily in this area, the river carries a very large large volume of water. Due to the presence of a lot of fertile silt in the river valley, the area is very good for growing rice and jute.

The Ganga-Brahmaputra basin lies in India for the most part. The Ganga-Brahmaputra Delta is known as the 'Sundarbans'. This is the world's largest and fastest growing delta.

The fine and deep alluvium deposited by the rivers in the great northern plains make these plain one of the most Fertile Plains in the world.

c. **The Coastal Plains :** The Deccan Plateau is bounded by a narrow coastal plain in the west along the Arabian sea and in the east along the Bay of Bengal. The western coastal plain extends from Gujarat to Kerala. The northern part of the this plain is called Konkan while its southern part is called Malabar. In the Malabar region along the Kerala coast, there are many lagoons, often called the backwaters.

The eastern coastal plains lies east of the Eastern Ghats along the Bay of Bengal. This is a Broad Plain. The rivers like Mahanadi, Godavari, Krishna and Kaveri pass through these plains and form deltas along the Bay of Bengal coast. The southern part of this plain is called Coromandel Coast.

d. The Deccan Plateau South of the Vindhya and Satpura ranges lies the Deccan Plateau. The Narmada, running through a narrow valley between these two ranges, and the Tapi (Tapti), running through a valley south of the Satpuras, flow westward through rocky areas before entering the Arabian Sea.

The Deccan Plateau is bounded by hills on the west and east. The western hills are collectively called the Western Ghats or the Sahyadris. The hills which are part of the Western Ghats include the Satmala, Nilgiri, Anaimalai and Cardamom hills. The eastern hills are collectively called the Eastern Ghats.

There are many east-flowing rivers in the Deccan Plateau. The longest of these rivers is the Godavari. Known as the Ganga of the South, it makes a large delta before flowing into Bay of Bengal. The Mahanadi, Krishna and Kaveri are the other major rivers which flow into the Bay of Bengal.

e. **Distribution of Rainfall :** The distribution of rainfall in India is highly uneven. The amount of rainfall varies not only from season to season, but also from place to place. Most of it comes within four months (June to

September) from the southwest monsoons. There are a few areas like the Western Coast and North-East India which receive heavy rainfall. Here the annual amount of rainfall is over 300 cm. West-North Rajasthan, parts of Punjab, Haryana and Gujarat, interior parts of the Deccan Plateau and the area around Leh receive a low amount of rainfall. Here the annual rainfall is less than 50 cm. All other parts of India receive a moderate amount of rainfall. The North-West Himalayan region receives some snowfall during winter.

Formative Assessment (CCE Pattern)

Ans. Do yourself

India-Natural Vegetation and Wildlife

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. ii. b. i. c. iii. d. iii.

2. Oral Questions :

Ans. a. Mangrove forests are found along the coast and in deltas. There forests are covered by mangrove trees.
b. Monsoon forests are called deciduous forests because there forests are covered by deciduous trees.
c. Project Tiger is a project to save tigers.

3. Fill in the blanks :

Ans. a. Thorny forests receive rainfall less than **5 cm**.
b. Gifts of nature are known as **natural resources**.
c. In a **zoo,** we can watch the different animals and birds very closely.
d. Tidal forests are found along the **coasts** and in **deltas**.
e. Wildlife is also called **fauna**.

4. State whether the following statements are True or False :

Ans. a. True b. False c. True d. False e. False.

5. Answer in one sentence :

Ans. a. Monsoon forests.
b. More than 500 species.
c. National Park is a received area for preserving natural vegetation, natural beauty and wildlife.
d. Monsoon forests.
e. Peepal, neem, shisham teak, sal and sandal wood.

6. Match the following :

Ans.

a.	Forest Research Institute	i.	Mangrove forests
b.	Tidal forests	ii.	Dehradun and Coimbtore
c.	Gir Forests	iii.	Migratory birds
d.	Pelican and Siberian Crane	iv.	Gujarat

Summative Assessment (CCE Pattern)

1. Define the following :

Ans.

a. Natural Resource : Nature has gifted our country with many valuable resources, such as natural vegetation, wildlife, soils, minerals and water. These gifts of nature are known as natural resources.

b. National Parks : A national park is reserved area for preserving natural vegetation, natural beauty and wildlife.

c. Zoo : A zoo is a place where wild animals and birds from different parts of the world are kept and brought up.

d. Migratory bird : Many birds like flamingos, storks and pelicans fly a very long distance from cold countries to reach India during mid-November and stay till the summer begins here in March. They are known as migratory birds.

2. Give reasons for the following :

Ans.

a. Himalayan vegetation has varied belts ranging from Tropical Deciduous to Alpine forests within a height of 4000 metres because the Himalayan forests are distributed according to the altitude. In the mountains the temperature decreases with the increase in altitude.

b. The Indian Government has set up various projects for tigers and the one-horned rhinoceros because there animals are endangered species of wildlife in India.

c. Wild life reserves have been set up in different parts of India for conserving wildlife in India.

3. Answer the following questions in short :

Ans.

a. **Natural Vegetation :** The climate conditions and the landforms play a major role in determining the vegetation of any particular area. This is the reason why the plains and the trees of mountain regions are so different from that of the plant cover of the plains. Natural vegetation is the plant cover which grows naturally without any care taken by human beings. As the plant cover of any area adapts to the climate of that area, we get large variety of forests in India according to the varied geographical conditions. There are more than 5,000 species of trees in India. However, the green cover of India is receding very fast due to deforestation and and acquisition.

b. **The Thorny Forests :** The thorny forests are found in the western parts of Rajasthan, parts of Gujarat, Punjab, Haryana and the Deccan Plateau.

These areas are very dry with temperature and scanty rainfall often less than 5 cm per annum. The plants are thorny, very short shrubs. Trees have deep roots, thick barks and thorny leaves. Wood of these trees is normally used as fuel. Some important trees are acacia, babul, date palm, khair and cactus.

The Tidal Forests : These forests are found along the coasts and in deltas. These forests can survive in both fresh and salt water. They occur in the deltas of the Ganga, Mahanadi, Godavari and Krishna rivers and along the eastern coast. These forests are covered by mangrove trees. Mangrove trees occur mainly in deltas of tropical regions near river mouths. Sundari is one of the species of mangrove. The Ganga-Brahmaputra delta is known as Subdarbans.

c. The government has put up certain controls on exports of forest products and made sandalwood oil a restricted item of export. Social forestry programmes like 'Van Mahotsav' which involve planting thousands of trees along roads, railway, lines and hill slopes are increasing India's total forested areas.

d. Forests are useful to us in many ways :
   - Trees inhale carbon dioxide and exhale oxygen, the much needed life-giving gas.
   - Trees hold the soil firmly together and prevent soil erosion.
   - Trees moderate the temperature of a place.
   - Trees enable percolation of water into the ground.

e. Evergreen trees remain green throughout out the year wild decdiuous trees shed their leaves at different times according to their definite leaf shedding period spread over six to eight weeks each year.

