GS-I EXPLANATIONS

[Note: Answers can be extracted from these Model Explanations. Use diagrams, flowcharts and keywords to represent answers within stipulated number of words.]

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

Indian temples have symbolised the very ethos of life-style of people through the millennia. Medieval Indian temple sculptures [7th century CE to 1526] depict a variety of cultures, religions and social life of that period.

Represents Political Supremacy

The Medieval Indian society was divided into four major groups. They were the aristocrats, the priests, the towns people and the peasants. And hence, **Political supremacy governed the basic principles of Temple architecture.** In the medieval period, the social structure encompasses **local lords with pre-eminent social and political status in the area**. The key figures of early medieval India were thus various groups of **samantas, mahasamantas, mandalesvaras, mahamandalesvaras, rajakulas, rajaputras.** These all are **basically landed magnates**. The Medieval Indian temple architecture provides information on this aspect which is marked by majorly three architectural styles namely **Nagara (Northern), Dravida (Southern) and Vesara (coalescence between Nagara and Dravida) style of architecture with the presence of regional influences**. Gadag architecture, Maru- Gurjara architecture, Nayaka style, Hoysala style, Vijayanagara art **reveals the glory and opulence of its times with the constant struggle for power.**

Emperors caused excellent **portraits to be carved by the sculptors to immortalise themselves in the vicinity of their favourite deities.**

Examples:

- Sculpture of Krishnadevaraya of Vijaybagara Empire at one of the Gopuras at Chidambaram.
- Brihadeshwara temple devoted to Lord Shiva was patronised by Raja Raja Chola I. The temple and the **sculpture of Nataraja became symbols of Chola's glory** as it is one of the largest Hindu temples.
- In temples such as Meenakshi temple in Madurai, one can observe **highly intricate ornamentations and sculptures** in **Gopurams** displaying vivid colours. It measures the **nearness to God by the visual height of the shikhara**. Dominating **elements like lion, supernatural beast, gives the appearance of strength and vigour.**
- A classic panel showing the king of the Naga and his queen, belonging to Ajanta, 5th century A.D. shows them **seated on a throne attended by a hand maiden.**

Represents Culture and Faith

In Konark Sun Temple of Odisha for example there are sculptures of young women clad with multitude of **belts, bracelets, armlets, necklaces, ear-rings and hair ornaments.** Sculptures depict Narasimhavarman (the builder of Konark Sun Temple) appreciating literature in an assembly of poets patronised by him. Another sculpture shows his **tolerance for faiths by presenting him before Siva, Jagannath and Durga**. There are several other similar representations of his life, and Konarak, with its rich sculpture, may be considered a **storehouse of 13th century culture in Odisha.**

Similarly, **Ellora Cave temples** built between the 5th and 10th century; **demonstrate the coexistence of religions and a spirit of acceptance of different faiths.**

The caves have carvings of Gautama Buddha, bodhisattvas and saints. It has carvings of Samavasarana images, Parsvanatha, Bahubali and other sacred figures in Jainism. Again, it has Hindu temples and architecture - Kailasha temple, Dashavatara temple etc. In a nutshell, the Ellora caves are a **confluence of Hindu, Jain, and Buddhist ways of Life of that period.**

Represents Social Life

The vast majority of arts in Khajuraho Temples for example depict various aspects the everyday life, mythical stories as well as symbolic display of various secular and spiritual values. For example, depictions show **women putting on makeup, musicians making music, potters, farmers, and other folks in their daily life during the medieval era**. Similarly, the kama arts represent diverse sensual expressions of different human beings.

Represent Art Forms

The Khajuraho temples for instance **represent one expression of many forms of arts that flourished in Rajput kingdoms of India from 8th through 10th century CE.** For example, contemporary with Khajuraho were the publications of poems and drama such as ***Prabodhacandrodaya, Karpuramanjari, Viddhasalabhanjika and Kavyamimansa***. Some of the themes expressed in these literary works are **carved as sculpture in Khajuraho temples.**

The medieval temples for example Modhera temple, Dilwada temple **point to the strong Natyashastra tradition** which prevailed during the medieval period. Ceilings of the temples have exquisite **carvings of female dancers**, the kinnaras and the gandharvas. The bracket figures, the **shalabhanjikas, the yakshis and the dancers surround the seated deities**. Taking inspiration, several Indian classical dance forms such as Bhartanatyam gained an identity through these natamandirs of Medieval times. Dhrupad stream of Indian classical music also developed in temples.

Conclusion

In conclusion, Temple architecture in India was not just a matter of constructing only aesthetically pleasing religious centres. It is a symbolic representation of the various social and cultural activities. Here, not only the religious, but also the political, social and cultural aspects of history are preserved in stones.

2. Why did the armies of the British East India Company – mostly comprising of Indian soldiers – win consistently against the more numerous and better equipped armies of the Indian rulers? Give reasons.

Historically, many of the major Indian Rulers lost to armies of British East India Company. There are, numerous exceptions of note; for example, the Marathas were victorious against the British in the first Anglo-Maratha War in the 18th century**;** Four wars were fought with Mysore (1767-69, 1780-84, 1790-92 and 1799). Only in the last – the Battle of Seringapatam – did the Company ultimately win a victory. But broadly, armies of Indian rulers often eventually lost wars in the long run. This is despite of the fact that many Indian rulers imported modern European arms and employed European as military officers.

