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GS Paper - I

**UPSC CSE
Mains - 2022**

Model Answers



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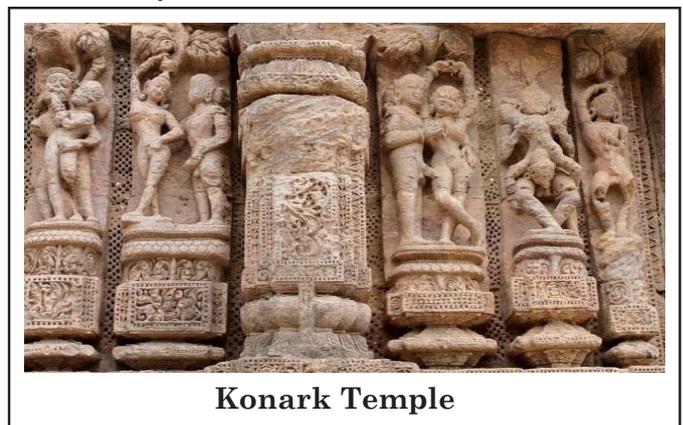
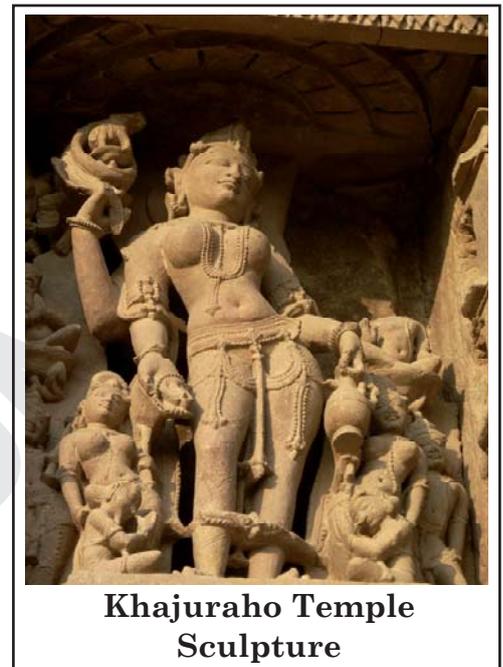
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Q1. How will you explain that medieval Indian temple sculptures represent the social life of those days?

Medieval India is characterized by a number of **magnificent temples** with their unique and intricate carvings presented in the form of sculptures. These Sculptures depict **artistic excellence and a fine specimen of craftsmanship**.

Though different aspects of human life are represented in these sculptures but **social life of medieval days resonated far and wide** in the following manners:

- **Erotic sculptures of Khajuraho** served as a form of **sex education**, by rekindling passions in the ascetic minds of people, who were probably influenced by Buddhism. About 10% of the carvings contain sexual themes and rest of the sculptures depict the **everyday life of the common persons** such as **women putting on makeup, playing games, dancing, knotting and unknotting their girdles**, and others themes such as **musicians, potters, farmers** etc. Thus, these massive platforms have ornately carved depictions of contemporary life.
- Instead of the classical dignity, sobriety and simplicity, the sculpture is now **more and more tending towards ornamentation**, creating highly ornate art objects, with strange and unusual imaginary creatures, such as **half human, half monsters**, etc.
- **Sun temple at Konark** have Images of **dancing apsaras** even replicated today in the form of classical dances. Similarly, the **social attributes of music and dance** can be seen in the **Nataraj image of Chola period** which has impressed connoisseurs though out the world.
- An element of **toleration and integration in the society** as seen in the construction of **Chalukyan temples**. For example, **Badami cave temple sculptures** of different religions depict **religious diversity** in the society.
- The images of **doorkeepers (Dvarapalas)** in the **Pallava temples** represented **guardian figures of the contemporary society**, who tested the intrepidity of the seeker before they let him pass and carry on his quest. Many Indian temples often have such guardians who usually are the **most expressive social figures**.

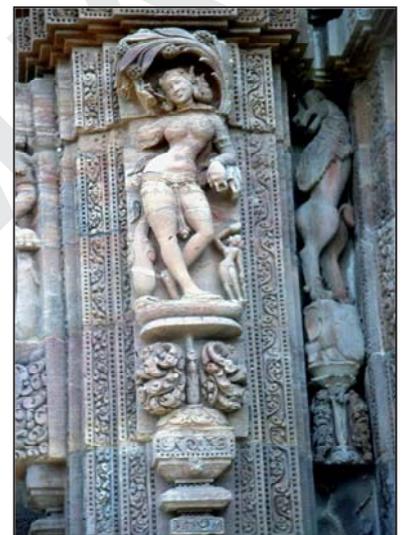


- **Loveliness and idealisation** are still the artist's passion as they were for artists in the early classical period, but **love of the ornate, decorative details** is now dominant over classic simplicity. There is more complication, ornamentation and enrichment. It is vividly seen in **rock-cut architectural style of Kailasanath temple at Ellora.**



Kailasanath Temple, Sculpture

- One look at the **variety and individuality of Indian sculpture** will clearly demonstrate that as styles went on developing the sculptors frequently departed from the texts and rules laid down, and delighted in those departures and the **liberties** they took with the bodies of humans and even of gods and goddesses.
- There is a **new beauty in women.** The hips are more slender, the waist more supple, the legs longer. The face still continued to be stylized and the breasts full and firm. The woman is **no longer the mother goddess but a divine charmer.** One such superb example of the sculptor's art is a **lovely figure of Vrikshika**, or a celestial damsel, from Gyrapur, in Gwalior, standing in a gracefully flexed pose, against a tree
- The beautiful architectural rock sculpture from **Cave No.29 at Ellora, Rashtrakuta shows the marriage of Siva and Parvati**, another depiction of social life.
- A charming specimen of the **Chandella art of the 11th century** is this figure of a woman writing a love letter. Behind her right shoulder are the fingernails marks inflicted by her lover, while embracing her. Recalling the pleasures of which she had **experienced in union with her lover** and longing for another meeting with him she is prompted to write a love letter.
- **Celestial maidens are shown playing the Veena in the Konark Temple.**
- **The Vijayanagara emperors caused excellent portraits** to be carved by the sculptors to immortalise them in the vicinity of their favourite deities as means to **seek legitimacy in the society.** One such fine example is of **Krishnadevaraya at one of the Gopuras at Chidambaram.**



Krishnadevaraya Sculpture

Though traditions of stone sculptures continued, **no major sculpture movement survived under the Mughal** and the other Muhammadan rulers. Under the Muhammadan rulers great impetus was given to architecture, but sculptures are rarely found and even those available are products of **local chieftains**. During the **British regime no proper patronage** was provided to sculptors and the whole tradition of Indian art almost came to a standstill.

Q2. Why did the armies of the British East India Company mostly compromising of Indian soldiers - win consistently against the more numerous and better equipped armies of the then Indian rulers? Give reasons.

British East India Company mostly compromising mostly Indian soldiers won against the more numerous and better equipped armies of the then less unified but numerous Indian rulers.

Martial Communities in the army: They preferred the recruitment of martial communities like Gurkhas, Sikhs, Rajput etc. Bravely were in blood of these races which helped the Britishers to win against Indian rulers.

Better use of diplomacy: Britishers used diplomacy and strategy to win the wars eg. Battle of Plassey was won even without fighting with the help of Clive's diplomacy. Shift in the balance was one of the key reasons for the loss of Mysore.

Technologically advanced: The firearms used by the English, which included muskets and cannons, were better than the Indian arms both in speed of firing and in range. British army consisted of many Indian brave warrior races like Gorkhas, Punjabi, Rajputs etc. when they were better equipped under competent command, the fighting power of their army increased.

More Disciplined under their Commanders: A regular system of payment of salaries and a strict regime of discipline were the means by which the Britishers ensured that the officers and the troops were loyal. The Indian rulers were dependent on personal retainers or a rabble of mercenary elements who were not amenable to discipline and could turn rebellious or join the opponents when the going was not good.

Brilliant Leadership and Support of Second-Line Leaders: Clive, Warren Hastings, Elphinstone, Munro, Marquess of Dalhousie, etc., displayed rare qualities of leadership. The English also had the advantage of a long list of secondary leaders like Sir Eyre Coote, Lord Lake, and Arthur Wellesley, who fought not for the leader but for the cause and the glory of their country. The Indian side too had brilliant leaders like Haidar Ali, Tipu Sultan, Chin Qilich Khan, Madhu Rao Scindia, and Yashwant Rao Holkar, but they often lacked a team of second-line trained personnel.

Civil Discipline and Fair merit based Selection : British officers and troops were given charge on the basis of their reliability and skill and not on hereditary or caste and clan ties. They themselves were subject to strict discipline and were aware of the objectives of their campaigns. In contrast, the Indian administrators and military officers were appointed on the basis of caste and personal relations, often disregarding merit and ability.

Hold on strategically important region like Bengal: After the win of battle of Plassey they gained strategic important region like Bengal. Revenue of Bengal helped them to raise more advanced and numerous soldiers. They had huge financial backup.

Hostilities and lack of unity among Indian rulers: Regular expansion and dissension with neighbours could not lead to the development of unity among Indian rulers. They made each other weak with these consistent wars. The spirit of fighting for a united cause was not their motivation. Thus, they often supported the British against neighbouring rulers. The consciousness of 'India' was lacking.

Panoculist vision of Indian rulers: India as a nation vision was missing. Rulers were fighting for their personal gain. Internal dissensions and war of successions gave better opportunity to Britishers to intervene. Conquest of Nizam, Maratha etc were results of same. An economically thriving British people believing in material advancement and proud of their national glory faced the 'weak, divided-amongst-themselves Indians' bereft of a sense of unified political nationalism. The lack of materialistic vision among Indians was also a reason for the success of the English Company.

Thus, the armies of British East India Company though mostly comprising of Indian soldiers with technologically equipped under united commanders won consistently against more numerous armies of Indian rulers.

Q3. Why was there a sudden spurt in famines in colonial India since the mid-eighteenth century? Give reasons.

India was hit by recurrent famine from 1760 AD to till 1943 AD. As per British sources, there were more than 85 million Indians died in these famines which were in reality genocides done by the British Raj.

Famines were the phenomenon of ancient and medieval India also but frequency and devastation was increased during the colonial rule. The reasons were **man made and natural** but largely artificial when grievances were not addressed on timely.

Causes of famines in colonial India:

- **Exploitative settlement policies of Britishers:** Devastating Bengal famine in 1769 after the allotment of **diwani rights** of Bengal, Bihar, Orissa to the British was the result of British new settlements. **Dual Government** was the phase of Bengal where Britishers extracted all revenues without having any responsibility left peasant in misery.
- **Storage of Food grains was prohibited** by the Britishers against the **cartelization**. During failures of crops they were left with nothing to eat and grow in next season than perish.
- **Corruption and lack of understanding** of local situation: European officials were superior authority in extracting revenue. Bribes, gifts, private trade hampered the growth of agriculture economy.

- **Commercialisation of agriculture and Capitalist economies :** There is a persistent view that the peasants were “forced” to cultivate cash crops because of high revenue demand like Indigo, Cotton, Jute etc over food crops.
- **International factors:** American Civil War artificially created the boom in cotton demand. It led to the pocket of prosperity in the Deccan cotton belt, which disappeared very soon after the end of the war and was followed by a **famine and agrarian riots in the 1870s**. Jute cultivation in eastern India developed as the **peasants failed to meet the subsistence necessities**. Jute economy crashed in 1930s and was followed by a devastating Bengal famine in 1943.
- **Due to Crop failures:** in 1896-97 there was a crop failure resulting in a severe famine, there was no remission of revenue, leading to a widespread no-tax campaign, particularly in the coastal districts of Thane and Kolaba. In Khandesh and Dharwar districts, the sahuikars refused to pay the land tax. By the end of 1897 it was all over. But peasant unrest erupted again in 1899-1900 in Gujarat, which suffered from a bad harvest and famine.
- **Failure of monsoon and droughts:** In 1768 and 1769 failure of monsoon led to the famine and drought like conditions. The drought of 1865 followed by a famine the following year affected Orissa, Madras, Northern Bengal and Bihar. The calamity was most severe in Orissa, hence the name the ‘Orissa Famines’ in 1866.
- **Diversion and export of food crops:** When there was already serious shortage of food for home consumption, export of food to feed the army fighting abroad continued. This resulted in near famine condition. The miseries of the people were further compounded by the outbreak of an influenza epidemic.
- The **idea of Free Trade and laissez faire**, nationalists contended, **led to a tariff and industrial policy** which stifled the possibilities of growth of industries in British India. Consequently, India became “**the agricultural farm**” of industrial England, i.e. a source of **raw materials and food-grains**, dependent totally on industrial supplies from England.
- **Environmental-imperialism:** British intrusion into tribal areas and enactment of various forest acts restricted the access of tribals to forest produce and prohibited Jhum cultivation creating conditions for famine in the tribal areas.
- **High rate of taxes and tariff:** The rate of taxation of agriculture was also criticised by R.C. Dutt who felt that the burden of land revenue was excessive in areas which were subjected to periodical temporary settlements. This, in his opinion, was the cause of frequent recurrence of famines in British India.
- **Little investments on agricultural activities** and funds diverted for military and serving other vested interests. The concept of **Drain of Wealth** evolved in the writings of **Naoroji and Dutt**. They also pointed out how British regime brought about the **destruction of the small-scale industries of India**, a process that in more recent times has been called de-industrialisation. Shift to rural areas, **pressure on land**.