4. Answer the following questions :

Ans. a. **Tropical Rainforests :** Evergreen forests are found in region with rainfall above 300 cm. The climate is highly moist and humid. The temperature of equatorial type. They are commonly found in the western Ghats and hills of Assam. Important trees of evergreen forests are oak, chestnut, deodar, cedar, chir and pine etc. The trees are often very high (about 100 metres). They have hard wood and broad leaves, and remain green all the year around that is why they are also known as evergreen trees and the forests are known as Evergreen forests.

b. **Vegetation of the Himalayan Region :** The Himalayan forests are distributed according to the altitude. In the mountains the temperature decreases with the increase in altitude. The vegetation varies from tropical to alpine types. There are tropical deciduous forests at the foothills. Coniferous forests are found at the heights between 1,500 and 3,300 metres. Blue pines, cedars, silver firs and deodar are the common trees here. Thereafter at 3500 metres and above the alpine variety of

plants such as shrubs, scrubs and grass are commonly found. Beyond the Alpine belt (height about 6,000 metres) is the area of permanent snow and no vegetation grows there.

c. Wildlife refers to all those animals that have not been tamed or domesticated by humans. Wildlife is also called fauna. India has a rich and varied fauna. There are more than 89,000 species of animals and 1200 species of birds in our forests. Elephants are found in large numbers in the forests of Assam, Nilgiri and in southern hilly areas of Karnataka and Kerala. Camels have adjusted themselves to the hot and dry regions of Rajasthan and Gujarat. The one horned rhinoceros is found in the marshy lands of Assam and West Bengal. Lion is found in India and Africa only. Gir forest of Gujarat is its natural habitat, the home of lions. Tiger is our national animal. Sundarbans delta having the tidal forests is the Bengal tiger's natural habitat. Himalayas have a wide range of animals and birds. They include wild goats, snow leopards, bears, etc. India is equally rich in bird life. Peacock is a very common and beautiful bird of India. It is our national bird. Some species of animals and birds have nearly become extinct because people hunt them for their pleasure.

d. **Wildlife Conversation :** In order to save wildlife our government has taken several steps. The government has set up 86 National Parks. In these parks wildlife, natural vegetation and natural beauty are preserved. Tigers are preserved in the Corbett Park. There is a park for rhinoceroses in Assam. There are also wildlife and bird sanctuaries where both rare birds and animals live and roam about without any fear of being hunted. There is a large bird sanctuary at Bharatpur. Many Zoological Parks have also been set up by the government in different parts of India to preserve wildlife.

Tigers and rhinoceroses are some endangered species of wildlife in India, so for them special projects have been prepared. Project Tiger has proved very successful. About 16 tiger reserves have been set up in different parts of India where special care is being taken for the all round protection and betterment of tigers. Likewise, Project Rhino is also being implemented at Kaziranga Wildlife Sanctuary of Assam.

Besides the government, it is our duty also to preserve the widllife. We should avoid reckless hunting of wild animals and birds. Indiscriminate felling of trees and clearing of forests should be checked. We must protect our wildlife which is our national wealth. We must refuse to buy products made from animal body partsfur, bones, skin, teeth, etc.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

1 When, Where and How

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. ii. b. iv. c. ii.

2. Oral Questions :

Ans. a. Thousands of coins have been found. They are made of gold, silver, copper and nickel. The coins bear many figures and marks. They also bear names and portraits of the rulers who issued them. Samudragupta's coins how the emperor playing the Veena, a musical instrument. His warrior character is also shown by the coins which picture the battle axe and the tiger. The coins have become the most important source of the history of ancient India.

b. The French scholar Jean-Francois Champollion deciphered the Hieroglyphic script, by successfully reading the inscription of the Rosetta Stone. It was a piece of rock that had been inscribed with tiny writings. When scholars examined it, they found that it contained the same passage in three ancient scripts. Ancient Egyptian Greek, a simple Egyptian script and Ancient. Since scholars could read the Greek and Egyptian writings, they were finally able to decode the Hieroglyphics.

3. Fill in the blanks :

Ans. a. **History** refers to the period about which written documents are available.
b. Man appeared on the Earth round **2.5 million** years ago.
c. BC denotes the years before the birth of **Jesus Christ.**
d. Archaeological sources are usually found during **excavations.**
e. The Harappan script is a kind of **pictographic** writing.
f. The period for which we do not have written records is known as **prehistory.**

4. Match the following :

Ans.

a. Archaeology	v. Origin of man
b. Meghaduta	iv. Kalidasa
c. Organic evolution	iii. Digging
d. Veena	ii. A musical instrument
e. Sumerians	i. Pictographic script

5. Answer in one sentence :

Ans. a. It was around 2.5 million years ago that man appeared on the Earth.
b. BC and AD are that terms which are used to express dates in history.

c. Passes are the ways or routes in hilly areas or mountains. The passes in these mountains acted as routes of contact through which ideas, traditions and culture were exchanged.
d. Some land documents were recorded on copper plates and referred to as tamrapatras.

6. Who/What am I?

Ans. a. Inscriptions
b. Manuscripts
c. Megasthenes
d. Archeologist
e. Prashastis

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. In simple words; we can say that history is the life story of man from the earliest period to the present day. To understand the present, we need to study and understand the past.
However, it is virtually impossible to get written records of all the past events. There was a period in the past when man had no knowledge of reading and writing. So, we do not have written records of that period. This period is known as prehistory.
b. We should read history to know our past. History provides us information about our past.
c. The literary sources provide us valuable information regarding the reconstruction of ancient Indian history. They are in the form of handwritten documents known as manuscripts. The word 'manuscript' is derived from the Latin word 'manu' which means 'hand'. Thus, manuscripts are ancient books written by hand either on dried palm leaves or the thick bark of the birch tree or on paper.
d. Several literary sources from the ancient period are written in scripts that are no longer used and are therefore, unknown or 'decoded' to understand what they say. For example, the Harappans used a pictographic script which historians have not yet been able to decipher. Another difficulty is that the Harappan script is Boustrophedon in which one line is written left to right and the next, right to left.
e. Inscriptions are the words inscribed on stone, metal, etc. Thousands of inscriptions on rocks, pillars and metal-plates have been discovered in India. The earliest of inscriptions are found on the seals of Harappa. Ashoka's rock inscriptions throw light on Ashoka's religious beliefs and his administration. The Allahabad Pillar Inscription presents a description of the character and conquests ofSamudragupta.
f. The experts which deals and study the archeological sources are known as archaeologists.

2. Answer the following questions in detail :

Ans. a. **Sources of History :** In history, the evidences are called source material. They may be divided into two categoriesliterary and archaeological.