For example:

- Siraj-ud-Daulah (1733-57) commanded around 50,000 men, including 16,000 cavalries. He also had 50 field guns, a combination of 32-, 24- and 18-pounders. Officers on loan from the French commanded this artillery.
- Hyder Ali concluded an alliance with the French, and used the services of French workmen in raising his artillery and arsenal.
- Tipu Sultan deployed iron-cased Mysorean rockets against advances of British forces and their allies during the Anglo-Mysore Wars.

Despite all these, Indian rulers to follow up on victories, constantly fought defensive wars.

Reasons

Lack of strategy

Indian military officers and the ranks could never match the English officers and English armies; in the absence of originality, the military officers and armies of Indian rulers became mere imitators. The main reasons are strategic.

Better Military Discipline and Regular Salary

A regular system of payment of salaries and a strict regime of discipline were the means by which the English Company ensured that the officers and the troops were loyal. On their part, most of the Indian rulers did not have enough money to pay salaries regularly. The Marathas at times diverted their military campaigns to collect revenue so as to pay their troops. Also, the Indian rulers were dependent on personal retinues 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.

Civil Discipline and Fair Selection System

The Company 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. As a result, their competence was doubtful and they often tended to be rebellious and disloyal in order to pursue their own interests.

Brilliant Leadership and Support of Second-Line Leaders

Robert 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. Moreover, the Indian leaders were as much fighting against one another as against the British. 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.

Unscrupulous diplomatic and military Tactics of the British

After the 1857 War of Independence recruitment of Indian soldiers changed. The high-caste Hindus from the Ganges Valley who had dominated the Bengal Army - the Company's most important force - were now distrusted due to their role in the Mutiny. They were replaced by the more loyal Punjabi Muslims, Sikhs, Gurkhas, Baluchis and Pathans. This restructured force went on to serve in many campaigns on India's unruly North-West Frontier, but also in Afghanistan, China, Burma and elsewhere. During the two World Wars, the Indian Army made a vital contribution to Allied victory, serving in most theatres of war.

No Power Projection

Armies of Indian rulers largely remained overly defensive and failed to project power to take out their enemies. India's coastal states, some of which had navies, did little to clear European navies out of local waters, perhaps because they **did not understand the strategic importance of the ocean.**

Strong Financial Backup

The income of the Company was adequate enough to pay its shareholders handsome dividends as also to finance the English wars in India. Furthermore, England was earning fabulous profits from its trade with the rest of the world. This vast amount of resources in money, materials, and men was available to the British in times of need, thanks to their superiority in sea power.

Lack of Unity

The lack of unity among the Indian rulers was one of the major reasons for its failure. This was evident in the first war of independence, 1857. Although Bahadur Shah was made as the face, he eventually negotiated with British for own safety. The battle of Plassey also had similar causes for the failure. The conspiracy during the battle led to gaining of supremacy by the British which eventually led to the foundation of British rule in India. After departure of able persons like Baji Rao the Maratha state lacked unity. There was no ruler who could unite them and fight against the British. In other wars like Anglo-Mysore wars, battles were fought on individual grounds and not on collective goals. Every king wanted to be independent and thus they fought the war on their interests.

Nationalist Pride

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.

Final Thoughts

The Company became India's dominant power following victories at the **Battles of Plassey (1757), Wandewash (1760) and Buxar (1764).** Its **supremacy was confirmed in 1765**, when it secured from the weak Mughal Emperor the right to gather tax and customs duties in Bengal, India's richest province. Now an imperial administrator, the Company expanded its domains at the expense of native powers like **Mysore (1767-99), the Marathas (1775-1818) and the Sikhs (1845-49).** By the mid-1850s, the Company governed two thirds of the subcontinent. If Indian rulers had stayed united and strategically sound in crucial time, British supremacy could have been subdued as and when it was sprouting.

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

I hate Indians. They are a beastly people with a beastly religion. The famine was their own fault for breeding like rabbits.

-Winston Churchill

During the British era a very large number of famines struck India. India was hit by recurrent famine from 1760 AD to till 1943 AD. The mortality in these famines was excessively high and increased by British policies. The mortality in the Great Bengal famine of 1770 was between one and 10 million; the Chalisa famine of 1783–1784, 11 million; Doji bara famine of 1791–1792, 11 million; and Agra famine of 1837–1838, 800,000. More than 85 million Indians died in these famines which were **in reality genocides done by the British Raj.**

Famines in India under British rule

Name of famine	Period	Affected Territory	Mortality
Great Bengal Famine	1769–70	Bihar, Northern and Central Bengal	10 million(about one third of the then population of Bengal).
Madras famine	1782–83	Madras cityand surrounding areas Kingdom of Mysore	