The Government made half hearted efforts to help the famine stricken. The government famine machinery was inadequate and ineffective. It was half heartedly curative than preventive. The Government refused to recognise its responsibility for saving human lives. Committees like **Strachey Commission, 1880, George Campbell Committee, Macdonnell Commission** etc were set up.

Q4. Describe the characteristics and types of primary rocks.

Primary rock is an early term in geology that refers to crystalline rock formed first in geologic time, containing no organic remains, such as granite, gneiss and schist as well as igneous and magmatic formations from all ages.

The **solidification of magma formed the first rocks on earth**. Rocks formed out of solidification of magma (molten rock below the surface) and lava (molten rock above the surface) and are **known as igneous or primary rocks**. Having their origin under conditions of high temperatures the igneous rocks are unfossiliferous.

Some of the examples of igneous rocks are **Granite, gabbro, basalt etc**.

Characteristics of Primary rocks:

It alone accounts for about 90 percent of all rocks in the top layer of the earth's crust. The name igneous is coined after *ignis*, a Latin word meaning fire. This rock possesses distinctive properties that separates it from the other rocks.

- They are the **base rocks** for development of different rock types.
- They are **very hard** (harder than sedimentary rocks) and **resistant to elevated temperature conditions**. Resistance to extreme heat is understandable from the fact that these rocks are formed from the hot and molten magma (625-1200° C), which occur beneath the earth's surface.
- The important characteristic that differentiates them from sedimentary and metamorphic rocks is the **absence of fossils**. Since they are formed at a relatively fast rate, there is no chance for entrapment of plant and animal traces.
- They are made up of **different types of minerals**, based on the actual temperature at which cooling of magma (below or above earth's surface) takes place.
- The **crystal size of volcanic rocks is small and inconspicuous** because of volcanic eruption in the ocean, thus speeding up the rock cooling process.
- The individual **crystal size of igneous rocks is inversely proportional to the speed of cooling**. A rock with inconspicuous crystals (fine texture) is formed by a fast cooling process, while the reverse occurs for an igneous rock with larger crystals (coarse texture).

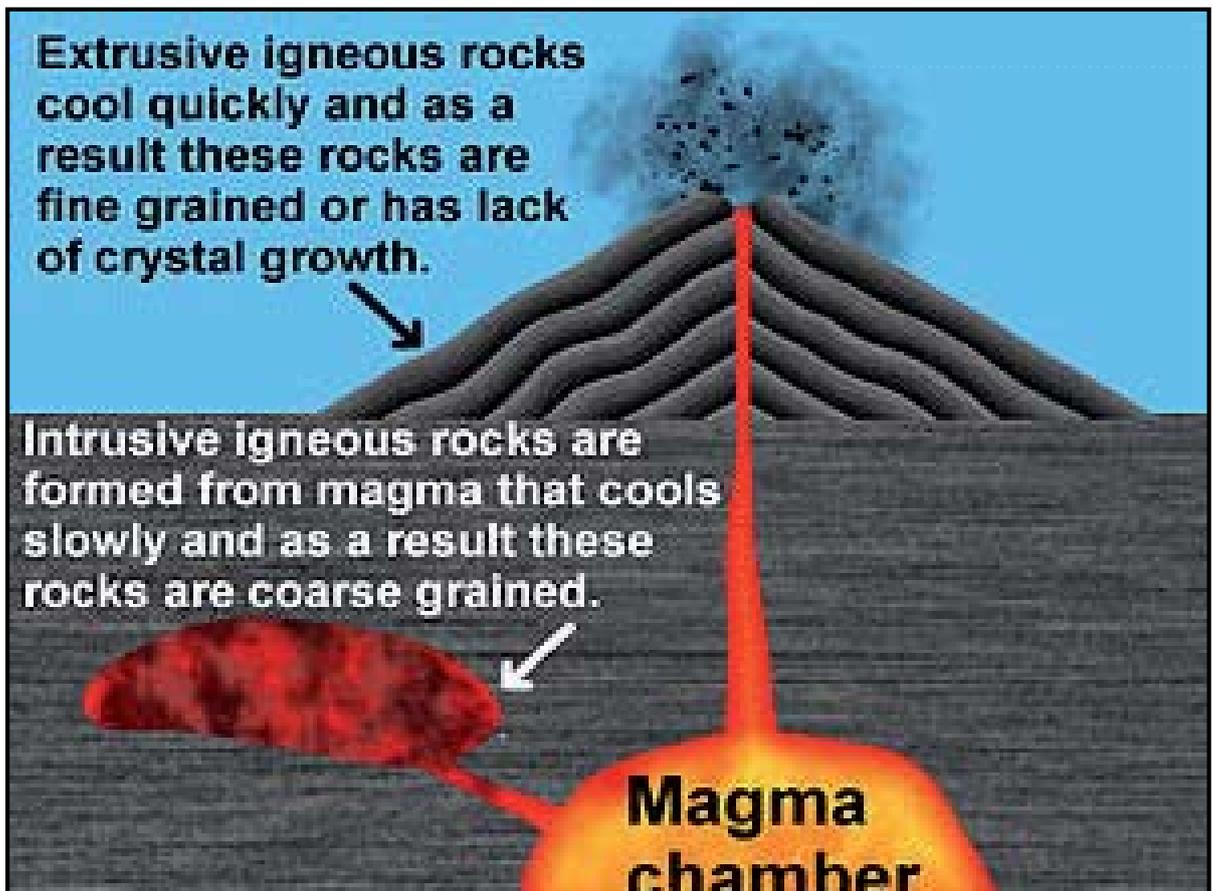
Types:

- There are three types of igneous rocks **based on place and time taken in cooling** of the molten matter, plutonic rocks, volcanic rocks and intermediate rocks.
- There are two types of rocks **based on the presence of acid-forming radical**, silicon, acidic rocks and basic rocks.

Classification On the basis of location:

■ Intrusive igneous rocks (Plutonic rocks):

- ▶ If magma cools slowly at great depths, mineral grains formed in the rocks may be very large.
- ▶ Such rocks are called intrusive rocks or plutonic rocks (e.g. Granite).
- ▶ These rocks appear on the surface only after being uplifted and denuded.



■ Extrusive igneous rocks (Lava or Volcanic rocks):

- ▶ Sudden cooling of magma just below the surface or lava above the surface results in small and smooth grains in rocks as rapid cooling prevents crystallization, as a result, such rocks are fine-grained.
- ▶ Such rocks are called **extrusive rocks or volcanic rocks (e.g. Basalt)**.
- ▶ The Deccan traps in the Indian peninsular region are of basaltic origin.
- ▶ Basic rocks contain a greater proportion of **basic oxides**, e.g. of iron, aluminum or magnesium, and are thus **denser and darker in colour**.

■ Hypabyssal or Dyke Rocks or Intermediate rocks:

- ▶ These rocks occupy an intermediate position between the deep-seated plutonic bodies and the surface lava flows.

- ▶ Dyke rocks are semi-crystalline in structure.

Classification on the basis of chemical composition:

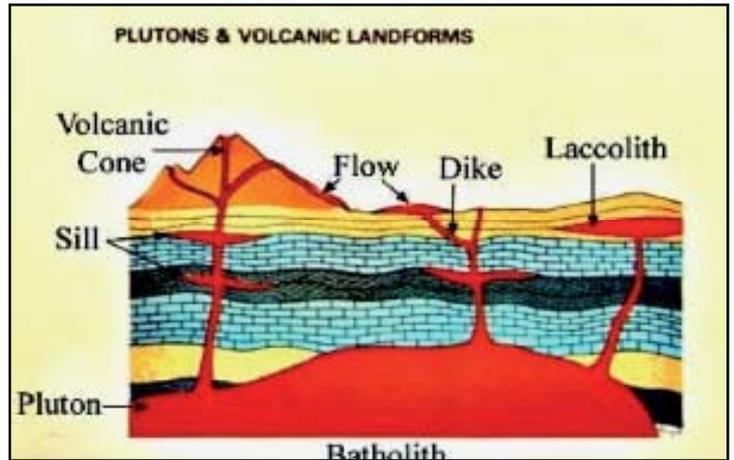
■ Acidic Rocks

- ▶ Acidic rocks are characterized by high content of silica (quartz and feldspar) — up to 80 per cent.
- ▶ The rest is divided among aluminium, alkalis, magnesium, iron oxide, lime etc.
- ▶ These rocks have a lesser content of heavier minerals like iron and magnesium. Hence, they are less dense and are lighter in colour than basic rocks.
- ▶ These rocks constitute the sial portion of the crust.
- ▶ Due to the excess of silicon, acidic magma cools fast, and it does not flow and spread far away.
- ▶ High mountains are formed of this type of rock.
- ▶ Acidic rocks are hard, compact, massive and resistant to weathering.
- ▶ Granite, quartz and feldspar are typical examples.

■ Basic Rocks

- ▶ These rocks are poor in silica (about 40 per cent); magnesia content is up to 40 per cent, and the remaining is spread over iron oxide, lime, aluminum, alkalis, potassium etc.
- ▶ Due to low silica content, the parent material of such rocks cools slowly and thus, flows and spreads far away. This flow and cooling give rise to plateaus.
- ▶ Presence of heavy elements imparts these rocks. Not being very hard, these rocks are weathered relatively easily.
- ▶ Basalt, gabbro and dolerite are typical examples.

Magma is the major source of metal ores, many of them are present in igneous rocks. Magnetic iron, nickel, copper, lead, zinc, chromite, manganese, gold, diamond, and platinum are found in igneous rocks which are of great economical importance. These crystallized minerals or metals are abundant in the old rocks of the large Indian peninsula. Many igneous rocks, such as granite, are utilized as building materials because of their stunning colours.



Q5. Discuss the meaning of colour-coded weather warnings for cyclone prone areas given by India Meteorological department.

The India Meteorological Department (IMD) issues **color-coded weather warnings** to provide inputs to disaster management authorities **for the management of severe**

weather events. These color-coded warnings are **universal in nature** and can be used **for a wide range of natural calamities**, and other dangerous weather events.

Why are colours used?

- The key idea is to forewarn relevant officials and the disaster management authority “about the impact of the weather expected so as to **keep them ready for necessary action** related to disaster risk reduction”.
- At a basic level, the message in the four different colours are to be read thus: Green - No Action needed; Yellow - Watch and stay updated; Orange - Be prepared; Red - Take action.

Types of color-coded warnings:

The Met department has **four colour-coded warnings** that it flashes depending on how intense or violent a weather system is at a given point in time. These are as follows:

- Green
- Yellow
- Orange
- Red

Description of color-coded weather warnings:

	NO SEVERE WEATHER EXPECTED Keep up to date with latest forecast
	BE AWARE Remain alert and keep up to date with latest forecast
	BE PREPARED Remain vigilant, keep up to date with latest forecast and take precautions where possible
	TAKE ACTION Remain extra vigilant, keep up to date with latest forecast. Follow orders and any advice given by authorities and be prepared for extraordinary measures

- **Green (All is well):** It means that there is no severe weather expected and no advisories are issued.
- **Yellow (Be updated):** It indicates severely bad weather spanning several days.
- **Orange/Amber (Be prepared):** It is issued as a warning of extremely bad weather with the potential of disruption in commute with road and rail closures, interruption of power supply, and so forth.

- **Red (Take action):** It is issued to help people remain extra vigilant and be prepared for extraordinary measures and follow orders given by the authorities.