Literary Sources : The literary sources provide us valuable information regarding the reconstruction of ancient Indian history. They are in the form of handwritten documents known as manuscripts. The word 'manuscript' is derived from the Latin word 'manu' which means 'hand'. Thus, manuscripts are ancient books written by hand either on dried palm leaves or the thick bark of the birch tree or on paper. They throw ample light on almost all the subjects such as, religious beliefs and practices, the lives of kings, medicines and sciences etc.

With the passage of time, more durable materials began to be used for important documents or instructions from the kings. Scribes carved the writings onto stone surfaces using chisels and hammers. These were called incriptions. They usually gets details of battles won (Prashastis), or instructions from the ruler to the common people (Rajyadesh). Some land documents were recorded on copper plates and referred to as tamprapatras.

Literary sources can be classified into indigenous and foreign works. Indigenous literature includes works of Indian writers. On the other hand, foreign literary works were those written by visitors from abroad. These include works such as the Indika by the Greek author Megasthenes, the writings of Fa Hien and other travellers who visited India during different periods.

Literary sources can be further divided into secular (non-religious) and scared (religious). The Arthashastra by Kautilya and Meghadoota and Kumarasambhavam by Kalidasa are the examples of secular literature, while the Vedas are considered sacred.

Several literary sources from the ancient period are written in scripts that are no longer used and are therefore, unknown or 'decoded' to understand what they say. For example, the Harappans used a pictographic script which historians have not yet been able to decipher. Another difficulty is that the Harappan script is Boustrophedon in which one line is written left to right and the next, right to left.

Archaeological Sources : We can know the history and civilization of ancient people by examining the remains of their buildings, their tools and some other objects. They study of these objects is called Archaeology. Excavations have brought to light many interesting objects.

1. Monuments : Ruins of the buildings, caves, stupas and temples are of great historical importance. Stupas at Barhut and Sanchi and the caves at

Ellora and Ajanta tell us a lot about the religion and art of ancient India. The temples at Mahabalipuram and at Thajnavur were not only places of worship. They were centres of social and culture life also.

2. Inscriptions : Inscriptions the words inscribed on stone, metal etc. Thousands of inscriptions on rocks, pillars and meal-plates have been discovered in India. The earliest of inscriptions are found on the seals of Harappa. Ashoka's rock inscriptions throw light on Ashoka's religious beliefs and his administration. The Allahabad Pillar Inscription presents a description of the character and conquests ofSamudragupta Samudragupta. The inscriptions at Udaygiri provide information about the conquests of king Kharvela of Kalinga (Odisha).

3. Coins : Thousands of coins have been found. They are made of gold, silver, copper and nickel. The coins bear many figures and marks. They also bear names and portraits of the rulers who issued them. Samudragupta's coins show the emperor playing the Veena, a musical instrument. His warrior character is also shown by the coins which picture the battle axe and the tiger. The coins have become the most important source of the history of ancient India.

4. Other Archaeological Sources : Other archaeological sources include cave paintings, bones of persons and animals and the stone and metal tools. Paintings on the walls of the caves tell us about the artistic skills of the early man.

b. Several literary sources from the ancient period are written in scripts that are no longer used and are therefore, unknown or 'decoded' to understand what they say. For example, the Harappans used a pictographic script which historians have not yet been able to decipher. Another difficulty is that the Harappan script is Boustrophedon in which one line is written left to right and the next, right to left.

c. Literary and archaeological sources both provide information required to write history. Historians study the information to reconstruct the events of the past, using clues provided by the various sources. History is thus the sequence of events ascertained in the light of their study by the historians. To accurately interpret history, historians must consider all sources available and must not impose their own thoughts or ideas on the information they provide. They should use both types of sources to confirm their interpretation and ensure an impartial treatment.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. i. b. iii. c. i.

2. Oral Questions :

Ans. a. Paleolithic men were nomads. The people of this age were wanderers, moving from place to place in search of shelter, animals and food. Hunting and gathering was their way of life. This type of life was called nomadic life.

b. The early humans started collecting nuts, fruits, roots or plants for subsistence.

3. Fill in the blanks :

Ans. a. The early humans were basically **hunters** and **gatherers.**

b. The Mesolithic Age is also known as **Microlithic** Age.

c. **Neolithic** Man used harder stanes for tools.

4. State whether the following sentences as True or False :

Ans. a. False b. False c. True d. False.

5. Match the following :

Ans.

a. Neolithic man	i. Food gatherer
b. Chalcolithic Age	ii. Middle stone age
c. Palaeolithic Age	iii. Discovery of copper
d. Mesolithic Age	iv. Food-producer

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. During Mesolithic age, the technique of tool-making too underwent a significant change. Since a wider use of microliths (tiny or small stones) was made during this age, it is also known as Microlithic age. The microliths were struck on the handles of bone or wood to make tools like spears, saws, sickles and arrows.

b. The period of human history from around 500,000 BC to 4,000 BC, when humans used mainly stone tools, is known as the Stone Age.

c. The divisions of the stone age and their duration are as follows :
(i) The old stone age, or the Palaeolithic Age (5,00,000 BC-10,000 BC).
(ii) Mesolithic Age (10,000 BC-8,000 BC).
(iii) Meolithic Age (8,000 BC-5,000 BC).
(iv) Chalcolithic Age (5,000 BC-3,000 BC).

d. The tools of Paleolithic Age can be classified into these categories :

Hand tools : These were pear-shaped tools used for cutting or smashing things. They usually had sharp edges on all sides.

Core tools : These were made by chipping and shaping large stones. They had sharp edges and were used to cut trees and dig the earth. Example of these tools include hand-axes and hammers.

Flint tools : These were made from smaller stone pieces, sometimes those that chipped off larger stones while making core tools. They were sharpened and used as choppers and knives, and were used to chop meat and cut through animal skin. Examples include cleavers and scrapers.

2. Answer the following questions in detail :

Ans. a. **Skills and Knowledge of Palaeolithic Man**

1. Early man, who was a hunter and gatherer, started living in caves.
2. To ensure protection from extreme weather he covered himself with coarse animal skin and large leaves.
3. He started moving from one place to another (nomadic life) and also started collecting nuts, fruits, roots or plants.
4. The Early man used to move in groups to scare away wild animals.
5. Though Early men moved in large groups they were still afraid of lightning and thunder.
6. The primary weapon was stone axe often used in hunting. Flake tools were used for cutting animal skin to be used as clothes or for cutting plants.
7. They also practised painting. Painted rocks and caves in Bhimbetka, Madhya Pradesh shows hunters-gatherers chasing animals and birds. This clearly proved the existence of Paleolithic period.

b. The word Mesolithic comes from the Greek word 'meso' meaning middle. The age extends from 10,000 BC to 8,000 BC.