Chalisa famine	1783–84	Delhi, Western Oudh, Eastern Punjab region, Rajputana, and Kashmir	Severe famine. Large areas were depopulated. Up to 11 million people may have died during the years 1782–84.
Doji barafamineor Skull famine	1791–92	Hyderabad, Southern Maratha country, Deccan, Gujarat, andMarwar	One of the most severe famines known. People died in such numbers that they could not be cremated or buried. It is thought that 11 million people may have died during the years 1788–94.
Agra famine	1837–38	Central Doab and trans-Jumna districts of the North-Western Provinces (later Agra Province), including Delhi and Hissar	800,000.
Upper Doab famine	1860–61	Upper Doab of Agra; Delhi and Hissar divisions of the Punjab, Eastern Rajputana	2 million.
Orissa famine	1865–67	Orissa (also 1867) and Bihar; Bellary and Ganjam districts of Madras	1 million (814,469 in Orissa, 135,676 in Bihar and 10,898 in Ganjam)
Rajputana famine	1868–70	Ajmer, Western Agra, Eastern Punjab, Rajputana	1.5 million (mostly in the princely states of Rajputana)
Bihar famine	1873–74	Bihar	There were little to none significant mortalities during the famine.
Great Famine of 1876–78	1876–78	Madras and Bombay Mysore and Hyderabad	5.5 million in British territory. Mortality unknown for princely states. Total famine mortality estimates vary from 6.1 to 10.3 million.
Not named	1888–89	Ganjam, Orissa and North Bihar	150,000 deaths in Ganjam. Deaths were due to starvation as famine relief was not provided in time.
Indian famine	1896–97	Madras, Bombay Deccan, Bengal, United Provinces, Central Provinces, Northern and eastern Rajputana, parts of Central India and Hyderabad	5 million in British territory.
Indian famine	1899–1900	Bombay, Central Provinces, Berar, Ajmer, Hyderabad, Rajputana, Central India, Baroda, Kathiawar, Cutch	1 million (in British territories). Mortality unknown for princely states.
Not named	1905–06	Bombay, Bundelkhand	235,062 in Bombay (of which 28,369 attributed to Cholera). Mortality unknown for Bundelkhand.

Bengal famine	1943–44	Bengal	1.5 million from starvation; 3.5 million including deaths from epidemics.

Great Bengal famine of 1770

John Fiske, in his book **"The Unseen World",** wrote that the famine of 1770 in Bengal was far deadlier than the Black Plague that terrorised Europe in the fourteenth century. The famine had struck Bengal and Bihar between 1769 and 1770 and as many as ten million people, a third of the entire population, died as a consequence. The start of the famine has been attributed to a failed monsoon in 1769 that caused widespread drought and two consecutive failed rice crops. The **exploitative tax revenue maximisation policies of the British East India Company after 1765 crippled the economic resources of the rural population.**

Drought, bad harvests and British economic and administrative policies all contributed to its catastrophic proportions. Nobel prize winning Indian economist **Amartya Sen describes it as a man-made famine.**

Background

In the 17th century, the English East India Company had been given a grant of the town of Calcutta by the Mughal Prince Shah Shuja. At this time the Company was effectively another tributary power of the Mughal. During the following century, the company obtained sole trading rights for the province and went on to become the dominant power in Bengal. In 1757, at the Battle of Plassey, the British defeated the nawab Siraj Ud Daulah and plundered the Bengali treasury. In 1764 their military control was reaffirmed at Buxar. The subsequent **Allahabad treaty gained them the diwani, that is, taxation rights; the Company thereby became the de facto ruler of Bengal.**

The Company **increased tax rates from 10 percent to up to 50 percent of the value of the agricultural produce**. As the famine approached its height in April 1770, the Company announced that the **land tax for the following year was to be increased by a further 10 percent**.

The historian **William Dalrymple has called Robert Clive an "unstable sociopath" due to these harmful policies and actions that resulted in famines and atrocities towards local native Indians and peasants.**

Changes caused by Robert Clive to the revenue system and existing agricultural practices to maximize profits for the company led to the famine of 1770. The **destruction of food crops in Bengal to make way for opium poppy cultivation** for export reduced food availability and this also contributed to the famine. The company is also criticised for forbidding the "hoarding" of rice. This prevented traders and dealers from laying in reserves. By the time of the famine, **monopolies in grain trading had been established by the company and its agents.**

Reasons behind Famines in India during the British Raj

Cash Crops replacing food crops

After taking over from the Mughal rulers, the British had issued widespread orders for cash crops to be cultivated. These were intended to be exported. Thus, farmers who were used to growing paddy and vegetables were now being forced to cultivate **indigo, poppy and other such items** that yielded a high market value for them but could be of no relief to a population starved of food. There was no backup of edible crops in case of a famine. It was the single-minded motive for profit that wrought

such devastating consequences. No relief measure was provided for those affected. Rather, taxation was increased to make up for any shortfall in revenue.

Mindless Taxation

Starvation had set in from early 1770. Then the deaths started in 1771. That year, the Company raised the land tax to 60 percent in order to recompense themselves for the lost lives of so many peasants. Fewer peasants resulted in fewer crops, which in turn meant less revenue. Hence the ones who had not yet succumbed to the famine had to pay even greater taxes so as to ensure that the British treasury did not suffer any losses during this travesty. **It is ironic that the East India Company generated higher profits in 1771 than they did in 1768.**

Inadequate transportation of food

Florence Nightingale pointed out that the famines in British India were not caused by the lack of food in a particular geographical area. They were instead **caused by inadequate transportation of food**, which in turn was caused due to the **absence of a political structure.**

Draining and Diversion of money

Money was drained from the peasant to the landlord, making it impossible for the peasant to procure food. Money that should have been made available to the producers of food via public works projects and jobs was instead diverted to other uses.
Money needed to combat famine was being diverted towards activities like paying for the British military effort in Afghanistan in 1878–80.

Poor British Administration

Economy Nobel Prize winner Amartya Sen found that the famines in the British era were not due to a lack of food but due to the inequalities in the distribution of food. He links the inequality to the **undemocratic nature of the British Empire.**

Mike Davis regards the famines of the 1870s and 1890s as 'Late Victorian Holocausts' in which the effects of widespread weather-induced crop failures were greatly aggravated by the negligent response of the British administration.