The four stages of cyclone warnings in India are:

- **The First Stage warning, Pre Cyclone Watch,** issued **72 hours in advance.** It contains an early warning about the development of a cyclonic disturbance in the north Indian Ocean, its likely intensification into a tropical cyclone and the coastal belt likely to experience adverse weather.
- **The second stage warning, Cyclone Alert,** is issued at least **48 hrs in advance** of the expected commencement of adverse weather over the coastal areas. It contains information about the location and intensity of the storm, likely direction of its movement, intensification, coastal districts likely to experience adverse weather and advice to fishermen, the general public, media and disaster managers.
- **The Third Stage** warning is **Cyclone Warning,** issued at least **24 hours in advance** of the expected commencement of adverse weather over the coastal areas and the landfall point is forecasted at this stage.
- **The Fourth Stage** of warning is **Post Landfall Outlook** and it gives the likely direction of movement of the cyclone after its landfall and adverse weather likely to be experienced in the interior areas.

Stage of warning	Colour code
Cyclone alert	Yellow
Cyclone warning	Orange
Post - landfall outlook	Red

These alerts are universal and are not used exclusively for cyclones but for a range of natural calamities including floods, heavy rainfall, snowstorms and other dangerous weather events. Thus these warnings are mainly meant for administrators to keep ready and position their resources to handle situations arising out of weather related disastrous events.

Q6. Discuss the natural resource potentials of ‘Deccan trap’.

Deccan Traps – a thick pile of solidified lava from volcanic eruptions 65 million years ago – occupies about a third of peninsular India and is the world’s largest continental flood-basalt province outside Siberia. The trap cover varies in thickness from a few hundred to a few thousand metres and, below this, lie thick sedimentary rocks.

Its formation has been linked to the foundering of the Gondwanaland and Greater India’s northward drift, passing over the Reunion plume and eruption of over a million km³ of lava that apparently led to a mass extinction of global proportions.

It has been a major domain of scientific interest and study the world over. Thus, studies have provided a very large database that has led to a better understanding of the genesis and evolution of this province and similar flood basalt provinces of the world.

- India’s Deccan Traps originated by rifting. The consequence of rifting is the formation of rift-valleys and rift-basins, which over geological time may develop into sedimentary basins with geological strata favorable to the entrapment of petroleum and natural gas.
- Like the Siberian Traps, the Deccan Traps are the consequence of massive flood basalt eruptions about 65 million years ago which blanketed the underlying geological features.
- It is widely believed that Deccan basalt flows are resting over widely varying rocks that range in age from the **Archaean era to the Phanerozoic era**. Based on geochemistry, DVP is divided into four subprovinces: the main **Deccan plateau**, the **Malwa plateau**, the **eastern Deccan volcanic province** and the **Saurashtra plateau**.

The natural resource potential of deccan traps are:

- **Abundance of black soil:** those soils are often referred to as *regur* but are popularly known as “**black cotton soils,**” since cotton has been the most common traditional crop in areas where they are found. Black soils are derivatives of trap lava and are spread mostly across interior Gujarat, Maharashtra, Karnataka, and Madhya Pradesh on the Deccan lava plateau and the Malwa Plateau, where there is both moderate rainfall and underlying basaltic rock. Because of their high clay content, black soils develop wide cracks during the dry season, but their iron-rich granular structure makes them resistant to wind and water erosion.
- **Hydrogeological potential:**
 - ▶ The basaltic flows constitute the shallow and deeper aquifers in the province and present an inconsistent and complex hydrogeological framework.
 - ▶ The upper reaches of the Godavari drainage basin are occupied by the **Deccan Traps** containing minerals like **magnetite, epidote, biotite, zircon, chlorite** etc (metallic minerals).

Division	Thickness (m)	Petrology	Areas where Developed
Upper Traps	450	Basaltic flows with numerous (i) layers of volcanic ash (ii)inter-trappean beds (Fossiliferous)	Bombay and Kathiawar

Middle Traps	1500	Basaltic flows The Intertrappean Beds are ABSENT Ash Beds common	Madhya Pradesh and Malwa
Lower Traps	150	Basaltic flows Ash beds very rare. Inter-trappean beds present	Madhya Pradesh

- **Petrology of Deccan Traps:** The deccan traps are surprisingly uniform in mineralogical characters.
- The most important rock of Deccan Trap is Basalt, of augite-basalt type, with a grayish green colour. The Inter-trappean beds are composed chiefly of volcanic detritus, clay, impure limestones and similar material eroded from the congealed volcanic flows. Such beds have been studied at many places in Maharashtra, Madhya Pradesh and Gujarat. The inter-trappean beds appear in excellent sections in Malabar hills of Bombay where they are made up of dark shaded **shales**.
- **Massive bed of laterite:** The tropical weathering of Deccan traps at and near the surface has given rise to massive beds of laterite which at many places is fairly rich in iron, averaging 25-30 % of the metal. The laterite also contains deposits of titaniferous bauxite. They are likely to assume importance in future. When attention is focused on lower grade ores. The limonitic material from laterite, often forming rich concretions, was won and smelted by indigenous artisans for many centuries.
- **ONGC strikes oil and gas in Deccan Traps:** Hydrocarbon has been found in the exploratory well Karjan-9 in Ankleshwar (Gujarat). If commerciality of the discovery is established, India will be one of the top oil-producing countries as the Deccan Traps (also called Deccan Syncline) is stated to have massive oil deposits, estimated around 30 billion tonne. The Deccan Traps, considered 65 million years old, extend from Saurashtra to central India.
- **Carbon sequestration:** India holds a substantial geological sequestration potential in its basaltic rocks, coal seams, depleted oil reserves, soils, deep saline aquifers and sedimentary basins.
 - ▶ The Deccan volcanic province in India is promising and provides enough material for CO₂ sequestration.
 - ▶ CO₂ reacts with calcium, magnesium and iron rich silicates in the lava, turning them into stable carbonate minerals such as calcite, dolomite, magnesite and siderite.
 - ▶ Realizing the potential of Deccan Traps as a long-term CO₂ storage option, Indian government agencies, jointly with American scientists, proposed in 2007 a field study to investigate the feasibility of this.

Minerals and precious stones abound in the **Deccan level**. Numerous marsh kings, especially those of the Mauryan (fourth second century BCE) and Gupta (fourth sixth century CE), fought for the level's mineral wealth. Today, owing to erosion and changes in the earth's crust over the years, the area of the Deccan Traps is just about a third of its original size. It is fascinating not only because of its size, but also due to its varied nature of basement and potentiality for mineral resources.

Deccan Traps spread over large parts of south, west and central India, possibly hiding underneath sediments with hydrocarbon potential.

Q7. Examine the potential of wind energy in India and explain the reasons for their limited spatial spread.

Wind power saw a steady growth in India for about three decades (1985-2015). India is the world's **fourth largest country in terms of total wind installations** after China, the USA and Germany. India has made great strides in improving access to modern energy in recent years. Since 2000, India has more than halved the number of people without access to electricity and doubled rural electrification rates.

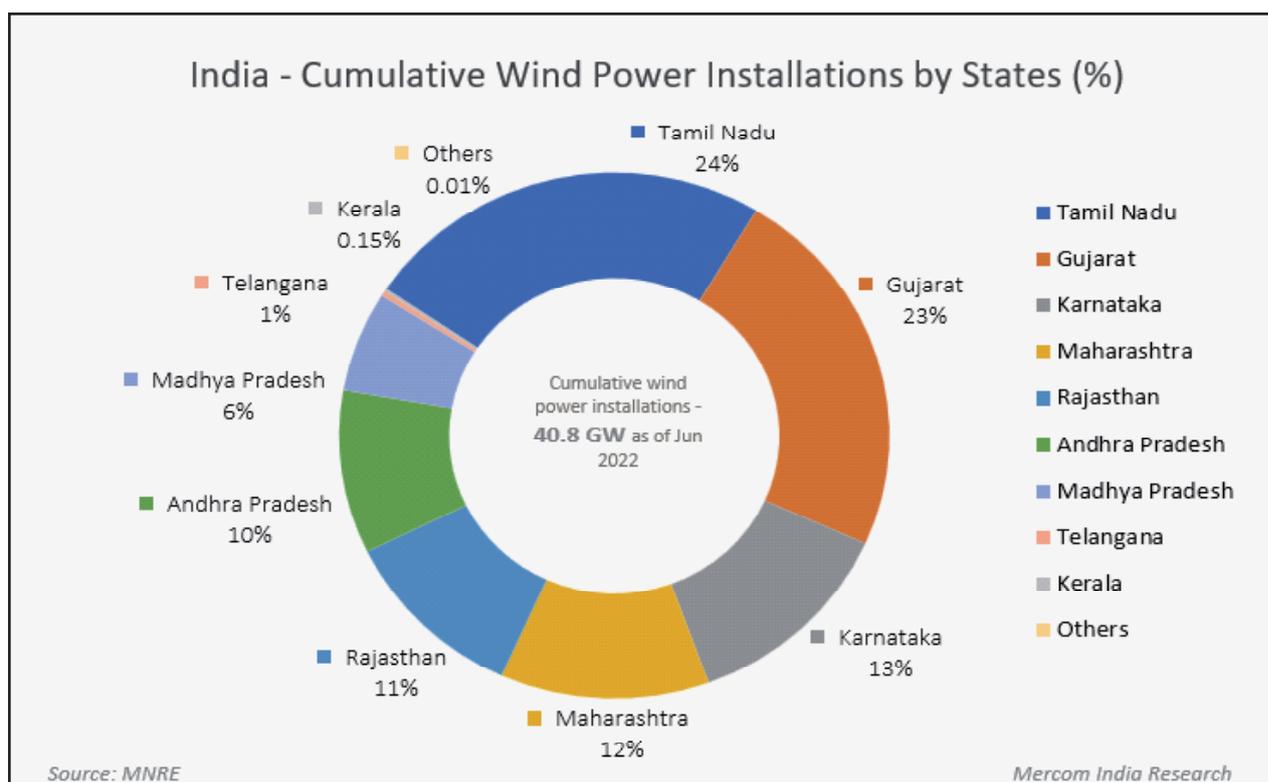
The country currently ranks fourth in the world in wind power, with 37.5 gigawatt (GW) of capacity installed (as on 31st March 2021) and has generated around 60.149 Billion Units during 2020-2, most of which was driven by incentives such as accelerated depreciation and generation-based payments and attractive feed-in tariffs (FiT).

As per Global winds report 2022,

- In India, **more than 1.4 GW of wind energy was installed in 2021**, exceeding the previous year's 1.1 GW.
- **The government has set a target of 5 GW of offshore capacity installed by 2022 and 30 GW by 2030.**

Potential of Wind Energy in India:

- With its 7,600 kilometers of coastline, India has the **potential to create 127 GW of offshore wind energy.**
- The Indian wind market is expected to have **3.2 GW and 4.1 GW of onshore wind installations** in 2022 and 2023, respectively.
- Wind is an intermittent and **site-specific resource of energy** and therefore, an **extensive Wind Resource Assessment is essential** for the selection of potential sites. The Government, through National Institute of Wind Energy (NIWE), has installed over 800 wind-monitoring stations all over the country.
- **Tamil Nadu, Gujarat, Maharashtra, Karnataka and Rajasthan** are the top wind-energy potential states in India (As of March, 2021).



Initiatives by Government of India:

- **National Wind-Solar Hybrid Policy:** The main objective of the National Wind-Solar Hybrid Policy, 2018 is to provide a framework for promotion of large grid connected wind-solar PV hybrid systems for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land.
- **National Offshore Wind Energy Policy:** The National Offshore wind energy policy was notified in October 2015 with an objective to develop the offshore wind energy in the Indian Exclusive Economic Zone (EEZ) along the Indian coastline of 7600 km.
- **National Institute of Wind Energy:** Technical support including wind resource assessment and identification of potential sites through the National Institute of Wind Energy.
- Accelerated Depreciation benefit; concessional custom duty exemption on certain components of wind electric generators.
- The Ministry of New & Renewable Energy has already introduced **Generation Based Incentive (GBI) schemes** separately for wind and solar energy.
- **Wind bidding scheme:** A scheme was sanctioned by MNRE in June 2016, according to which wind projects of 1 GW capacity connected with Central Transmission utility (CTU) were proposed to be set up by Gov. of India

Reasons for their limited spatial spread:

The major challenges in India to develop offshore wind power are high capital cost, the data required for the calculation of wind potential of suitable sites is not available, unavailability of bathymetric data, regulatory and policy framework.