The period intervening as a transitional phase between the Palaeolithic Age and the Neolithic Age is, known as the Mesolithic Age. It extends from about 12,000 years ago to about 10,000 years ago. This phase witnessed a number of environmental changes. The temperature rose gradually and the climate became warm and dry. The people moved closer to water sources like rivers and lakes. The technique of tool-making too underwent a significant change. Since a wider use of microliths (tiny or small stones) was made during this age, it is also known as Microlithic Age. Perhaps, the microliths were struck on the handles of bone or wood to make tools like spears, saws, sickles and arrows. Thus, man could now hunt swift-moving prey with bows and arrows. It should be kept in mind that the older varieties of tools also remained in use.

c. The Hunsgi and Baichbal Valleys in Karnataka. Stone Age tools dating to around 1 million years ago have been found here. Hunsgi appears to have been a place where early humans manufactured tools.
The availability of a perennial water sources in the form of springs, the availability of raw material in the form of limestone for tool-making, the protected nature of the valley, and the availability of a wide variety of plant and animal food ensured continuous human occupation of this valley from the earliest times.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

3 The First Farmers and Herders

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. iv. b. iv. c. ii. d. i.

2. Oral Questions :

Ans. a. Wheat and barley were the first crops grown by the Neolithic farmers.
b. Domestication is a process in which people grow plants and look after animals.

3. Fill in the blanks :

Ans. a. The period from **8000** to **4000 BC** is known as the Neolithic Age.
b. The process in which people grow plants and look after the animals is known as **domestication.**
c. The most important invention of the Neolithic Age was the **wheel.**
d. The first metal to be discovered by the man was **copper.**

4. State whether the following statements are True or False :

Ans. a. False b. True c. False d. True.

5. Match the following :

Ans.

a. Stone tools	i. First metal used
b. Burial at Mehgarh	ii. Mother Earth
c. Provider of food	iii. Goat
d. Copper	iv. Sickle blades, grinding stones

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. Useful plants were domesticated by the man. People selected those plants that yield large size grain and had strong stock capable of bearing the

weight of the ripe grain. Some of the earliest plants to be domesticated were wheat and barley.

b. The dog, the goat and the sheep were the earliest domesticated animals. Very soon the Neolithic man started domesticating cow, bull, donkey, hen, pig, etc. The animals were used for carrying heavy things and ploughing fields etc.

c. Sickles and reaping knives and grinding stones were used by humans in the Neolithic Age.

2. Answer the following questions in detail :

Ans. a. Around 8000 BC, the ice which had covered large parts of the Earth during the Paleolithic and Mesolithic Ages started to melt. The warmer climate encouraged the spread of plants and animals to previously cold regions. People learnt to grow crops of grains, and vegetables. This resulted in the development of agriculture. People also started taming more and more animals as they realised how useful they were.

During the Neolithic Age, man started using polished stone tools, cultivated plants, domesticated animals and settled in villages. As a learn suggesting a stage of cultural development. Neolithic Age varies with geographic location. In south-west Asia, Neolithic cultures appeared soon after 10,000 BC.

b. As early humans moved away from the dense forests, and settled near the water bodies, they required shelters which would provide them comfort and security, so they started building huts. They realized that many people living in close proximity would be advantageous for them in every way. For this, they formed small settlement which gradually took the shape of a proper village. Traces of early villagers have been discovered in Indian in the Malabar region.

People used crude methods to build their huts. In order to demarcate the area of their own hut, they used mud walls or prickly bushes. Mostly, each hut had one room and the roof was thatched. The huts were used to close constructed each other for security reasons. The fields to be cultivated lay outside the fenced area.

Settlements of this kind, later on developed into villages. Thereafter, the need for a leader in the village was felt. The oldest man, often became the leader on headman. At other times, the tallest and the strongest man became the leader.

c. Man during the Neolithic and Chalcolithic Ages was scared of natural phenomena, such as lightning, thunderstorms and forest fires. He did not understand how they occurred and had no control over them. So, he worshipped the forces of nature like the sun, rain, thunder and fire. Earth was revered as mother (Mother Earth) as it provided food. The cow and bull were considered holy.

d. Mehgarh is one of the earliest villages that we know about. It is located in a fertile plain, near the Bolan Pass, one of the most important routes into Iran. Earliest evidences of agricultural life have been found here. It was perhaps one of the places where people for the first time learnt to grow barley and wheat and domesticate sheep and goat.
Archaeologists have found a number of evidences during excavation. Finds of cattle bones and the earliest food grains suggest that they were domesticated locally. Various kinds of animal bones including the bones of wild animals like deer and pig, have been found from the earliest levels. Bones of sheep and goat have been found in later levels. Cattle bones are most common in still later levels. It suggests that cattle were generally domesticated by the people.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

The Earliest Cities

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. iii. b. iv. c. i.

2. Oral Questions :

Ans. a. Harappan civilisation is the other name of the Indus Valley Civilisation.
b. Wheat, barley, peas, rice, seasame, lineseed etc. were the main crops cultivated by the Harappan people.

3. Fill in the blanks :

Ans. a. By the end of the **Neolithic** period, man started getting familiar with metals.
b. The rise of cities in the **Neolithic** age marked the beginning of **urbanisation.**
c. **Faience** is not a naturally found material.
d. Dholavira is locally known as **Kotada.**

4. State whether the following statements are True or False :

Ans. a. True b. False c. False d. True.

5. Match the following :

Ans.

a. Gold	i. Afghanistan
b. Copper	ii. Lothal
c. Dockyard	iii. Karnataka
d. Tin	iv. Rajasthan

6. Read the following paragraph and answer the following questions :

Ans. Do yourself.

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. In India, cities first developed in Harappa and its surroundings in the valley of the river Indus. Hence, it is called the Harappan civilisation or Indus Valley civilisation. It developed around 4700 years ago.

b. More than 2000 seals have been discovered from the various sites. The seals, rectangular in shape were made of terracotta soapstone. The most interesting seal is that of Pashupati. A person appearing like Lord Shiva is seated in a yogic posture. The deity is surrounded by animals. Some seals bear the figures of animals like the buffalo, bull, tiger and elephant.

i. The seals throw light on religious beliefs of the people.

ii. From the figures on the seals we come to know the features, dress and ornaments of the people.

The seals were probably used to stamp the bags which contained goods being sent from one place to another.

c. Faience is not a naturally found material. It is produced artificially. Sand or powdered quartz was shaped into an object with the help of gum. The object was then glazed usually in blue or sea-green colours. Its resulted in a shiny and glassy surface. Generally, beads, bangles, earrings and tiny vessels were made of faience.

d. The Harappans were gifted with high talent regarding crafts and industries. Most of the things excavated from the Harappan sites are made of stone, shell and metal, including copper, bronze, gold and silver.