Exploitative Colonial policies

Colonial policies implicated include **rack-renting, levies for war, free trade policies, the expansion of export agriculture, and neglect of agricultural investment.** The Battle of Plassey and subsequent grant of diwani in 1765 to the East India Company changed everything. Post diwani, there was a sudden increase in the outflow of bullion from India to England. From 1765 to 1938, the British government extracted goods worth trillions of dollars in today's money, which were either consumed in Britain or re-exported for profit. This windfall was used to build domestic infrastructure in Britain, including roads, factories and public services, as well as to finance the industrialization of Western Europe and British settler colonies. **Development in the Global North was funded in large part by colonial extraction**.

Fall in per capita consumption

As colonial extraction intensified, India's per capita consumption of food grains collapsed from 210 kilograms per year in the early 1900s down to 157 kilograms per year by the end of the 1930s.

Inflation engineered by British Raj

During the 1940s, the colonial government printed extraordinary amounts of money for military expenditure. All this new demand caused prices to soar, particularly for staple goods. The price of rice increased by 300 per cent. But because wages did not rise accordingly, ordinary people were pushed

even deeper into poverty, forcing them to dramatically curtail their consumption of food and other goods. In 1943, **three million people died and others resorted to eating grass and human flesh in order to survive.**

Meanwhile, any additional profits that fell into the laps of business owners as a result of the price inflation were taxed by the colonial state.

The inflation was no accident. The impoverishment was no accident. British policy was **explicitly designed to 'reduce the consumption of the poor',** in order to make resources available for British and American troops, **through a 'forced transfer of purchasing power' from ordinary people to the military**. The austerity was imposed most harshly on **the people of Bengal, who fell into extreme famine, while food supplies were appropriated and diverted for military use.**

In the name of the Allied cause, the British policies killed more than three million people – many times more than the total number of military and civilian casualties suffered during the entire war by Britain and the US combined.

Final Thoughts

Between 1850 and 1899, India suffered 24 major famines, a number higher than in any other recorded 50-year period, resulting in millions of deaths. The famines that had taken place during the colonial period left deep impact upon the socio-economic and even cultural fields of Murshidabad. The famines badly affected growth of population and hindered the economic growth. Cultural progress was also deeply affected. The famines of 1770,1866,1874,1897 and 1943 caused devastating harm**. 'Manmade,' insofar as this means that famines were an outcome of colonial politics.**

It is worthwhile to remember that the riches of the West were built on the graves of the East.

4. Describe the characteristics and types of primary rocks.

Primary rock **refers to crystalline rock formed first in geologic time**. Its constituents are newly formed and have never been constituents of some other rock or formed through replacement and alterations. These are basically **crystalline rocks with no organic remains** on them **such as** granite, gneiss and schist as well as igneous and magmatic formations from all ages. They are also called primitive rocks.

Igneous Rocks are Primary Rocks.

Trivia

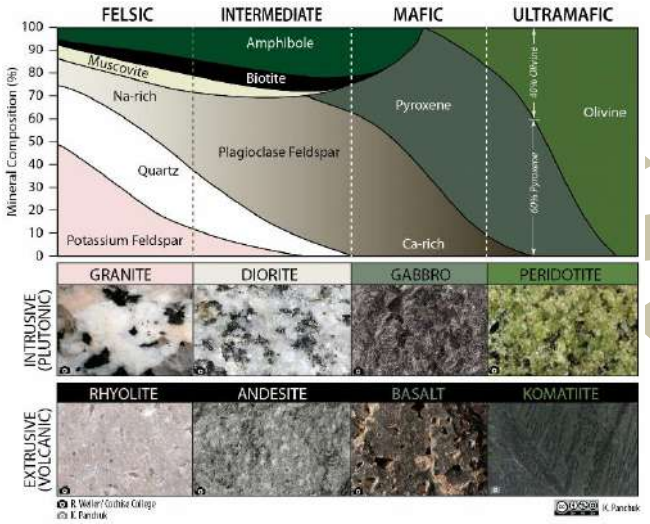
Secondary Rocks: Rocks composed of particles derived from the erosion or weathering of preexisting rocks, such as residual, chemical, or organic rocks formed of detrital, precipitated, or organically accumulated materials; specif., clastic sedimentary rocks.

Igneous rocks are "fire-born," meaning that they are **formed from the cooling and solidification of molten (melted) rock.** Basically they form when hot, molten rock crystallizes and solidifies. The melt **originates deep within the Earth near active plate boundaries or hot spots**, then rises toward the surface. Molten rock material is known as magma until it is erupted onto the surface when it then is termed lava.