- **Technical barriers:** The wind turbine technology in India is based on European technology. The Indian market lacks local standards in turbine manufacturing and thus, a mismatch in the self-manufactured items and imported components is likely to occur.
- **Financial barriers:** Initial investment on the wind energy projects is quite high and a risk factor is always involved questioning the confirmed profitability of the project.
- **Environmental barriers:** Although wind energy is considered as a clean source of energy, it has some negative impacts on the environment as well. Environmental problems associated with wind farms include-
 - ▶ **Risk to wildlife:** problems faced by wild species include habitat loss, change in practices of migration, nesting, breeding etc.
 - ▶ **Visual problems:** Visual disturbances are caused by the wind farms located nearby the roadways.
 - ▶ **Other problems:** Climatic changes occur over the sites where wind farms are situated. Rotation of blade causes mixing of hot air with vapour and thus, certain undesired meteorological changes occur. Harmful wastes are produced and their improper disposal has detrimental effects on the environment.
- **Socio-economic barriers:** Socio-economic barriers are the major obstacles in the path of wind energy development. Sometimes, a wind project may face public opposition, if a cultural or historically important land is being occupied by a wind farm. As transportation of heavy parts of wind systems is quite a task and requires accessibility to roadways, sometimes developing a wind farm has associated expenditure of transportation facilities as well.
- **Less Lucrative:** The lowest bid price for solar energy is Rs 2.23 per unit, whereas it is approximately Rs 4.50 for wind energy. Investors find the solar energy business to be more profitable.
- **Poor state of DISCOMS,** makes it difficult for states to meet their renewable purchase obligation and due to the lower rate of solar energy it is preferred over Wind energy.
- **Alternative land uses** that might be more valuable than energy production must compete with property that is appropriate for the installation of wind turbines.
- The wind power industry has been stagnant for the last three years. India added about 5.5 GW in 2016–17; in 2017–18, that number dropped to 2 GW.

Way Forward:

- To sustain and expand wind-based generation capacity, policymakers must streamline permit procedures, including land allocation and grid connection projects.
- Developing **underwater power evacuation and sub-sea substations:** The Power Grid Corporation of India Ltd can do the work. This would reduce the risk for offshore wind project developers.

- Bringing Renewable Energy under GST and lowering GST rates to minimum 5% on inputs like Turbine Blades, motor etc.
- A stronger international regulatory framework is needed to address the increased competition for commodities and critical minerals.
- Change in the current Bidding Mechanism: Unlike solar, wind power development cost varies from state to state. There is a need to develop the wind project site, collect data and then carry out biddings.
- Governments must address concerns such as planning barriers and grid connection challenges.

Wind power has become one of the key renewable energy sources for power generation in India and can play an important role in the coming decade to bring a clean and indigenous source of power to the people.

Q8. Explore and evaluate the impact of 'Work from Home' on family relationships.

A work-from-home job is a job that one can perform from home without going to the office/workplace. Many workplaces are adopting work from home(WFH) arrangements , especially since the COVID-19 pandemic.It has both negative and positive impact on families.

Impact of 'Work from Home' on family relationships:

▪ **Negative Impacts**

- ▶ **Not finding the Right Balance:**Difficult to balance both personal and work lives.You switch off home when you leave to work and switch off work when you leave home-only then it becomes easy to strike a healthy balance.
- ▶ **Venting Out Stress:** When working from home, it becomes rather simpler for work related problems to impact marital and family relationships.
- ▶ **Dividing Responsibilities:** During Work From Home,there is a high chance that no one has enough time to do chores.So , all the load of cooking and cleaning come on one person, who will eventually get frustrated and this will lead to bitter moments and arguments.
- ▶ **Sharing Common Space:**When people share their workspace and meeting timings clash,tempers are likely to fly High.
- ▶ **Lead to frustration-**Some people become more irritable while working from home due to background disturbance and lack of required work infrastructure.
- ▶ **Health issues:**extended hours of screen exposure due to full time computer work can lead to fatigue, tiredness, headaches and eye-related symptoms.For individuals who live alone, full time WFH without face-to-face interactions and social support everyday could contribute to mental issues such as social isolation and depression. For others, blurred work-life boundaries can make it

difficult to detach mentally from work which can increase stress and anxiety

- ▶ **Night work:**In some cases, parents might choose to sacrifice their sleep hours and work at nights or early mornings since these are the only quiet hours where they could concentrate on work and avoid frequent interruptions. Ongoing work-family conflict can lead to emotional exhaustion.

■ Positive Impacts

- ▶ **Flexibility and agility** - home working enables more agility and flexibility in working arrangements. With employees no longer tied to an office, they may be better placed and more willing to work flexible hours such as earlier or later in the day or even at weekends. Accordingly you can arrange family responsibilities.
- ▶ **Improved employee retention** - home working can help retain employees as the flexibility of home working can help them meet childcare needs, reduce their commute and enable them to fit their work around their personal life.
- ▶ **Increased productivity** - due to fewer interruptions, which would normally occur in an office environment. By contrast, working from home allows for a quieter environment that can facilitate more focused work. Hence stress free environment in home, create positivity and strengthen their relationship with family members
- ▶ **Increased staff motivation** - by working from home staff will feel more trusted by their employer as the working relationship isn't as closely monitored and employees are allowed a degree of autonomy to get on with their work. Staff will also be happier developing a home working routine that suits them better and this can contribute towards them feeling more motivated to give their best.
- ▶ **Improved staff health and wellbeing** - working from home eliminates the need for a commute to work that can be stressful to your employees. Time savings such as this also enables staff to get extra health benefits such as additional sleep, spending more time with family, exercising or preparing healthy meals.
- ▶ **Convenience** - you may have staff that do a lot of visits to customer locations and are therefore not regularly in the office. Allowing them to base themselves from home may be more convenient and leads to further time and cost savings. That savings can be invested in children's education.
- ▶ **WFH saves daily commuting time** and offers more flexibility for workers to take care of their families
- ▶ **Better work/life balance** - working from home can help employees improve their work-life balance eg staff that would have had to commute will now be able to use that time for themselves giving the basis for a better work-life balance. Staff are also able to fit in household chores around their working

day giving them more free time in the evenings eg loading or unloading the dishwasher or preparing dinner on their lunch break.

- ▶ **Less sickness absences** – staff are more likely to feel happier and more energised working from home and therefore less chance of their immune system being negatively impacted by burnout. Also the fact that employees are working in isolation there is less chance of infections spreading as would be the case within an office environment. While working from home a person spends more time with family. This makes the family bond stronger.
- ▶ **Fulfil their responsibility:** While working from home you can take better care of your sick elderly parents.

During the times of COVID 19 Pandemic, work from home became a new normal which depicts its own effectiveness and certain concerns particularly for the vulnerable sections.

Q9. How is the growth of Tier 2 cities related to the rise of a new middle class with an emphasis on the culture of consumption?

With metropolitan cities reaching a saturation point, Tier 2 cities have emerged as new loci of growth. These Tier-2 cities like Jaipur, Indore, Lucknow-witnessed increase of infrastructure developments, which become main destinations for IT/ITs investment by establishing industrial clusters.

Initiatives like Digital India and Startup India campaigns and Smart Cities Mission have accelerated the Urban transformation in Tier2 cities with depiction of following new dimensions:

Rise of Middle class: A section of India's emerging middle class also resides in less urban areas along the periphery areas of Tier 1 cities.

- Due to the rise of industries in Tier-2 cities, more employment opportunities occurred. Hence more people from Tier 1 cities migrated to Tier 2 cities-which gave rise to the middle class population.
- Hence most examples of rapid sustained economic growth coincide with the development and expansion of the middle class.
- India's favourable demographic trends, which have raised the proportion of the workforce in the total population, have set the stage for a massive expansion of the middle class.

Consumption pattern: It uses both private consumption and savings, filled by the middle class, which has driven growth. Private consumption in India is almost 60% of the gross domestic product (GDP).

- The expanding demand of middle class who are working in Tier2 cities for consumer durables-cars, motorcycles, television, air conditioning, mobiles phones and refrigerators-is already leading to an acceleration in manufacturing in India.
- The middle class is also demanding housing, shopping malls and other infrastructure and now can afford to take an annual vacation -boosting domestic tourism.

- The middle class saves for its retirement, housing, children's education-hence providing the resources for fixed capital formation.
- Initiative like Jan Dhan Aadhar Mobile (JAM) trinity and the launch of Unified Payment System(UPI) for feature phones by the RBI, among others, are a game changer in directing the consumption pattern.

A combination of rising middle class, shift in consumption pattern and technological innovation augur well for Tier 2 cities to emerge as growth of Indian economy

Q10. Given the diversities among tribal communities in India, in which specific contexts should they be considered as a single category?

India has been described as a “melting pot” of races and tribes. India has one of the largest and diverse tribal populations in the world. The tribal population in India according to the 2011 census is 104 million or 8.6% of the total population.

The government has special concern and commitment for the wellbeing of the Tribes. Hence government made a group of Scheduled Tribes and PVTGs on the basis of their social and economic backwards and relative isolation, where they are considered as a single category.

Scheduled Tribes

- **Constitutional status:**The term ‘Scheduled Tribes’ first appeared in the Constitution of India. Article 366 (25) defined scheduled tribes as “such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution”. Article 342, which is reproduced below, prescribes procedure to be followed in the matter of specification of scheduled tribes.
- **Characteristics:**The essential characteristics of these communities are:-
 - ▶ Primitive Traits
 - ▶ Geographical isolation
 - ▶ Distinct culture
 - ▶ Shy of contact with community at large
 - ▶ Economically backwards

As in the case of the SCs, the Plan objective of empowering the tribals is being achieved through a three-pronged strategy of social empowerment, economic empowerment and social justice

PVTGs

- **Constitutional Status:**Among the tribal groups, several have adapted to modern life but there are tribal groups who are more vulnerable. The Dhebar Commission (1973) created a separate category “Primitive Tribal Groups (PTGs)” which was renamed in 2006 as “Particularly Vulnerable Tribal Groups (PVTGs)”.
- **About PVTGs:** (Particularly Vulnerable Tribal Groups) are more vulnerable among the tribal groups. Due to this factor, more developed and assertive tribal groups

take a major chunk of the tribal development funds, because of which PVTGs need more funds directed for their development.

- ▶ In 1975, the Indian Government declared 52 tribal groups as PVTGs
- ▶ In 1993, 23 groups were added to the list.
- ▶ Hence, there are 75 PVTGs out of 705 Scheduled Tribes
- ▶ Odisha has the highest number of PVTGs. In 2020, the Odisha government further identified 888 villages/hamlets inhabited by PVTGs
- ▶ The PVTGs are spread over 18 states and one Union Territory (UT), in the country (2011 census).
- **Characteristics of PVTGs:**
 - ▶ Population – stagnant/declining
 - ▶ Technology – pre-agricultural
 - ▶ Literacy Level – extremely low
 - ▶ Economy – Subsistence level

These tribal communities depicts pristine nature of living; thereby constitutes our rich cultural heritage. The approach followed by authorities in this respect is the integration of tribal people to the nation instead of assimilation.

Q11. The political and administrative reorganization of states and territories has been a continuous ongoing process since the mid-nineteenth century. Discuss with examples.

In the **mid-nineteenth century**, **Europeans** who came to India as traders started establishing their **political hegemony** in the country. Amongst them, the British became successful and since then till today the political and administrative reorganization of states and territories **underwent significant changes** resulting in the **readjustment of not only political boundaries but administrative apparatus in the country.**

The political and administrative reorganization of states and territories has been a continuous ongoing process:

Annexation of territories: Britishers started carving their **all India territorial empire**. In this imperialistic tendencies, number of political arrangements were made.

- **Lord Dalhousie** devised the **Doctrine of Lapse**, via which number of princely states were annexed on the grounds of non-production of an heir. For example, **Satara(1848), Jaitpur and Sambalpur(1849), Baghat(1850), Udaipur(1852), Jhansi(1853), Nagpur(1854).**
- **Annexation of Sind (1843), Punjab conquest(1849), Berar(1853), Oudh(1856)** on grounds of misgovernance, etc in order to satisfy their quest for territories. This altered the politico-administrative arrangements of the country.