2. Answer the following questions in detail :

Ans. a. The cities of the Harappan civilisation were very well-planned. The cities were built according to a well laid out scientific plan. There was an excellent uniformity in the planning and construction of the cities. Most of the cities were divided into two partsa high citadel in the west and a lower town in the east.

b. The Harappan people had an excellent and well-planned drainage system. The bathrooms had sloping floors and house drains were connected to the main drain. The main drains which ran along the sides of the streets were covered with bricks. There were manholes at regular intervals which were cleaned regularly. The drainage system exhibits the high architectural skills of the Harappan people as well as the importance they attached to hygiene and sanitation.

c. Historians are not sure about the exact cause for its decline, they consider several possibilities. But it is sure that the civilisation did not meet a sudden end. It declined gradually. Around 3900 years ago, people stopped living in many of the cities. Writings, seals and weights were no

longer in use. Raw materials brought from far-off places became rare. The archaeological remains discovered from Mohenjodaro reveal that garbage piled up on the streets, the drainage system broke down, and new less impressive houses came to be built even over the streets.

Thus, the factors responsible for the decline of the Harappan civilisation can be studied as under :

The area was heavily flooded frequently. It was ravaged by earthquakes as well. Thus, the cities may be have been destroyed by floods and earthquakes.

The civilisation got its prosperity from trade. With a decline in trade, the cities also declined.

According to some scholars, the civilisation came to an end because its rulers lost their control. Sites in Sindh and west Punjab (now Pakistan) were abandoned whereas many people settled down into newer, smaller settlements to the east and the south. New cities came into emergence about 1400 years later.

Some scholars believe that barbarian invasions caused the downfall of the civilisation. The cities may have been attacked and the inhabitants could not defend themselves.

Thus, a number of factors caused the decline of the Harappan civilisation.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Different Ways of Living

Formative Assessment (CCE Pattern)

1. Tick (3) the correct answer :

Ans. a. i. b. iii. c. i. d. ii. e. iii.

2. Oral Questions :

Ans. a. Vedas are the main source of information of Indo-Aryans.

b. Two assemblies, the sabha and the samiti, advised the king on important matters such as wars. The sabha comprised some selected people of the village while the samiti comprised all the villagers. Here the people met to discuss matters of war and peace. They played a vital role in choosing the leaders. Usually, brave and skilful warriors were chosen as leaders (kings), and sabha and samiti assisted the king.

3. State whether the following statements are True or False :

Ans. a. False b. True c. True d. True e. True.

4. Match the following :

Ans.

a. Chariots	iv. Used in battles
b. Megalith	i. Stone boulder
c. Inamgaon	v. River Ghod
d. Aryan	iii. Superior
e. The Rig Veda	ii. Early Vedic Period

5. Complete the following sentences :

Ans.

a. The Upanishads deal with the Indian philosophy and evolved the theories of **Karma.**

b. Megaliths are found in **South India.**

c. The Chalcolithic period at Inamgaon is divided into **three periods.**

d. The word 'Veda' means knowledge and **wisdom.**

e. Inamgaon is a site on the river **Ghod.**

f. Slaves were treated as the **property.**

g. The Rigveda contains 1028 hymns in the praise of **Gods and Goddesses.**

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans.

a. Some historians are of the opinion that the Aryans who possibly spoke Sanskrit, came from Central Asia (mainly the Kirghiz steppes of Russia) and the Eurasian region. They entered India through the north-western side. The other group, the Indo-Europeans, originated from the same region and migrated to Europe. Their mother language was the same; hence, we notice many similarities between Latin, German, Persian, Sanskrit and other languages. Another group of historians believe that the Aryans may have been the descendants of the Harappans.

b. The Vedas are the main source of information about the political, social, economic, religious and cultural life of the people of the Vedic Age.
The four Vedas Rig Veda, Sama Veda, Yajur Veda and Atharva Veda form the core of Vedic literature. The word Veda comes from 'vid', meaning knowledge. The source of the compositions is believed to be divine and eternal. The Vedas were first verbal compositions, handed down from one generation to another through recitation, hearing the Guru and memorizing. They were finally recorded in books.

c. Rigveda describes two groups in terms of their work-the priests or brahmins, who performed various rituals, and the rajas. The rajas were not monarchs. They had no capital, palaces or armies, nor did they collect taxes. Further, sons, did not inherit their father's kingdom.

d. Apart from the vedas, the Brahmanas, the Aranyakas, the Upanishads and the Puranas are other literary sources of the period.
The Brahmanas are commentaries on the Vedic hymns in the simple prose. The Aryanakas were meant for the hermits who lived in forests.

e. The word 'Megalith' literally means a big stone. The stone boulders were carefully arranged by people and were used to work burial sites. Large stones were placed all around the graves. Hence, they were known as Megaliths.

2. Long Answer Questions :

Ans. a. The Rig Veda is the oldest of the Vedas and contains 1028 hymns in praise of the gods and goddesses. The Sama Veda contains hymns to be sung by a special class of priests in Soma sacrifice. The Yajur Veda contains hymns that are to be followed in an ordinary sacrifice. The Atharva Veda is a collection of songs, spells, magical charms of evil spirits, etc. These Vedas from the most important sources of information about the political, social, economic and religious life of the Aryans.

Apart from the vedas, the Brahmanas, the Aranyakas, the Upanishads and the Puranas are other literary sources of the period.

The Brahmanas are commentaries on the Vedic hymns in the simple prose. The Aryanakas were meant for the hermits who lived in forests. The Upanishads deal with the Indian philosophy and evolved theories of Karma, Maya and Mukti.

b. The culture which originated in South India after the Stone Age, is known as Megalithic culture. According to historians, South India witnessed a sudden transformation from Stone Age to Iron Age without any Chalcolithic or Bronze Age between them. The two signficant characteristics of Megalithic culture are as under :

(i) its being closely related to the Iron Age.

(ii) use of black and red pottery.

c. Archaeologists assume that objects discovered with a skeleton, probably belonged to the dead person. Sometimes, more objects are found in one grave then in another. In Brahmagiri, a skeleton was buried with 33 gold beads, 2 stone beads, 4 copper bangles and one conch shell whereas the other skeleton only had a pot. This shows the difference in status amongst the people who were buried. Some were rich, while others were poor.

d. Inamgaon is the name of a Chalclithic site in Maharashtra, near the river Ghod. The site was excavated in the 1960s and 1970s. Archaeologists have found much information about the early farmers who lived at this site from 1,600 BC to 700 BC.

Archaeologists have divided the Chalcolithic period at Inamgaon into three periods : Period I : about 1,600 BC to 1,400 BC, Period II : 1,400 BC to 1,000 BC and Period III : 1,000 BC to 700 BC.