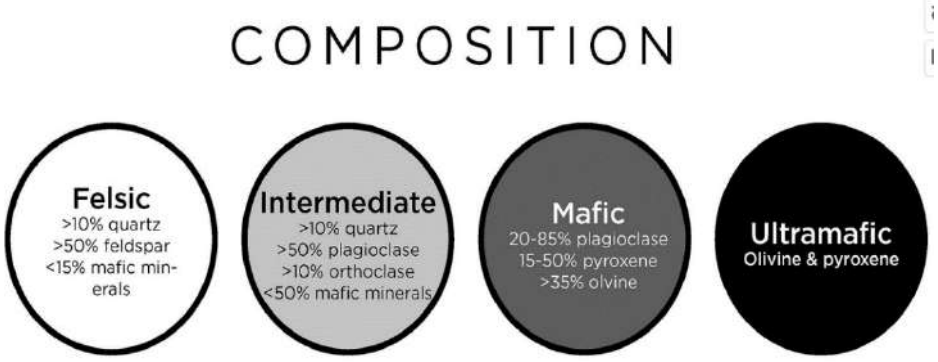
Classification by Mineral Abundance

Igneous rocks can be divided into four categories based on their chemical composition: **felsic, intermediate, mafic, and ultramafic.**

These groups refer to **differing amounts of silica, iron, and magnesium found in the minerals that make up the rocks**.



- **Felsic** refers to a predominance of the light-colored (felsic) minerals feldspar and silica in the form of quartz. These light-colored minerals have more silica as a proportion of their overall chemical formula. Minor amounts of dark-colored (mafic) minerals like amphibole and biotite mica may be present as well. Felsic igneous rocks are rich in silica (in the 65-75% range, meaning the rock would be 65-75% weight percent SiO_2) and poor in iron and magnesium. **Granite** is a course-crystalline felsic intrusive rock.
- **Intermediate** is a composition between felsic and mafic. It usually contains roughly-equal amounts of light and dark minerals, including light grains of plagioclase feldspar and dark minerals like amphibole. It is intermediate in silica in the 55-60% range. **Diorite** is a coarse-crystalline intermediate intrusive igneous rock.
- **Mafic** refers to an abundance of ferromagnesian minerals (with magnesium and iron, chemical symbols Mg and Fe) plus plagioclase feldspar. It is mostly made of dark minerals like pyroxene and olivine, which are rich in iron and magnesium and relatively poor in silica. Mafic rocks are low in silica, in the 45-50% range. **Basalt** is a fine-grained mafic igneous rock.
- **Ultramafic** refers to the extremely mafic rocks composed of mostly olivine and some pyroxene which have even more magnesium and iron and even less silica. These rocks are rare on the surface, but make up peridotite, the rock of the upper mantle. It is poor in silica, in the 40% or less range.



Classification By Grain Size

The name an igneous rock gets also depends on whether it cools within Earth or whether it cools on the Earth's surface after erupting from a volcano.

There are two broad types of igneous rocks:

1. Intrusive (plutonic) rocks
2. Extrusive (volcanic) rocks

Intrusive Igneous Rocks

Intrusive, or plutonic, igneous rock forms when magma is trapped deep inside the Earth. Great globs of molten rock rise toward the surface. Some of the magma may feed volcanoes on the Earth's surface, but most remains trapped below, where it cools very slowly over many thousands or millions of years until it solidifies. Slow cooling means the individual mineral grains have a very long time to grow, so they grow to a relatively large size. Intrusive rocks **have a coarse grained texture.**

Diorite, granite, and pegmatite are examples of intrusive igneous rocks.

Extrusive Igneous Rocks

Extrusive, or volcanic, igneous rock is produced when magma exits and cools above (or very near) the Earth's surface. These are the rocks that form at erupting volcanoes and oozing fissures. The magma, called lava when molten rock erupts on the surface, cools and solidifies almost instantly when it is exposed to the relatively cool temperature of the atmosphere. Quick cooling means that mineral crystals don't have much time to grow, so these rocks **have a very fine-grained or even glassy texture.** Hot gas bubbles are often trapped in the quenched lava, forming a bubbly, vesicular texture.

Table 7.1 Comparison of Intrusive and Extrusive Igneous Rocks

	Magma cools within Earth	Lava cools on Earth's surface
Terminology	Intrusive/ plutonic	Extrusive/ volcanic
Cooling rate	Slow: surrounding rocks insulate the magma chamber.	Rapid: heat is exchanged with the atmosphere.
Texture	**Phaneritic** (coarse-grained): individual crystals are large enough to see without magnification.	**Aphanitic** (fine-grained): crystals are too small to see without magnification.

Basalt, tuff, pumice are examples of extrusive igneous rock.

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

IMD has **its own colour coding system for warning and information regarding cyclones**. The colour codes are used by the department to signify the intensity of the situation and the warning associated with it. It has come up with four colour codes, namely **green, yellow, orange, and red.**

Here are the IMDs four colour codes:

Green: The green colour signifies everything is smooth and well i.e all is well with no adverse weather conditions.

Yellow: The yellow colour code asks the guards to be updated to handle the bad weather that can last for days, with a warning of affecting daily activities.

Orange: The alert for colour code orange indicates to be prepared. It can be a warning of extreme damage to communication disruptions that can lead to power cuts, road and railway blockages. The orange alert is also a sign for evacuation and keeping the basic necessities ready for families.

Red: The red colour is the highest level of warning that notifies the authorities to take action. This is a case in which there is a threat to life with the worst weather conditions. In this case, all the measures are taken to handle the situation along with the help of disaster management response teams.

Conclusion

These warnings are mainly a **part of the preparedness program for handling a natural disaster like a cyclone**. The main objective of the colour codes is to alert people of hazardous weather conditions which have the potential to damage properties and lives.

6. Discuss the natural resource potentials of 'Deccan trap'.

The Deccan Traps is a large igneous province of west-central India in states of **Maharashtra, Goa, and Gujarat and to some extent in Madhya Pradesh and southern Rajasthan.** It is one of the largest volcanic features on Earth, taking the form of a large **shield volcano**.