- In this manner, **British Indian Provinces** were created. There were **11 British Indian Provinces when 1937 elections were held.**

Indian Princely states though maintained lesser autonomy and fell under the control of Britishers depicted political scenarios in ways:

- Under the **crown policy of Subordinate union (1857-1935)** : The queen's proclamation announced the abandonment of annexation policy. The fiction of the Indian princes standing on a status of equality with the crown as sovereign independent states finally came to an end. Canning referred to the rulers as "**vassals**" and to the crown as "the unquestioned ruler and paramount power in India". **Chamber of Princes** also established as an advisory and consultative body.
- **Policy of equal federation, 1935-47:** Indian provinces were invited at the Round table conferences during 1930-32. In the federal structure proposed under the government of India act, 1935, the states were allotted 125 out of 375 seats in the federal assembly and 104 out of 260 seats in the council of states.

Integration of Princely states with the union:

- At the time of independence, there were **more than 500 princely states in India** that were not a part of the British Empire officially. **The Indian Independence Act of 1947** gave princely states the choice to accede to either India or Pakistan or remain independent.
- **Sardar Vallabh Bhai Patel** was given the task of integration of princely states who used the tactics of **persuasion and force diligently.**

The new Constitution of India, which came into force on 26 January 1950, made India a sovereign democratic republic. The new republic was also declared to be a "**Union of States**". The constitution of 1950 distinguished between three main types of states and a class of territories:

- **Part A states** – which were the former governors' provinces of British India, were ruled by a governor appointed by the president and an elected state legislature. The nine Part A states were Assam, Bihar, Bombay, Madhya Pradesh (formerly Central Provinces and Berar), Madras, Orissa, Punjab (formerly East Punjab), Uttar Pradesh (formerly the United Provinces), and West Bengal.
- **Part B states** – which were former princely states or unions of princely states, governed by a rajpramukh, who was usually the ruler of a constituent state, and an elected legislature. The eight Part B states were Hyderabad, Jammu and Kashmir, Madhya Bharat, Mysore, Patiala and East Punjab States Union (PEPSU), Rajasthan, Saurashtra, and Travancore-Cochin.
- **Part C states** – included both the former chief commissioners' provinces and some princely states, and each was governed by a chief commissioner appointed by the President of India. The states were Ajmer, Bhopal, Bilaspur, Coorg, Delhi, Himachal Pradesh, Cutch, Manipur, Tripura, and Vindhya Pradesh.
- The sole **Part D** territory – was the Andaman and Nicobar Islands, which was administered by a lieutenant governor appointed by the central government.

The **States Reorganisation Act, 1956 reformed the boundaries of Indian states and territories, systematizing them on language base.**

The Government divided the country into 14 states and 6 union territories under the State Reorganization Act that was passed in November 1956.

States:

1. **Andhra Pradesh:** formed by the merger of Andhra State (1953–56) with the Telugu-speaking areas of Hyderabad State (1948–56).
2. **Assam**
3. **Bihar:** reduced slightly by the transfer of minor territories to West Bengal
4. **Bombay State:** the state was enlarged by the addition of Saurashtra State and Kutch State, the Marathi-speaking districts of Berar Division and Nagpur Division of Central Province and Berar and Marathwada region of Hyderabad State. The southernmost districts of the Bombay Presidency were transferred to Mysore State.
5. **Jammu and Kashmir:** No change of boundary in 1956.
6. **Kerala:** formed by the merger of Travancore-Cochin state with the Malabar district and Kasaragod taluk of South Canara district of the Madras Presidency. The Laccadive and Minicoy Islands were separated from Malabar District to form a new Union Territory namely Laccadive, Amindivi, and Minicoy Islands.
7. **Madhya Pradesh:** Madhya Bharat, Vindhya Pradesh, and Bhopal State were merged into Madhya Pradesh; the Marathi-speaking districts of Nagpur Division were transferred to Bombay State.
8. **Madras State:** Malabar District was transferred to the new state of Kerala, and a new union territory, Laccadive, Minicoy and Amindivi Islands, was created
9. **Mysore State:** enlarged by the addition of Coorg State and the Kannada speaking districts from western Madras Presidency, southern Bombay Presidency and western Hyderabad State.
10. **Orissa:** No change of boundary in 1956.
11. **Punjab:** enlarged by addition of the Patiala and East Punjab States Union.
12. **Rajasthan:** enlarged by the addition of Ajmer state and parts of Bombay and Madhya Bharat states.
13. **Uttar Pradesh:** No change of boundary in 1956.
14. **West Bengal:** enlarged by addition of Purulia district, previously part of Bihar.

Union territories

The Part C and Part D territories that weren't merged into other states, were converted into Union Territories:

- Andaman and Nicobar Islands



- Delhi
- Manipur
- Tripura
- Himachal Pradesh
- Laccadive, Minicoy & Amindivi Islands

Further reorganisation of States and Union Territories:

- The state of Bombay was divided into two, giving rise to the conditions of **Gujarat and Maharashtra**. This was the result of continuous violence and agitation in 1960.
- In order to provide a separate state for Nagas, the **state of Nagaland** was introduced in 1963; however, before marking it as a full-fledged state, it was under the Assam government in 1961.
- After the acquisition imposed by **Mahe, Chandernagore, Karaikal, and Aman**, the territories of **Daman and Diu, and Goa** were either marked as union territories or given the status of neighbouring states.
- Lately, most of the Punjabi-speaking community has shifted to **Haryana**. **Chandigarh** served as the Union Territory and is known as the joint capital of Haryana and Punjab.
- In 1969, Assam was divided into two states, popularly known as the **state of Meghalaya**. Initially, the state was counted within Assam; however, it was raised as a full-fledged state over the years.

- After converting **Manipur and Tripura** into states, the number of Indian states rose from 19 to 21.
- Earlier, **Sikkim** was established as a state of the Indian Union. Although it was known as an association state, it turned into a full-fledged state after a few years.
- In 1986, **Mizoram** was introduced as the 23rd state of India after giving it the status of a full-fledged state.
- In 1987, another Union Territory of India, **Arunachal Pradesh**, was known to be the 24th state of the Indian Union.
- The **state of Goa** was given the status of a separate entity after separating it from Daman and Diu, the Union territory of Goa. Three new states **Jharkhand, Uttaranchal, and Chhattisgarh**, were established in November 2000.
- After creating the **two Union territories of Ladakh and Jammu and Kashmir**, the new political map came into existence which led to reorganisation of Jammu and Kashmir.

India's federal structure is a one-of-a-kind example in which the state has been constantly fiddling with its inner boundaries in order to maintain its unity in diversity even amidst the growing demands of creation of statehoods in form of **Bodoland, Gorkhaland**, etc.

Q12. Discuss the contribution of Gupta period and Chola period to Indian heritage and culture.

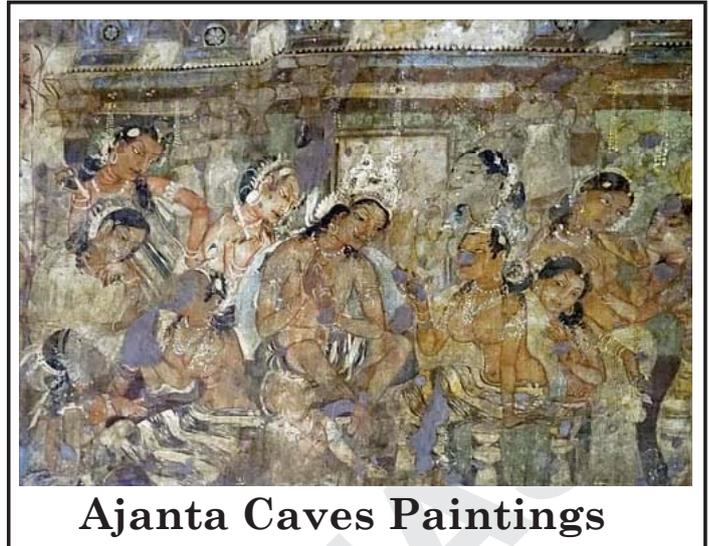
The Gupta and Chola rulers were not only mighty conquerors and great administrators, but also great patrons of art; during their reign. Temple architecture of Nagara style Initiated during Gupta era and the most magnificent temples and exquisite bronze icons were created in South India by the Cholas. Gupta and Chola period had the significant contribution

Contributions of Gupta and Cholas period:

- **Temples:** Most prominent architectural marvels of **Gupta and chola period** are temples. Most of the temples built in the Gupta era were carved with representation of Gods (mainly avatara of Vishnu and Lingams) and Goddesses. The Shikhara was not much prominent in the early Gupta temples but was prominent in later Gupta era. There was a single entrance or mandapa



or Porch. **Airavatesvara Temple at Darasuram, the Brihadisvara Temple at Gangaikondacholisvaram and the Brihadisvara Temple at Thanjavur.** These temples of Southern India represent an outstanding creative achievement in the architectural conception of the pure form of the Dravida type of temple which are now known as the “Great Living Chola Temples”



- **Sculptures:** The Chola period is also remarkable for its sculptures and bronzes. Among the existing specimens in the various museums of the world and in the temples of South India, may be seen many fine figures of Siva in various forms accompanied by his consort Parvati and the other gods, demigods and goddesses of the Saivaite pantheon, Vishnu and his consort Lakshmi, the Nayanmars, other Saiva saints and many more.
- Though conforming generally to the iconographic conventions established by long tradition, the sculptor could also exercise his imagination within the boundaries of the canonical Hindu iconography and worked in greater freedom during the eleventh and the twelfth centuries. As a result, the sculptures and bronzes show classic grace, grandeur and taste. The best example of this can be seen in the form of Nataraja, the Divine Dancer. Chola period bronzes were created using the lost wax technique. Three main schools of Gupta sculpture are often recognised, based in Mathura, Varanasi/Sarnath and to a lesser extent Nalanda. The distinctively different stones used for sculptures exported from the main centres described below aids identification greatly.
- **Rock cut architecture:** The most famous remaining monuments in a broadly Gupta style, the caves at Ajanta, Elephanta, and Ellora (respectively Buddhist, Hindu, and mixed including Jain) were in fact produced under other dynasties in Central India, and in the case of Ellora after the Gupta period, but primarily reflect the monumentality and balance of Guptan style.
- **Literature:** Gupta period was considered as the **golden phase of Indian literature.** The wonderful literature was produced in **prose, poetry, drama, and grammar.** Kalidas, Bhasa, Sudraka, Kalidas, and Bhavabhuti written some identical literature. Kumaragupta I (455 CE) is said to have founded Nalanda reflect the proficiency in education of that period. .
- **Religion:** The Guptas were traditionally a Hindu dynasty. They were orthodox Hindus, and allowed followers of Buddhism and Jainism to practice their religions. Sanchi remained an important centre of Buddhism. Some later rulers however seem to have especially promoted Buddhism. Narasimhagupta Baladitya. In general, Cholas were the adherents of **Saivism and Hinduism.** Even the early Cholas followed a version of the classical Hindu faith.

- **Paintings:** Painting was evidently a major art in Gupta times, and the varied paintings of the Ajanta Caves, which are much the best survivals (almost the only ones), show a very mature style and technique, clearly the result of a well-developed tradition. During the Nayak period, the Chola paintings were painted over. The **Chola frescos** lying underneath have an ardent spirit of saivism expressed in them. They probably synchronised with the completion of the temple by Rajaraja Chola.
- **Music and Dance:** The Chola kings, especially Rajaraja Chola I, were great connoisseurs of music and dance. There were performances of ladies dancing to the music of **Veena, Flute, and Drums like Udukai and MaththaLam**. The reference to Music in Gupta period comes from the works of **Kalidasa and Vatsyayana** among others.
- **Numismatics:** The gold coinage of the Guptas, with its many types and infinite varieties and its inscriptions in Sanskrit, are regarded as the **finest coins in a purely Indian style**. The Gupta Empire produced large numbers of gold coins depicting the Gupta kings performing various rituals for eg. Ashwamedha coins of Samudra Gupta, as well as silver coins clearly influenced by those of the earlier Western Satraps by Chandragupta II.
- **Pillars and inscriptions:** Pillars with inscriptions were erected, recording the main achievements of Gupta rulers. Iron pillar of Chandra Gupta II is a important specimen of this period. The Allahabad pillar inscription composed by Harisen, Mandor inscription composed by Vatsabhata; and Junagarh rock inscription, Mehrauli Pillar inscription, Aihole inscription composed by Ravikirti are some significant sources and contributions.
- **Science:** **Vararuchi, Baudhayana, Ishwar Krishna and Bhartrihari** contributed to both Sanskrit and Prakrit linguistics, philosophy and science. Varahamihira wrote Brihatsamhita and also contributed to the fields of astronomy and astrology. Genius mathematician and astronomer **Aryabhata wrote Surya Siddhanta** which covered several aspects of geometry, trigonometry and cosmology. Shanku devoted himself to creating texts about Geography. **Dhanvantri's** discoveries helped the Indian medicinal system of Ayurveda become more refined and efficient. Doctors were skilled in surgical practices and inoculation against contagious diseases was performed. In the field of medicine the great medical trio of ancient India; **Vagbhata, Charaka and Susruta** belonged to this period.
- **Cholas local administration:** Uttaramerur inscriptions throws light on the administration of the Cholas. The Chola Empire was divided into three major administrative units called Central Government, Provincial government and local government.