134 mud houses have been excavated at Inamgaon. Mostly belonging to the first two phases, these houses were usually rectangular and quite spacious. One of the biggest houses had as many as five rooms. They were sometimes divided by a partition. Inside the house, there were oval-shaped p's where people cooked their food. Some other structures built during that period include wall round the settlement, landing platforms for boat, and an embankment and channels built to use the water of the

Ghod river to irrigate the fields for cutting plants and animal hide. Copper was known to the people, but was not used much.

Eating habits : People grew crops such as wheat, barley, lentils, peas, gram and beans and domesticated cattle, sheep, goats, dogs, horses and pigs. People ate plant food, meat and dairy products. Their meals included more meat and fish and locally-gathered plants.

Artefacts : Artefacts found in Inamgaon are terracotta figurines, such as the animal figurines and beads, made of terraotta, semi-products stones, ivory and even seashells. All these indicate trade relations with other settlements. The most frequent animal figure is the bull, which might have been worshipped.

Burial : Objects were placed inside burials. In one such burial, archeologists have found a clay bull and a headless female figurine. Below these, there was clay box with a female figurine in it. The curious thing was that there was a hole in the stomach of the headless female and in the back of the bull figurine.

Decline : The Period III of Inamgaon show signs of decline. There was a decline in farming variety. People started relying more on hunting and collecting wild plants. They also started keeping more sheep and goats instead of cattle. There were changes in the kinds of houses they lived in. Instead of the large, rectangular houses, we find small, round huts. It seems, people were becoming poorer and their old way of life had come to an end.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Rise of Early States

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. i. b. i. c. iv. d. i. e. ii.

2. Oral Questions :

Ans. a. Since the mahajanapadas were huge in size, the king maintained a large and strong standing army for the purpose of security. The soldiers received regular salaries in the form of coins called Krshapana.

b. The Vedic texts, mainly the ones composed during the Later Vedic period, like the Sama Veda, Yajur Veda and Atharva Veda, Brahmanas and Upanishads are the main sources about this period. We also come to know about the life of the people from the Buddhist texts like the Jataka Tales.

3. Answer the one sentence :

Ans. a. A republic could also a confideracy, that is, a number of tribes under a single government. For instance, the Vajjis functioned as a confederacy.

b. Vidha, Vaishali, Vajji, Mithila etc. are the republics which flourished during the Buddha's time.

c. The rajans fought among themselves for control over land, as whoever controlled the largest territory was considered the most powerful. The powerful states that emerged after defeating the smaller states or janapadas came to be known as mahajanapadas.

d. Punch marked coins were used in trade in the Mahajanapadas.

4. Fill in the blanks :

Ans. a. There were altogether **15** mahajanapadas.

b. The **Digha Nikaya** a famous Buddhist text gives an account of the Vajjis.

c. The verna system was **hereditary.**

d. Generally **two** crops were grown in a year.

5. State whether the following statements are true or false :

Ans. a. False b. True c. False d. False e. True.

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. **Concept of State :** Group of people (jana or tribe) setting together in one territory was called Janapada. For instance, if Kuru tribe settled, their territory was known as Kuru Janapada. When this territory became big with large boundaries it came to be known as Kuru Mahajanapada.
These states were formed to defend their crops, land, trade, settlements, etc., from rival tribes. The states were governed by rulers or rajans having their own army and captial.

b. According to the Buddhist texts Anguttarra Nikaya, and Digha Nikaya, bu around 600, BC there were 15 mahajanapadas. Of these, Magadha emerged the most powerful of all. The other powerful states were Avanti, Vatsa and Kosala.

c. The Vedic texts, mainly the ones composed during the Later Vedic period, like the Sama Veda, Yajur Veda and Atharva Veda, Brahmanas and Upanishads are the main sources about this period. We also come to know about the life of the people from the Buddhist texts like the Jataka Tales. The Digha Nikaya, a famous Buddhist text gives an account of the Vajjis. They refer to the small kingdoms as the Janapadas and the larger and more powerful ones as the Mahajanapadas. The Jain texts also provide a lot of information.

d. Magadha, Kosala, Vatsa, Avanti are the examples of monarchies while republics are found in the foothills of the Himalayas, Punjab and north-west of India.

e. For the first time people started using coins as payment for trade, instead

of bartering goods. We have evidence of the use of punch-marked coins in trade-silver and copper coins were punched with symbols of hills or trees.

f. Tax collectors collected taxes from the people. Taxes could be paid in money or in kind (i.e., goods). Land tax fetched the maximum revenue. A share (bhaga) of one-sixth of the agricultural produce had to be given as tax. Craftsmen and merchants also had to pay regular taxes. Sometimes, taxes had to be paid in the form of unpaid labour.

The revenue collected was spent on paying salaries to the people in administration, on public works like construction of roads and canals, and on maintaining the standing army.

2. Answer the following questions in detail :

Ans. a. The Mahajanapadas were of two types—monarchies and republics of ganasanghas.

Monarchies : These kingdoms were ruled by the hereditary kings or monarchs. The king was very powerful and maintained a large army. He collected taxes from different sources. The example of this form of mahajanapadas are Magadha, Kosala, Vatsa, Avanti.

Republics : A kingdom of this type was ruled by a clan headed by a king who was elected by the common people. Buddha belonged to such a ganasangha ruled by the Shakya clan.

A republic could also a confideracy, that is, a number of tribes under a single government. For instance, the Vajjis functioned as a confederacy.

The republics functioned in a democratic manner and they voted to make a decision. They Assembly elected by the people, performed administrative duties. Though the ganasanghas worked in a democratic manner, women and karmakaras or labourers were not allowed to attend the assemblies. It was headed by the Raja or Senapati.

Such ganasanghas were found in the foothills of the Himalayas, Punjab and north-west India.

b. The republic of Vajji (or Vajji), with its capital at Vaishali, was also located in modern-day Bihar. It was a confederation of 8-9 clans, of which the Lichhavis were the most powerful.

The confideracy was ruled by a tribal republic. It consisted of several sanghas. Each had one head or raja.

The main sanghas were Lichhavis, Mallas, etc. Eminent people were chosen form each of these as representatives (gana mukhyas) to the Vajji gana parishad (people's council of Vajji).

The chairman of the council was called Ganapramukh (head of the democracy), but often he was addressed as the king, though his post was not hereditary. The other executives were mahabalandhikrit (minister of internal security), binishchayamatya (chief justice), dandadhikrit (other justices), etc.

Another important sangha was Videha. Its capital was Mithila. It was an important trade centre.

The capital of Vajji was the prosperous city of Vaishali. The founder of Jainism, Lord Mahavira, was born here. The Buddha visited Vaishali to preach.

c. Magadha had two very powerful rulers, Bimbisara and Ajatashatru. They tried to conquer other Janapadas. Mahapadma Nanda, a powerful ruler, Janapadas. Mahapadma Nanda, a powerful ruler, extended his control up to the north-west part of the subcontinent. Rajagriha (present day Rajgir) in Bihar was the capital of Magadha for several years. Later, the capital was shifted to Pataliputra.