The province is commonly divided into four subprovinces: the main Deccan, the Malwa Plateau, the Mandla Lobe, and the Saurashtran Plateau.

Natural Resources in Deccan Trap Region

Major mineral constituents

The Deccan trap consists of **numerous layers of solidified flood basalt**. Major mineral constituents in this region **are olivine, pyroxenes, and plagioclase, as well as certain Fe-Ti-rich oxides.** It is rich enough in alumina to be high grade bauxite.

Secondary Minerals

The Deccan trap basaltic lava flows host a **plethora of secondary minerals, notably zeolites, quartz, calcite, phyllosilicates, hydrated sulphates, carbonates, tungstates–molybdates, and even native elements like copper.**

Hot Springs

Western margin of volcanic Deccan traps, also known as Western Ghats, is characterized with the presence of **numerous hot springs.**

Black Soil

The **Black soil** formed over the Deccan trap is a rich soil particularly **suitable for raising cotton.**

Oil and Gas

ONGC struck **oil and gas in the Deccan Traps**. Hydrocarbon was found in 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 Syneclise) is stated to have massive oil deposits, estimated around 30 billion tonne.

Uranium

Uranium mineralisation is found at the Deccan Trap.

Applications

Basalt rock is used as road metal and an **aggregate in cement concrete**. Secondary minerals have huge applications. For instance, Zeolites are widely used as highly efficient catalysts, adsorbents, and ion exchangers in petrochemical industries and in our daily life.
Again, quartz crystals are used to make oscillators for watches, clocks, radios, televisions, electronic games, computers, cell phones, electronic meters, and GPS equipment.
Calcite is used as a building material, abrasive, agricultural soil treatment, construction aggregate, pigment, pharmaceutical, and other applications. It has more applications than nearly any other mineral.
Bauxite is useful in Petroleum filtration and in the manufacture of aluminium and alumina cements.
Phyllosilicates find applications in several fields, such as drug carrier and delivery, support for catalyst, environmental remediation and filler for polymeric matrices.
Hot springs can be harnessed to generate power.
Uranium can be used as fuel for nuclear power plants

Final Thoughts

Increasingly, scientists are recognizing the importance of Deccan volcanism. In view of the size of the region and the huge quantity of its minerals it has greatest collector significance. In the future, the discovery of additional mineral species, habits and associations in the Deccan Traps will continue to establish newer prospects of fulfilling energy and resource requirements from the region.

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

Wind power generation capacity in India has significantly increased in recent years. As of 2022, the total installed wind power capacity was 40.893 GW, the **fourth largest installed wind power capacity in the world.**
The Indian government has installed over 800 wind-monitoring stations all over the country through the National Institute of Wind Energy (NIWE). Recent assessment indicates **a gross wind power potential of 302 GW in the country at 100 meters and 695.50 GW at 120 meters above ground level.**
In addition, **India has a potential of 174 GW of offshore wind resources, according to an estimate by the Global Wind Energy Council**, almost all of it concentrated off the Gujarat and Tamil Nadu coasts. Onshore wind is also highly concentrated in Tamil Nadu, Gujarat and Maharashtra.
The trouble is, there is quite a distance to be covered between potential and actualisation.

Limited Spatial Spread

Out of the total estimated potential **of 302 GW** more than 95% of commercially exploitable wind resources are concentrated in **JUST** seven states (Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu). Installation of onshore wind turbines requires large tracts of open land and, has on occasion, been met with resistance from local communities.

Offshore wind energy does not have that constraint. Also, at sea, winds are free from any obstruction. But Offshore wind is a very expensive technology for India right now. Currently, India has no operational offshore wind energy plant. This is despite a 7,600 km-long coastline, and an offshore wind energy potential of 140 GW by 2050. Of this, **Gujarat and Tamil Nadu make up 71 GW.**

Access to Wind Sites: A Big Challenge

Competition prompts independent power producers (IPP) to quote low tariffs with the expectation of accessing cheap and windy land. But **increasing demand for good sites raises prices, making projects unviable.** Those who have wind sites have gone bankrupt while the ones with funds do not have sites. This has created a **virtual unavailability of land, leading to delays in projects.**

Intermittent nature

Due to the capricious nature of wind, power generation is highly variable and seasonal. It is difficult to predict generation at a given time of the day. This also leads to higher curtailment.
But wind energy brings distinct value to the overall energy mix as it is available during peak-demand time in the evening (7pm-10 pm), unlike solar. On the other hand, wind energy generation is the highest from June to October in Tamil Nadu and August to September in Gujarat, when demand tends to slow.

Final Thoughts

Projects can be developed **if the different wind sites are properly characterised**. The government needs to pursue an alternative approach. **Potential to generate wind energy in other states can easily be tapped with newer technologies** capable of **generating power at lower wind speed, increasing the capacity utilisation factor (CUF)**. Every wind site is characteristically different. Hence, the same mechanism cannot be applied to all.