Overseas colonies were established during Chola period **India funds restoration of Myanmar pagodas** . During the reign of Rajaraja Chola I and his successors invaded Sri Lanka, the Maldives and parts of Southeast Asia like Malaysia, Indonesia and Southern Thailand. Art and architecture have spread to South asian countries are glorious specimen of Indian cultural part.

Q13. Discuss the significance of the lion and bull figures in Indian Mythology, art and architecture.

Animal figures in Indian Mythology, art and architecture forms an essential part of religious practices. The connotations of these cultural aspects have distinguished meanings and help us to comprehend religions in a better way.

Significance of lion and Bull in Indian Mythology:

- Singh is an ancient Indian vedic name meaning “lion”, dating more than 2,000 years ago to ancient India. It was originally only used by Rajputs, a Hindu Kshatriya or military caste in India.
- The Sikhs also adopted the name “Singh” due to the wishes of Guru Gobind Singh. The appellation of the name Singh was used by the Rajputs before being adopted by the Sikhs in 1699. Therefore, all “Singh”s in Indian history before 1699 are Hindu and mainly Rajputs.
- The lion also features as the carrier or the vehicle of Durga, the Hindu goddess of war, worshipped in and around the Bengal region.
- Narasimha (“man-lion”), also spelt Narasingh, Narasinga, is described as **an incarnation (Avatara) of Vishnu in the Puranic texts of Hinduism**. It is worshipped as “**Lion God**” and considered sacred by all Hindus in India.
- **Nandi**, bull *vahana* (“mount”) of the Hindu god Shiva, identified as the god’s vehicle since the Kushan dynasty (c. 1st century CE).
- The **sacred bull Nandi or Nandin** not only vehicle but the gatekeeper of Hindu deity Lord Shiva, the creator, which is why it is enshrined in the form of statue at Hindu Shiv temples.



Significance of Lion and Bull in Art And Architecture:

- Lion Capital of Ashoka: The **four majestic lions**, roaring and facing the four cardinal directions. They represent **power, courage, pride, confidence**. The Mauryan symbolism of the lions indicate “**the power of a universal emperor (chakravarti) who dedicated all his resources to the victory of dharma**”. In adopting this symbol in National Emblem, the modern nation of India pledged to **equality and social justice** in all spheres of life.
- The cultural significance of **stucco pair lion motif in Shiva temples of Bengal**. One of them is **Jora Shiva Temple, Muroli, Jessore district**. The pair Lion used as stucco Shiva is the **braver** among the all God and Goddesses in Hindu religion during the early period and still. Thus we have found many Shiva temple build in Bengal.

- The sculptures of the bull, with a lion seat in front behind the Arjuna- Ratha and the lion in front of the Draupadi- Ratha in Mahabalipuram are carved from a separate low outcrop on the East and a separate tall free- standing boulder on the West respectively. These sculptures of **Lion, and Bull** were probably associated with Durga, and Shiva.
- The majestic bull Harappan seal with wide curving horns is perhaps the most impressive motif found on the Indus seals. The zebu bull may symbolize the leader of the herd, whose **strength and virility** protects the herd and ensures the procreation of the species or it stands for a **sacrificial animal**. When carved in stone, the zebu bull probably represents the **most powerful clan or top officials** of Mohenjo-daro and Harappa.
- As a symbol of Shiva, the Nandi represents **power, virility, joy, and delight, as well as a controlled potential for destructiveness**. When carved as a free-standing figure, the Nandi is always shown in a resting position that emphasizes the calmer aspect of its power.
- **South Indian Coinage:** The symbols and motifs on South Indian coin issues were confined to dynastic crests bull (Pallava), lion (Hoysala) etc.



The denotations of Lion and Bull in India's culture have a certain significance; thereby helping in enriching our rich heritage.

Q14. What are the forces that influence ocean currents? Describe their role in the fishing industry of the world.

Ocean current, a stream made up of horizontal and vertical components of the circulation system of ocean waters that is produced by gravity, wind friction, and water density variation in different parts of the ocean. Ocean currents are similar to winds in the atmosphere in that they transfer significant amounts of heat from Earth's equatorial areas to the poles and thus play important roles in determining the climates of coastal regions. In addition, ocean currents and atmospheric circulation influence one another.

They represent a regular volume of water in a definite path and direction. **Ocean currents are influenced by two types of forces namely:**

- primary forces that initiate the movement of water;
- secondary forces that influence the currents to flow.

The primary forces that influence the currents are:

- **Heating by solar energy**-causes the water to expand. That is why, near the equator the ocean water is about 8 cm higher in level than in the middle latitudes.
- **Wind**- Wind blowing on the surface of the ocean pushes the water to move. Friction between the wind and the water surface affects the movement of the water body in its course. Winds are **responsible for both magnitude and direction** [Coriolis force also affects direction] of the ocean currents. Example: **Monsoon winds** are responsible for the seasonal reversal of ocean currents in the Indian ocean.
- **Gravity**- Gravity tends to pull the water down to pile and create gradient variation.
- **Coriolis force**- The Coriolis force intervenes and **causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere**. These large accumulations of water and the flow around them are called Gyres. These produce large circular currents in all the ocean basins. One such circular current is the **Sargasso Sea**.

The secondary forces that influence the currents are:

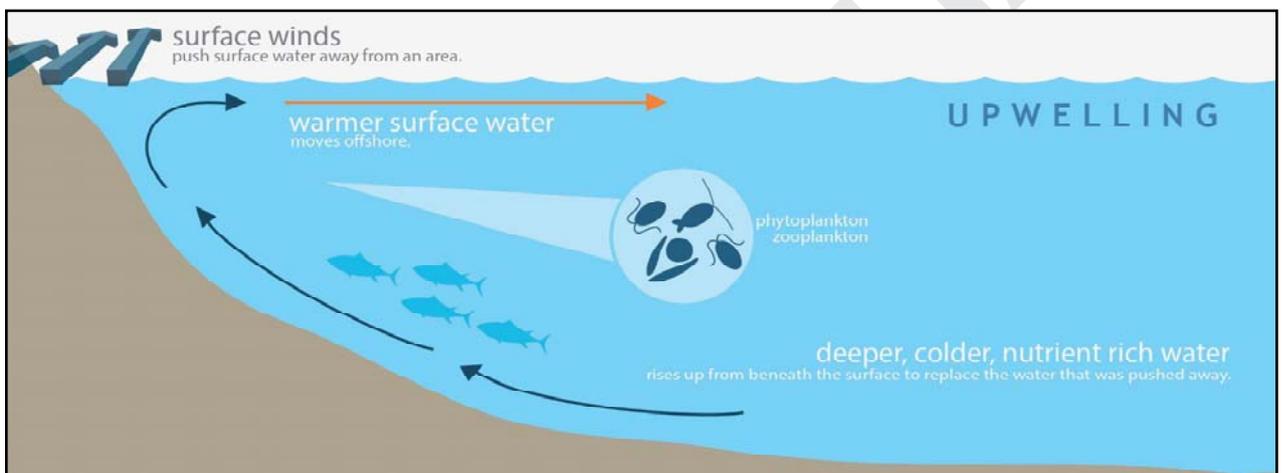
- **Temperature difference and Salinity difference**- Differences in water density affect vertical mobility of ocean currents. Water with high salinity is denser than water with low salinity and in the same way cold water is denser than warm water. Denser water tends to sink, while relatively lighter water tends to rise. Cold-water ocean currents occur when the cold water at the poles sinks and slowly moves towards the equator. Warm-water currents travel out from the equator along the surface, flowing towards the poles to replace the sinking cold water

Types of Ocean Currents:

- **Based on depth-**
 - ▶ The ocean currents may be classified based on their depth as **surface currents and deep water currents**.
- **Based on temperature-**
 - ▶ Ocean currents are classified based on temperature: as **cold currents and warm currents**.
 - ▶ **Cold currents bring cold water into warm water areas** [from high latitudes to low latitudes]. These currents are usually found on the west coast of the continents (currents flow in clockwise direction in northern hemisphere and in anti-clockwise direction in southern hemisphere) in the low and middle latitudes (true in both hemispheres) and on the east coast in the higher latitudes in the Northern Hemisphere;
 - ▶ **Warm currents bring warm water into cold water areas** [low to high latitudes] and are usually observed on the east coast of continents in the low and middle latitudes (true in both hemispheres). In the northern hemisphere they are found on the west coasts of continents in high latitudes.

The role of Ocean Currents in the fishing industry of the world:

- Winds blowing across the ocean surface often push water away from an area. When this occurs, water rises up from beneath the surface to replace the diverging surface water. This process is known as upwelling.
- Subsurface water that rises to the surface as a result of upwelling is typically colder, rich in nutrients, and biologically productive.
- The most effective, reliable, and productive areas for industrial fishing are located where the cold ocean currents (carrying oxygen) meet warm ocean currents rich in nutrients. Mixing cold and warm ocean currents are the richest fishing grounds in the world.
- **Example: Grand Banks around Newfoundland, Canada and North-Eastern Coast of Japan.** In East Asia, the warm Kuroshio and the cold Oyashio current provides ideal conditions for rich fishing grounds in Japan. However, navigation becomes difficult due to thick fog.



- The mixing of warm and cold currents help to replenish the oxygen and favor the growth of **planktons**, the primary food for fish population. The best fishing grounds of the world exist mainly in these mixing zones.

Why are cold and warm current mixing zones good fishing grounds?

- Almost all biomass in the ocean is derived from the phytoplankton and to a lesser extent the benthic algae (*found on the bottom of a sea or lake*).
- However, there is a fundamental problem phytoplankton in the open ocean have to face. They need both sunlight and nutrients (such as nitrate and phosphate) to be able to photosynthesize.
- Sunlight is only available in the uppermost layers.
- During photosynthesis, the nutrients are quickly used up by phytoplankton so they are not available for long periods in the upper layers under normal circumstances.
- To escape this problem the seawater needs to be **mixed regularly** to bring the nutrient rich deep waters up to the sunlight zone where the phytoplankton can grow.

- Furthermore, in surroundings where atmospheric temperatures are often colder than oceanic temperatures, the top layers of the ocean are cooled by the atmosphere.
- This increases the density of the surface waters and causes them to sink and therefore causes mixing [nutrient deficient water sinks and nutrient rich water is upwelled].

Our planet has an interrelated climate system, where the ocean, atmosphere, and the land all interact with each other, influencing global climate. Ocean currents do indeed play a significant role in ushering in the necessary weather changes, which at the same time, dictate the ways in which physiography, livelihoods and coastal economy of the world are impacted.

Q15. Describing the distribution of rubber producing countries, indicate the major environmental issues faced by them.

According to the **All India Rubber Industries Association (AIRIA)** the global market for rubber products which is estimated at around **\$212 billion today** is also expected to grow by 2025. Rubber products have a wide range of utilization, from automobiles to medical devices. India's captive consumption of natural rubber is 11 lakh tonnes per year, of which 4 lakh tonnes is imported. Similarly, of the 7 lakh tonnes of synthetic rubber consumed in the country annually, 4 lakh tonnes is imported.