Magadha emerged as the most powerful mahajanapada in this period. This was due to many factors :

It was located in the Gangetic basin, where the soil was very fertile and yielded large harvests. Land revenue was high and it provided a substantial income for the kingdom which enabled the rulers to maintain a large army.

Timber and elephants, provided by the eastern forest to Magadha were used for constructing buildings and elephants also used in the army.

Magadha had large deposits of iron-ore, which was used to make agricultural implements and weapons.

Natural barriers like hills and rivers protected the capital from any attack.

d. Trade increased and spread. It became a very important activity. Sources tell us how merchant carried textiles, pots and many other types of crafts to the markets for trade. Sometimes the traders crossed rivers in the search for new markets. For the first time people started using coins as payment for trade, instead of bartering goods. We have evidence of the use of punch-marked coins in trade-silver and copper coins were punched with symbols of hills or trees. Taxila (in Pakistan), Champa and Bharukaccha (Bharuch in Gujarat) emerged as important trading centres.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

Rise of New Ideas

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. ii. b. ii. c. iv.

2. Oral Questions :

Ans. a. Gautam Buddha was the founder of Buddhism. His real name was Siddhartha. He was a kashatriya prince of the Shakya clan. Buddha was born in the sixty century BC at Lumbini.

b. Both Buddhism and Jainism became popular among the masses because they were very easy to practise and they did not attach any importance to the caste system.

3. Fill in the blanks :

Ans. a. **Brihadaranyaka** is the biggest of all Upanishads.
b. Buddha was born in **sixty century BC.**
c. Buddha's main teachings are contained in the **Tripitakas** and the **Jataka Tales.**
d. Mahavira was associated with **Jainism.**
e. The Jains believe that there were **23** Tirthankaras before Mahavira.
f. **Swetambera** and **Digambara** were the two sects of Jainism.

4. State whether the following statements are True or False :

Ans. a. True b. True c. False d. True e. False.

5. Match the columns :

Ans.

a. He believed that a balanced life helps in attaining 'moksha'	i. Tripitakas
b. The Buddhist sacred texts are collectively known as	ii. Ahimsa
c. Buddha preached in	iii. Upnishads
d. Avoiding violence of any kind	iv. Upnishads
e. These literally means, 'sitting down near'	v. Pali

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans. a. The Upanishads are part of the Hindu scriptures which discuss philosophy and meditation and gives interpretation on the Vedas. The term 'Upanishad' is derived from Upa-(near), ni (down) and shad (to sit), i.e., the "sitting down near" a spiritual teacher (Guru) in order to receive instruction in religion and philosophy. This was known as the Guru-Shishya parampara or tradition.

b. Buddhas' teachings were based on ahimsa or non-violence and love and compasion for all living beings. It was a moral code of conduct prescribed for the ordinary person. Buddhism did not follow the strict rules of Jainism or the superstitions and rituals of Hinduism. Thus, it came to be known as the Middle Path. Buddha's teachings comprised the four noble truths and the eightfold path or ashatangika marga.

c. One night, at the age of 29, Siddhartha took his horse Kantahaka and rode out of the palace. When he came out of the city, he took of all his jewellery and fine garments and put on ordinary clothes. He wandered as an ascetic for about 6 years. He first learnt the technique of meditation and the teachings of the Upanishads. But these did not lead to supreme knowledge (enlightenment). Ultimately, at the age of 35, he attained

enlightenment under a peepal tree at Bodh Gaya in Bihar. Since then he came to be known as the Buddha (the enlightened one) and Tathagat (one who has attained the truth). The tree under which he attained knowledge became the tree of wisdom or the bodhivrisksha.

d. Jainism became popular from Odisha in the east to Gujarat in the west and also in the south, as far as Mysore. However, in later times, it became confined to mainly two regionsGujarat and Rajasthan, where the followers of the Svetambara sect lived; and Karnataka and Andhra Pradesh, where the followers of the Digambara sect were concentrated.

e. Both Buddhism and Jainism became popular among the traders, craftsmen and peasants because both the religions were very easy to practise. The Vedic religion with its emphasis on sacrifices and rituals had become expensive and difficult to follow. Buddhism and Jainism gave importance to languages like Prakrit and Pali, unlike Sanskrit, which was not understood by the common people. These were the languages commonly used by the people and therefore they could easily understand the teachings of Buddha and Mahavira. Another reason for the popularity of these new religions was that they did not attach any importance to the caste system. The lower castes of the society found the idea of social equality preached by these religions very appealing.

2. Answer the following questions in orally :

Ans. a. The Four Noble Truths were the first teachings of Buddha which contain the essence of his philosophy. They are as follows :

- The world is full of suffering and mystery.
- Suffering is caused by material desire.
- Suffering ends when desire ends.
- Desire can be overcome by following the eight fold path, which ultimately leads to nirvana (freedom from the cycle of birth and death).
- The Eightfold path is represented by the Dharma-chakra and acts as a code of conduct for man. It is also called the Ashtangika Marga.

The codes are :

- Right belief
- Right thought
- Right speech
- Right action
- Right means of livelihood
- Right effort
- Right knowledge
- Right meditation

b. Traditionally there are said to be 108 Upanishads. Of these eleven are considered to be the principal Upanishads. Most of them were written between eighth and fourth century B.C. Their language is generally classical Sanskrit, although the oldest of them is said to have been written in Vedic Sanskrit. The main amonmg the eleven Upanishads are : Brihadaranyaka Upanishad (it is the biggest of all Upanishads), Chhandogya Upanishad (it teaches truth through the medium of many

interesting stories), and Taittirya Upanishad (more than any other Upanishad, this one is widely studied). The Upanishads explain the relationship between Jeeva (individual soul) and Brahma (Supreme Soul or God).

The early Upanishads are believed to have been written prior to the rise of Buddhism and Jainism. The older Upanishads are usually affixed to a particular Veda, through a Brahmana or Aranyaka. The more recent ones are not.

The Upanishads contain many divergent ideas joined together loosely. They set forth the prime Vedic doctrines such as self-realization, the ideal human conduct, meditation, karma, reincarnation of the soul and the nature of true knowledge. In the Upanishads the spiritual meaning of the Vedic texts is brought out and emphasized. The central theme of the Upanishads, however, is upasana (worship) and bhakti (devotion). Most Upanishads highlight the path to take in order to immerse the self with the Supreme Reality.

c. Mahavira's teachings were simple. He believed that a person's position in life depends on Karma (actions) of the previous life. He believed that anyoneeven a low-born personcould atain moksha. He preached ahimsa and forbade his followers to cause harm or injury to any living being. Mahavira called upon his disciples to lead good and pure lives. He instructed his followers not to lie, steal or kill. Mahavira encouraged his followers to lead austere lives. Jain man who gave up wordly life were not even allowed to wear clothes. Later on, some Jains took to wearing while robes. Like the Buddha, Mahavira did not discuss God. He rejected all rituals.