Unlike solar, wind power development cost varies state to state. **The government should come to develop projects, collect data and then carry out biddings.** Instead, it calls for bids anywhere in India on a competitive basis with ceiling prices, resulting in **lop-sided development.**

Also, **development of wind parks** (similar to solar parks), where the government takes care of the land and integration of power to the grid — two difficult challenges — is **entirely missing for the wind sector**. These issues are more important for the sector **as wind projects are viable in two states only.**

Forecasting and scheduling for wind generation is more difficult because of its highly variable nature. **Therefore, it is important to incorporate better forecasting technologies — statistical tools, online measurements and satellite data.**

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

Many workplaces are adopting work-from-home (WFH) arrangements, especially since the COVID-19 pandemic. Work-from-home (WFH) influences both work and life, and further impacts family relationships. For the employees there have been a number of benefits for example: No commute time or expense, more time spent with family, greater flexibility, reduced distractions from co-workers etc.

But what has been the impact on Family Relationships? Let us find out:

- **Not Finding the Right Balance:** Many find it difficult to balance both personal and work lives. There are certain times when a career takes precedence over relationships and family. Work life may blend in with family life, making balance harder.
- **Venting Out Stress:** When working remotely, it becomes rather simpler for work-related problems to impact marital and family relationships, since both the roles are happening in the same place and at the same time.
- **Distracting:** Home may be more distracting than the office. Kids at home demand attention. This distraction takes a toll on both private life and professional life.

The Flip Side

- **Quality time with Family:** Working from home allows for more quality time with family. As a result, it helps in strengthening their family bonding.
- **Increased Work-Life Balance:** Working in-office full-time can fill up most of the day after commuting**.** In-person work can be so draining that by the time employee gets back home, she might not have the energy to meet friends and family. Work from Home improves work-life balance and overall mental health as employee spends time with family too.
- **Better child care:** Parents who work from home can customize their day to meet their family's needs. Things like breastfeeding on-demand or doing school drop-off and pick-up are easier when the employee is not required to be in a physical workplace at a set time.
- **Enhanced relationship with spouses:** The IT sector, according to NIMHANS, was among those that were seeing a high rate of divorce and discord. Working from home had given time to iron out many such issues. About 89% of those surveyed by NIMHANS reported enhanced relationships with spouses and other family members.
- **Mental and physical health:** Commuting is associated with increased levels of stress and anxiety. It is associated with health issues like: Higher cholesterol, Elevated blood sugar, Increased risk of depression. All these puts strain on the family members. The time savings in Work from Home can allow one to focus on priorities outside of work, like getting extra sleep in the morning, spending more time with family.
- **Model for children:** It can be so valuable and important for kids to be present and see their parents navigating the values and engagement in their work. Such precedents set up a model for how kids will build their relationships with work in the future, and shape whom they become, years down the line.

The Bottom Line

Working from home has been shown to lower stress, provide more time for hobbies and interests, and improve personal relationships, among other things. Indeed, the benefits of working from home impact so many things on a global scale that it's sure to become the best path forward. In general, employees have found that a mix of working from home and the office is a good solution.

9. 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?

Cities having a population size ranging between 50,000 and 100,000 are categorised as tier 2 cities in India. Today the educated middle class that resides in tier 2 cities are the wheels that move the economy. Tier-II cities are steadily becoming integral parts of the Indian growth story, through infrastructure and commercial development. With **middle-class lifestyle changes, higher disposable incomes and rising aspirations,** Tier-II cities are now becoming the hottest untapped markets for brands in all segments, right from shopping malls and retail to apparel, FMCG, restaurants and eateries, automobiles and more. This is giving rise to better social amenities, healthcare facilities, educational institutions and recreational amenities in these cities as well.

Shift in consumer buying patterns

The concept and idea of shopping has undergone a massive transformation in terms of format and consumer buying behaviour. Shoppers today prefer bustling centres, huge complexes, and multi-storied malls that offer shopping, entertainment, and food – all under one roof. Many consumers in smaller cities have aspirations to buy branded products and their ability to afford them is increasing. This is helping malls generate good revenues.

Relocation of industry and housing hubs to smaller cities

A number of industries in the service sector has relocated or expanded to tier- II cities. The demand in tier 2 towns and cities is primarily being led by **Chandigarh, Jaipur, Lucknow, Ludhiana, Agra, Surat, Varanasi, Vadodara, Patna, and Ranchi.** Growth of housing hubs in these areas has also resulted in growth of **large numbers of businesses that allow retail space to investors**. Between 2006 and 2017, these cities received five times more investments for retail infrastructure than tier 1 and metro cities, according to Kearney India Retail Index.

Government investment in infrastructure and rural development

The government is investing in infrastructure, rural development, and public health, ensuring a more robust retail environment, and simplifying policies. Retail growth outside traditional metro areas is exploding. With an increase in public investment and enhanced internet service availability, these cities have turned into lucrative spots with higher consumption.

Cheaper rental and land cost

Availability and cost of retail space is another major consideration in the development of organised retailing. Prime locations in tier-II and -III cities are. Larger chunks of land are also available in these cities compared with metros, and at lower cost. **30 percent cheaper than their counterparts in the metros.**

Service expansion in Tier-II cities

Growing retail and supermarket chains attached to growing real estate space makes low-budget housing easily accessible. Even in tier- II cities, the opening of malls and multiplexes, pubs, and fast-food joints have exposed the younger population to these big-city charms. Starting from the delivery services by most e-commerce players and cab-hailing apps have also targeted their services to these smaller cities, which were only enjoyed so far by big-city residents. This **gradual boom in consumption led by these cities in all verticals** makes them the country's actual growth engines.