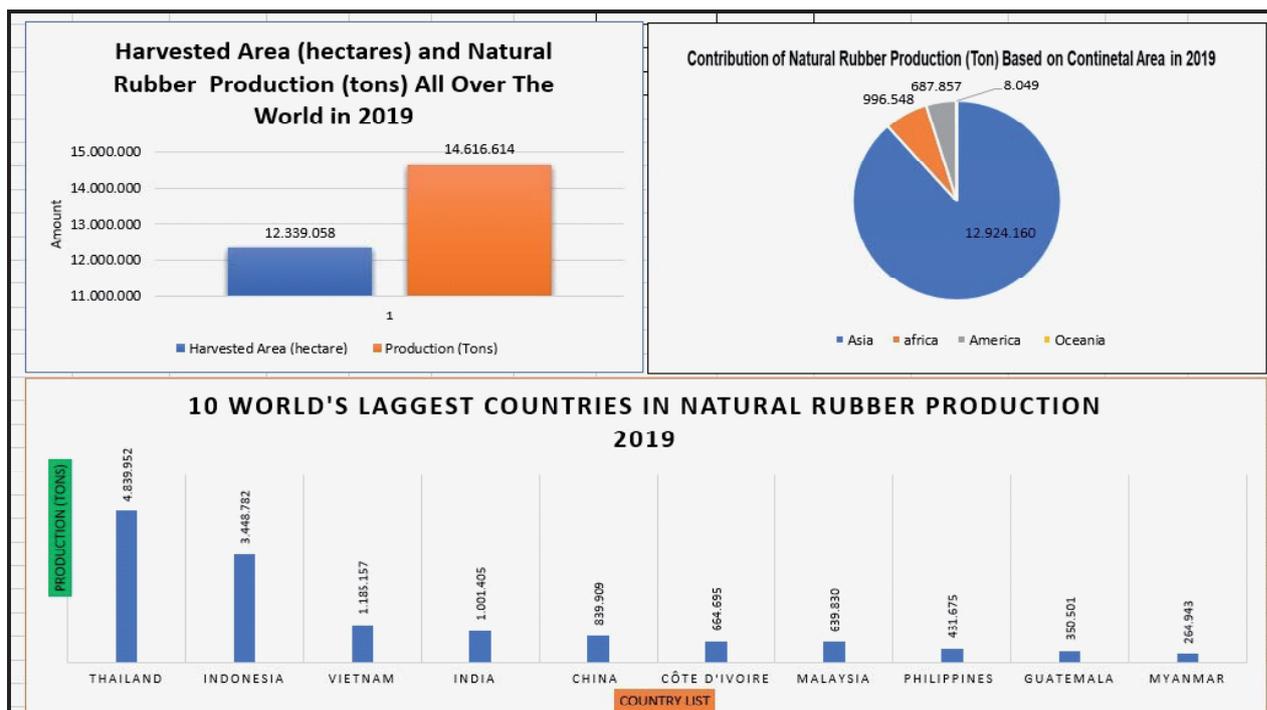
Cultivation Of Rubber Trees

Rubber trees have an **economic life period of around 32 years in plantations**. The trees demand well-drained and well-weathered soils. Lateritic type, alluvial, sedimentary types, and non lateritic red soils are best for the growth of these trees. An evenly distributed rainfall with at least **100 rainy days a year** and a temperature range of about **20 to 34 °C** are optimum conditions for the growth of the Hevea rubber tree. A humidity of around 80%, 2000 hours of sunshine, and absence of strong winds are also necessary for best results.

Countries with this ideal equatorial climate that produce natural rubber are found primarily in South America, Africa and Southeast Asia.

Distribution of rubber producing countries:

- Rubber is a crop which can be usually found in several countries in the tropics. It originated from the Amazon Basin in the Americas, a few countries in West Africa, and Southeast Asia as well as the Indian sub-continent.
- Due to the high global rubber demand, the area of rubber plantations worldwide gradually increased from 3 million ha in 1961 to 12 million ha in 2019. From the production side, several Asian countries such as **Thailand, Indonesia, Viet Nam, and India are the major natural rubber producers** with the 73% cumulative share of the global production as well as the highest net production value in recent years.



- ▶ **Thailand:** Thailand now ranks first in global rubber output and produced 3.09 million metric tons of rubber – 31 per cent of global total.
- ▶ **Indonesia:** Most of the rubber plantations are confined to Java, Sumatra and Borneo islands. Indonesia is now able to export her output.
- ▶ **Malaysia:** There was a time when Malaysia was the largest single producer of rubber in the world. But now it ranks third in global production of rubber
- ▶ **India:** India is in the fourth position in global production
- ▶ **Vietnam:** Vietnam ranks fifth among rubber-producing countries of the world.
- Therefore, in the past few years, policy has been changed to promote the industrial export activity and successfully introduced natural rubber as one of the largest agricultural export commodities besides oil palm, coffee, and cocoa.
- Thailand, Indonesia, and Cote d'Ivoire are the largest natural rubber exporting countries with a share of 31.5%, 29.8%, and 8.4%, respectively. Whereas, developed countries such as the United States, China, and Germany are the largest natural rubber importing countries in the world which processed the natural rubber products to various consumer's goods.

Status of Rubber Production in India:

- Natural rubber is a major raw material for the automobile industry (and is used to make everything) from tyres to engine parts. Natural rubber is imported from countries like Malaysia, Indonesia, Vietnam etc.
- According to FAOStat 2019, India is the **fourth largest producer and consumer of Rubber** in the World.

- India's rubber consumption had increased 22% in 2021, and the use of both natural and synthetic rubber has increased. The global demand for rubber too had gone up in 2021, registering a growth of 11%.
- **Kerala** is the largest producer of natural rubber in India.
- **Tripura**, which is the second largest NR producing state in the country after Kerala, is currently cultivating NR on 89,264 hectare of land and producing 93,371 tonnes of rubber annually.
- The leading countries importing natural rubber from India were Germany, Brazil, the United States and Italy.

Major environmental issues faced by rubber producing countries:

Natural rubber has become one of the largest export commodities in these countries. It creates job opportunities for the smallholders as well as contributes to the national economy growth. However, a large-scale of natural rubber plantation results in environmental issues included:

- Synthetic rubber is derived from petroleum. As well as being non-renewable, the fossil fuel industry also brings significant environmental impacts including deforestation and greenhouse gas emissions.
- Generally the **gasses released from the rubber industry** consist of chemical particulates such as CO₂, CO, sulfates, NO_x, lead and other carcinogenic compounds which not only degrade the environment, but are also cause of numerous health problems in humans, such as skin cancer, irritation and damage to eyes and, bronchitis and lung cancer.
- Rubber industry is one of the major **water polluting industries**. The effluents discharged by such industries consist of 30-40% of rubber and 60-70% of serum.
- Water contaminated by such particulates cannot be used for any other domestic purposes. It also has the potential to pollute the groundwater. Wastewater discharged from latex rubber processing usually contains high levels of BOD and COD. These characteristics vary from country to country due to differences in raw latex and applied technique in the process.
- **High concentration of ammonia and nitrogen compounds:** The high concentration of ammonia presents in the latex concentrate effluent posed another serious threat to the environment. Most of the concentrated latex factories in the South of Thailand discharge treated wastewater that contains high levels of nitrogen & ammonia to a nearby river or canals leading to a water pollution problem.
- The **nitrous oxide (N₂O) emission** which is obtained from the use of synthetic fertilizer during the cultivation process.
- Due to water pollution from the rubber processing industries, **habitat and stream hydrology are badly affected in many countries**. It resulted in dramatic degenerations in fish, shrimp, turtles, shellfish and edible stream bank vegetation. It negatively affects food safety and the livelihood of the people.

- Rubber plantation **negatively affects biodiversity** which leads to reduced total carbon biomass and impacting climate change.

Considering the negative effects further alteration of forests into rubber plantations needed to be controlled. Intercropping between rubber with crops such as banana, coffee and agar to support livelihood and to minimize environmental stress. Government supported research should be generating new rubber varieties which are suitable for the climate and land of the country. The threats to biodiversity and carbon stocks can be mitigated by the substantial increase in natural reserve areas. .

Q16. Mention the significance of straits and isthmus in international trade.

An **isthmus** is a narrow strip of land that connects two larger landmasses and separates two bodies of water. Isthmus have been strategic locations for centuries. They are natural sites for ports and canals linking terrestrial and aquatic trade routes. Isthmuses are also key sites for communications and cultural exchange, as well as military outposts.

Example: *Isthmus of Panama, Isthmus of Suez*

A **strait** is a narrow body of water that connects two larger bodies of water. It may be formed by a fracture in an isthmus.

Example: *Strait of Hormuz, Strait of Malacca*

Ocean shipping lanes serve as the life and blood of international trade. **According to the IMO, about 90% of the world trade depends on the transportation of goods by sea.**

Importance of control over Isthmuses and Straits:

- Control over straits and Isthmuses by a country helps it to establish good control over the connected sea and shipping lanes of the region.
- It helps in exploring the wealth that lies beneath the sea in the form of minerals, oil and gas.
- Countries with control over straits impose heavy charges on foreign ships passing through the straits.
- It also helps to exploit the marine commercial activities like aquaculture
- Isthmuses are key sites for communications and cultural exchange, as well as military outposts.

Shipping lanes, both natural and man-made, are vital contributors to the freight industry, but some are busier and more important than others because of the trade routes they facilitate. Some of the busiest shipping routes across the world include:

- **Asia - Europe:**
 - ▶ The **Suez Canal**, one of the world's most popular trade routes, is also the fastest and the most direct trade link between Asia and Europe, with energy, commodities, componentry, and consumer goods being the chief transportation items.

- ▶ It represents **12% of global trade and 30% of global container traffic**.
- ▶ The Suez Canal is also a key regional shipping hub for oil and hydrocarbons from Asia and the Middle East to Europe, responsible for transporting about 7-8% of the world's oil and 8% of liquified natural gas.
- **Asia-US:**
 - ▶ The **Panama Canal** facilitates major trade between Asia and the U.S, Asia - East Coast U.S being its busiest vessel trade route.
 - ▶ It Serves as a straight connecting point for vessels travelling between the Atlantic and the Pacific Ocean that would otherwise have to sail around the Cape Horn and South America's southern tip.
- **Intra-Asia:**
 - ▶ The **Strait of Malacca**, forming the main and the largest passageway **between the Indian Ocean and the Pacific Ocean**, is a major shipping lane into and out of Asia.
 - ▶ It connects three of Asia's biggest economies: India, China, and Japan to each other and other important Asian economies such as Thailand, Indonesia, Malaysia, Philippines, Singapore, Vietnam, Taiwan, and South Korea, making it an important arterial shipping lane in the world.
 - ▶ It shoulders one-quarter of the world's sea trade.
 - ▶ Nearly **61% or one-third of global petroleum production** moving on maritime routes travel through the Strait of Malacca, making it the second-largest oil trade checkpoint in the world.
- **Strait of Hormuz-**
 - ▶ It is a **stretch of water between the Persian Gulf and the Gulf of Oman** that provides sea passage from the Persian Gulf to the open ocean in the region.
 - ▶ About **20 percent of the world's petroleum** traded via sea route is transported through this strait.
 - ▶ This makes the strait of great economic and strategic importance to Middle East countries.
 - ▶ Control over the *Strait of Hormuz* by countries has remained a controversial subject. However, currently, Iran and Oman share territorial rights over the same.

Straits and isthmus have played an important role in human civilization since millennia. Empires have fallen whenever they failed to retain strategic control of the straits near their domain. Rich states have risen contiguous to these water bodies by taxing the traffic passing through them. They play an important role in economic and military matters to this day.

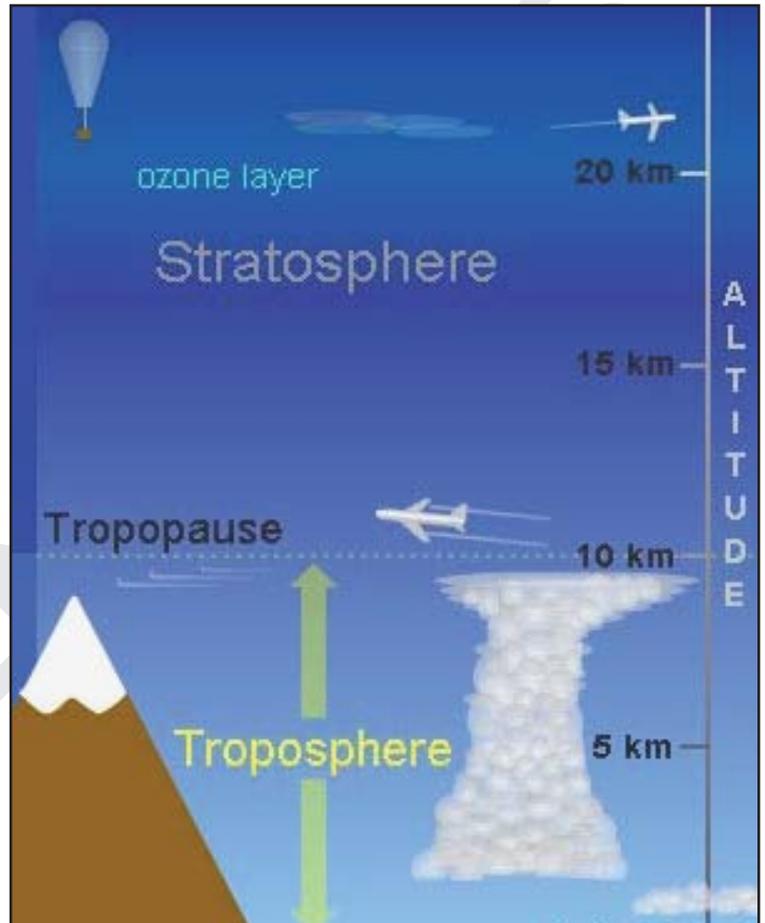
Q17. Troposphere is a very significant atmospheric layer that determines weather processes. How?