Formative Assessment (CCE Pattern)

Ans. Do yourself.

The First Empire-The Mauryas

Formative Assessment (CCE Pattern)

1. Tick (✓) the correct answer :

Ans. a. iii. b. iv. c. iii.

2. Oral Questions :

Ans. a. Literary source such as Arthashastra written by Chanakya, deals with polities, economy and military governance of Mauryas.

b. Kalinga war (261 BC) changed Ashoka's life.

3. Answer in one sentence :

Ans.

a. Literary sources such as the Indika and the Arthashastra and the various rock and pillar edicts of Ashoka give us a detailed account of the Mauryan administration.

b. Megasthenes, a Greek ambassador, stayed at Chandragupta's court at Pataliputra for several years. His book Indika is a valuable source of information about life in the India during Mauryan times.

c. The Macedonian king, Alexander the Great, was one of the world's greatest conquerors. His empire stretched from Macedonia in Greece to the borders of the river Beas in Punjab. Alexander wanted to conquer India, tempted by the stories he had heard of India's wealth. His attempt at crossing the river Beas in 326 BC failed, with his battle-weary Greek soldiers refusing to move further. Alexander's invasion had an important impact on India.

d. Chandragupta Maurya ruled over Magadha between 325-297 BC.

e. Brihadratha was the last Mauryan ruler.

f. Succession of kings of the same family is called dynasty.

4. Fill in the blanks :

Ans.

a. **Magadha** was the strongest of all the mahajanapadas.

b. Indika was written by **Megasthenes.**

c. Amitraghata means .

d. The sufferings caused by **Kalinga War** changed the life of Ashoka.

e. King Bindusara ruled for about **25** years.

f. Special officers called **dharmamahamatras** were appointed to spread Buddhism.

g. The Chief of the guild was called **Jesthaka.**

h. Ashoka died in **232 BC.**

5. Match the following :

Ans.

a. Army	i. Kalinga war
b. Stupa	ii. Subordinates
c. Adhyakshas	iii. Superindents
d. Yuktas	iv. Cavalry
e. Ashoka	v. Sanchi

Summative Assessment (CCE Pattern)

1. Answer the following questions in short :

Ans.

a. By the end of Chandragupta's rule, the kingdom of Magadha had become an empire. The Mauryan Empire now stretched from the Hindu Kush in the west to Bengal in the east, and from the Himalayas in the north to the Narmada in Central India.

b. The life history of Chandragupta, his empire and other interesting information are found in the book Indika written by Megasthenes, the ambassador of Seleucus to the court of Chandragupta.

Another source is Arthashastra, by Chanakya which deals with politics, economy and military governance of Mauryas.

c. Kalinga, a great maritime power, was under the control of Magadha during Nanda rule but gained independence with the beginning of Maurya rule. Control over Kalinga implied the control of trade with the south-east Asian countries. So, Ashoka attacked Kalinga in 261 BC.

d. The Mauryas built many stupas, viharas and pillars. The Stupa was the most important element in the architecture. It was derived from the ancient funeral mounds made of the Earth and brick that preserved the remains of monks and other important persons.

e. The main reason for the decline of the great Mauryan empire was the disorder which emered after the death of Ashoka in 232 BCE.

2. Long Answer Questions :

Ans. a. Kalinga, a great maritime power, was under the control of Magadha during Nanda rule but gained independence with the beginning of Maurya rule. Control over Kalinga implied the control of trade with the south-east Asian countries. So, Ashoka attacked Kalinga in 261 BC. Though he won the war, the resultant devastation and killing changed his life completely. He decided to give up violence and spread the message of love. His policy of digvijaya or the conquest of land changed to dhammavijaya or conquest through dharma.

Deeply influenced by the teachings of Gautama Buddha which laid emphasis on peace and non-violence, Ashoka became a Buddhist. He made it his state religion and devoted his life to the welfare of his people and to never rage a war again. It is said that, previously he was called Chandashoka, for his foul temper and cruel nature, but later he came to be known as Dhammashoka.

Ashoka's Dhamma : Dhamma is the Prakrit form of the Sanskrit word 'Dhamma', which means religious duty. Ashoka gave up the policy of conquest through war and replaced it with a policy of conquest through Dharma (Dhamma-Vijaya). This became Ashokas' goal for the rest of his life. The moral principles included are : non violence, charity, mercy, truth, tolerance, and purity.

b. **Source Materials** : The life history of Chandragupta, his empire and other interesting information are found in the book Indika written by Megasthenes, the ambassador of Seleucus to the court of Chandragupta.

Another source is Arthashastra, by Chanakya which deals with politics, economy and military governance of Mauryas.

Buddhist edicts written on pillars and rocks by Ashoka found in various parts of India (Gujarat-Junagadh rock inscription, Karnataka-Maski, Chittaldurga etc.) provide a fair account of the Mauryan times.

Jain literacy sources written by different scholars also mention the kingdoms and their life in that period.

Several coins and objects retrieved from sites also reveal about this period.

c. The Mauryan Empire had an efficient administrative system. It functioned at four levels :

1. Central, 2. Provincial, 3. District, 4. Village

Central Administration : The king was the supreme authority. He took all the important decisions. He was assisted by a council of ministers. (Mantri Parishad). The Prime Minister, Purohita and Senapati were some of the important central ministers. The various branches of administration such as revenue, military etc., were under officers called Amatyas.

Provincial Administration : The empire was divided into provinces. Each province was placed under a member of the royal family, and was ruled from its own capital. Taxila, Dhauli Ujjain, for instance, were provincial capitals. Although the centre had some control over the provinces, local rules and customs were also probably followed. The provinces were further divided into districts and villages.

District Administration : Each province was divided into a number of districts. The pradeshta was the head of each district, and was assisted by junior officials, such as yuktas and rajkutas. Their functions included the survey and assessment of land, collection of revenue and maintenance of law and order.

Village Administration : Each district consisted of many villages. Villagers assisted the government officials in marking the boundaries of the village, maintaining land records and collecting taxes.

d. The main reason for the decline of the great Mauryan empire was the disorder which emered after the death of Ashoka in 232 BCE.

His successors were weak and could not handle the affairs of the state efficiently. The huge expenditure incurred on maintenance of the army became a burden on the royal industry. The invasions in the north-western border of India added to the unrest.

In 185 BC, the last Mauryan ruler, Brihadratha was assassinated by his commander-in-chief, Pushyamitra Sunga who later, laid the foundation of the Sunga dynasty.

Ashoka was one of the greatest emperors in the annals of history. He spend his life working for the welfare of his subjects. He was the first king to promote non-violence and tolerance.

Formative Assessment (CCE Pattern)

Ans. Do yourself.