The troposphere is the region within the atmosphere between the earth's surface and the tropopause that is centered at an altitude of about 8-15 kilometers. This region is characterized by **decreasing temperature with increasing altitude**.

Main body:

▪ **Importance of troposphere to life on earth:**

- ▶ The troposphere is the **lowest layer of atmosphere** of the Earth and the layers to which changes can greatly influence the floral and faunal environments.
- ▶ 'Tropo' means Change, as almost **all the weather changes occur in this layer** due to the formation of clouds from the water vapours.
- ▶ Tropopause: The maximum height where the temperature stops decreasing. The temperature here can go as low as -58 degree Celsius.
- ▶ The troposphere **contains about 85% of the atmosphere's total mass**. Tropospheric processes, such as the water or hydrologic cycle (the formation of clouds and rain) and the greenhouse effect, have a great influence on meteorology and the climate.
- ▶ The chemical makeup of the air determines its quality. Certain components, even if present in trace amounts, can be harmful to human health and the environment.
- ▶ The troposphere is protected from the hard ultraviolet radiation of the Sun by the higher layers of the atmosphere. Because of this protection, many molecules are more stable in the troposphere than elsewhere in the atmosphere. This protection makes life possible on Earth.



- **How does the troposphere determine weather processes ?**
 - ▶ The atmosphere flows like a fluid with winds generated by temperature differences caused by a variety of factors, including incident and reflected sunlight.
 - ▶ These winds collect moisture from the oceans and, when clouds form in regions of appropriate temperature and air pressure, drop the moisture back to the ground.
 - ▶ All this activity happens in the troposphere, the lowest level of the atmosphere. It's the region with the highest concentration of atmospheric gases.
 - ▶ The lower levels of the troposphere are usually strongly influenced by Earth's surface.
 - ▶ This sublayer, known as the **planetary boundary layer**, is that region of the atmosphere in which the surface influences temperature, moisture, and wind velocity through the turbulent transfer of mass.
 - ▶ As a result of surface friction, winds in the **planetary boundary layer are usually weaker** than above and **tend to blow toward areas of low pressure**. For this reason, the planetary boundary layer has also been called an **Ekman layer**.
 - ▶ Under clear, **sunny skies over land**, the planetary boundary layer tends to be relatively deep as a result of the heating of the ground by the Sun and the resultant generation of convective turbulence.
 - ▶ During the summer, the planetary boundary layer can reach heights of 1 to 1.5 km (0.6 to 1 mile) above the land surface. When unsaturated air rises and expands, the temperature decreases throughout most of the boundary layer.
 - ▶ In contrast, during clear, calm nights, turbulence tends to cease, and radiational cooling (net loss of heat) from the surface results in an air temperature that increases with height above the surface.
 - ▶ **Air is warmest at the bottom of the troposphere** near ground level. **Air gets colder as one rises through the troposphere**. That's why the peaks of tall mountains can be snow-covered even in the summertime.
 - ▶ **Air pressure and the density of the air also decrease with altitude**. That's why the cabins of high-flying jet aircraft are pressurized.

Weather is constantly changing and sometimes difficult to predict, and weather services exist worldwide to warn people of dangerous conditions as they develop. It can also be affected by the very height differences within the troposphere and other levels of the atmosphere as well. As you move up the troposphere, temperature decreases, which also results in changing air pressure and wind currents.

Q18. Analyse the salience of ‘sect’ in Indian society vis-a-vis caste, region and religion.

A sect is a group of people that has separated from a larger group and has a particular set of religious or political beliefs.

▪ **Characteristics of a sect;**

- ▶ A small organisation with no professional hierarchy
- ▶ Generally headed by a charismatic leader
- ▶ Exclusive membership
- ▶ Requires total commitment from members
- ▶ Generally opposed to the state and wider society.

▪ **Sect and Religion**

- ▶ Member of a religion form a sect because they were dissatisfied with teachings or practices.
- ▶ Buddhism and Jainism were examples of sects which later transformed into religion.
 - ♦ In Hinduism , the word sect does not denote a split or excluded community, but rather an organised tradition. **Major Hindu Sects- Vaishnavism, Shaivism, and Shaktism.** Example: **ISKCON sect** has a wide appeal not limited to economically weaker sections alone.
 - ♦ **Nirankakrish and NamDharis (kuka sikhs)** sects emerged in Punjab during the latter part of Ranjit singh’s reign.
 - ♦ **Dera Sacha Sauda sect** promises a casteless society to the people from rural areas or from depressed castes.
 - ♦ Islam is divided in to three major sects- **Sunni Islam ,Shia Islam** and Ahmadiyya Islam

▪ **Sect and Region**

- ▶ They appear in particular regions demanding their own recognition as a religion or separate cult from the main type of religion.
- ▶ Example -**Lingayat sect origin traced in the Shiava Nayanar traditions** which was there in 7th century to 11th century. Lingayat challenged Hinduism at its roots and become a properly organised movement which led to the strict institutionalisation of the values other than Bhakti traditions were presenting as a reform. The Lingayat Bhakti movement in Karnataka transformed itself into a cult and became hereditary in nature which did not happen with other Bhakti traditions.

▪ **Sect and Caste**

- ▶ Caste is a system of **social stratification**, which lies at the very root of social structure of most social groups in India.

- ▶ Caste structure is thus a pattern of social behaviour in which groups and individuals are guided by **prescribed set of norms, values and sanctions**.
- ▶ The caste system is **interlinked with the 'Varna' model** which **divides the Hindu society into four orders**, viz., **Brahmana, (Brahman, traditionally, priest and scholar), Kshatriya (ruler and soldier), Vaishya (merchant) and Shudra (peasant, labourer and servant)**.
- ▶ There are about 200 caste groups which are further sub- divided into about 3,000 smaller units each of which is endogamous and provides the area of effective social life for the individual.

Sects tend to arise during periods of rapid social change. They are generally connected to lower classes or those who are opposed to state and society. Therefore they are in tension with the larger society and closed against it.

Q19. Are tolerance, assimilation and pluralism the key elements in the making of an Indian form of secularism. Justify your answer.

Mahatma Gandhi said "Religion is a force for unity; we cannot make it a cause of conflict". Pluralism and tolerance are the hallmark of our civilization. India's strength lies in her diversity. Plurality of our society has come about through assimilation of ideas over centuries.

- **Soul of India resides in pluralism and tolerance. This plurality came with assimilation of ideas over centuries. Secularism is a matter of faith for us.** India's nationhood is not one language, one religion, one enemy. It is the perennial universalism of 1.3 billion people who use more than 122 languages and 1,600 dialects in their everyday lives, practise seven major religion, belong to three major ethnic groups — Aryans, Mongoloids and Dravidians — live under one system, one flag, and one identity of being Bharatiya and have no enemies
- The multiplicity in culture, faith and language is what makes India special. India derives its strength from tolerance-it has been part of our collective consciousness for centuries.
- India was always an open society and defined **Indian nationalism as "universalism"**, which was distinct from the one based on a defined territory, a single language, shared religion, and a common enemy.
- In Nehru's 'Discovery of India', saying "nationalism can only come out of the ideological fusion of Hindu, Muslim, Sikh, and other groups in India".
- The **positive part of secularism** has been entrusted to the State to regulate by law or by an executive order.
- The **State is prohibited to patronise any particular religion** as State religion and is enjoined to observe neutrality.
- The State strikes a balance to ensure an atmosphere of full faith and confidence among its people to realise full growth of personality and to make him a rational being on secular lines, to improve individual excellence, regional growth, progress and national integrity.

- **Religious tolerance and fraternity are basic features** and postulates of the **Constitution** as a scheme for national integration and sectional or religious unity.
- **Nationalism emanated from “Universalism” the philosophy of Vasudhaiva Kutumbakam and Sarve Bhavantu Sukhinah, Sarve Santu Niramayah.**(We see the whole world as one family and pray for the happiness and good health of all.)
- Our national identity has emerged through a **long-drawn process of confluence, assimilation, and co-existence.**
- We derive our strength from tolerance.
- We accept and respect our pluralism.
- We celebrate our diversity.

These have been a part of our collective consciousness for centuries. Any attempt at defining our nationhood in terms of dogmas and identities of religion, region, hatred and intolerance will only lead to dilution of our national identity. Any differences that may appear are only on the surface but we remain a distinct cultural unit with a common history, a common literature and a common civilization

Q20. Elucidate the relationship between globalisation and new technology in a world of scarce resources, with special reference to India.

Globalisation as a model of fully internationally integrated markets and society in a multidimensional way. Globalisation has improved the living standards of hundreds of millions of people - but growing resource scarcity means it risks becoming a victim of its own success.

Globalisation has introduced innovations in production technologies.

- Globalisation has brought about **far reaching changes in our lives.** Technology has played a pivotal role in speeding up globalisation, while globalisation itself has been a constant driving force for the newer technologies to surface.
- The **fourth industrial revolution** of the current (twenty first) century, denoted as Industry 4.0, which is laying the foundation of an information intensive transformation of manufacturing and service industries in a connected environment of data, people, processes, systems and industry assets, with generation, leverage and utilisation of actionable information as a means to realise smart industry.
- The technological dynamic of globalisation includes everything from the internet and mobile phones, which have done much to create the **interconnectedness of the world,** to **improved logistics system,** which have enabled industries worldwide to function more efficiently and profitably , to **modern agronomic practices,** which are restoring infertile lands and opening up new opportunities in agriculture.

- Globalisation has presented to the world many new inventions, innovations and intervention.

Globalisation has also got its detrimental effect on society

- **Example** -It is a threat to sustainable development. Due to rapid spread of industrialization following globalisation, the world carbon dioxide emissions increase speedily.
- **Increase over Dependency** -Globalisation encourages dependence on other countries for essential goods and services. It halts the self sufficiency of the nations which becomes hazardous for a country's economy.
- **Over explosive population growth, accelerated consumption** and technological innovation have increased the scale of human impacts so that they are pushing planetary limits.
- Global trade puts the same **pressures on natural resources everywhere**. A tree is a potential source of wood chips whether it is growing in Siberia, Canada or Papua New Guinea. Since the non market values of trees and forest, such as for watershed management for biodiversity conservation, are not presently factored into the global trading system, unregulated trade has been very damaging to the natural capital of many countries.

Globalisation effect on India

- Globalisation **intensifies trade liberalisation** and trade related activities and those in turn affect the environment when all goods and services produced in the economy are **directly and indirectly associated with uses of power and energy** (oil products, natural gas), which are common to all the countries
- **India being a poor developing economy** is believed to mostly **compromises with its environmental standards** in an effort to maintain its international competitiveness position at a high level and thus might have induced the economy to relatively engage in **exporting more of pollution-intensive goods**, or might have inwardly **attracted more pollution-intensive foreign capital investments** from other countries.
- **India is highly vulnerable to climate change**, as large population are dependent on agriculture and natural resources and any adverse impact on these and related sectors due to environmental degradation and climate change will negate government's efforts to eradicate poverty and ensure sustainable livelihood for the population

Despite the widespread insistence on national sovereignty over natural resources, the only solution is to manage such resources at the global level for the benefit of the whole planet.

However, our present ad hoc methods of global legislation, negotiating and adopting a new convention for each environmental problem, will eventually bring us to a global legal gridlock. It will become essential to find a more coherent way to regulate and adjust the behaviour of states and companies in the common interest.