Growth of e-commerce: Aiding expansion plans for food companies

Unlike a couple of years ago, **online shopping is no longer restricted to tier I cities**. With an increase in the usage of digital offerings, a higher number of consumers have been experimenting with online shopping, which was further propelled by the pandemic. Euromonitor International's Indian cities survey indicated that e-commerce is an equally important channel in tier II cities for grocery shopping as in tier I cities. Apart from grocery e-commerce companies, several local, city-specific and regional companies are prominent in tier II cites. Local e-commerce companies such as Jai Bihar in Patna, Freshezy in Nagpur and Groci Store in Lucknow are a few examples. These local e-commerce companies give an opportunity for niche packaged food companies in particular to expand beyond tier I cities.

Health emerges as a key benefit that consumers expect from foods in tier II cities

With an increased focus on health and wellness, driven by the pandemic, **consumers are increasingly looking for health and wellness benefits when buying packaged food.** Consumers surveyed across 14 cities by Euromonitor International's Indian cities survey were extremely willing to

pay a premium for healthy foods, despite India being a price-sensitive market. This indicates opportunities for brands to offer healthier food across tier II cities.

Loans enabling growth

Be it a metro city or other tier-II cities. The **average spend per month has gone up by approximately 60% in the past few years**. With ample savings and low-interest rates over the last few years, the millennials & Gen Z are making the best of the opportunity and have started investing in homes at a very early stage of their professional life. The migration towards these cities has also provided a significant boom to the retail infrastructure like malls & shopping complexes, adding more to the real estate industry.

The overall disbursals in these cities have grown by almost 20%, majorly in the housing loan segment, followed by business and personal loans. The demand for small ticket loans has also increased, carrying a smaller amount for shorter loan repayment tenure. While the Indian economy is continuing its growth trajectory, the long-term returns of the real estate industry remain a key factor in driving the growth in these cities. Most real-estate developers from metro cities have taken up projects in the smaller ones, as they suggest that the **congestion and inflation have drawn the buyers towards the tier-II & III cities.**

Bottlenecks

Several broad bottlenecks preventing small cities from maximizing their respective economic potential were identified:

- Lack of common economic vision and planning across different institutions
- Challenges related to land supply and regulations
- Unintegrated planning of urban and industrial infrastructure
- Capacity constraints and inadequate institutional framework
- Policy and regulatory constraints
- Sub-optimal land use management, and
- Inadequate provisions of organized housing for workers.

Solutions and strategies

Some solutions for harnessing the economic potential of small cities:

- Sensitizing state governments on the importance of developing appropriate policy frameworks at the state and city level;
- Identifying key bottlenecks that constrain Indian cities from fully realizing their potential as engines of growth;
- Developing implementable solutions to these bottlenecks, including workable structures of urban governance and mechanisms for coordinating spatial and economic planning.
- Informing policy makers about the types of investments and activities that states and cities should prioritize from a growth and jobs perspective.

Need: Formulation of a comprehensive economic vision for the long-term, over 10-15 years. A vision that will include instituting a city economic council supported by representatives from leading industries, academicians and economy experts. Other steps to be considered are:

- Developing partnerships with international cities, agencies and others for thematic development
- Creating differentiated incentive policies to attract investments in smaller and underdeveloped cities
- Drafting byelaws to make it easier for land accessibility and create direct benefit transfer schemes, such as rental housing vouchers, for economically weaker sections
- Digitizing land records, and
- Exploring relaxation of building byelaws that is acting as a constraint to supply of land.

A promising future

India's economic potential lies in the growth of smaller cities that have been witnessing transformation on all fronts – urban housing, infrastructure, offices and retail real estate. The shift in consumption pattern in smaller towns over the past decade has resulted in higher purchasing power on discretionary items in these markets. Being a key component of this development, Tier-II cities are showing a promising future growth in the country. Going forward, smart planning and creating more liveable conditions will drive the growth further. Rising consumerism, income, and awareness will drive the growth further.

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

Diversities among the tribal communities in India

India is home to about 700 tribal groups with a population of 104 million, as per 2011 census. 68 million people belonging to 227 ethnic group and comprising of 573 tribal communities derived from six racial stocks namely - Negroid, Proto- Australoid, Mongoloid, Mediterranean, West Breachy and Nordic exists in different part of the country. There are 75 Particularly Vulnerable Tribal Groups (PVTGs).

These indigenous people constitute the second largest tribal population in the world after Africa. **Each community has its own individuality that separates it from the other tribes.** Each has its **own customs, traditions, morals, values,** its own institutions in brief, its own culture.

Due to diversity in the population, there is high degree of variation. Such as Dravidian tribes of south India- Like todas, Kaddasr, paliyan tribes. Proto- Australoid include oraans, bhumij, santhals belongs to the central India. Spread over the length and breadth of the landmass, mostly in forested and mountainous country, they are a heterogeneous set**, varying greatly in language, culture, means of primary livelihood.**

Diverse Tribes can be considered as a "Single Category" due to the following issues

Despite huge diversity the Indigenous societies in India are undisputedly considered as the **weakest sections of the population in view of common socio-economic and socio-demographic factors like poverty, illiteracy, lack of developmental facilities, lack of adequate primary health facilities etc.** And in this very context they should be considered as a single category. Despite the protection given to the indigenous population by the constitution of India in 1950, Scheduled Tribes remains the most backward and ethnic group in India. In fact, the conditions of tribes or indigenous population in the post-independence India has, in many ways worsened. Indigenous women are malnourished and their dietary energy intake is not adequate to compensate their heavy physical work load.

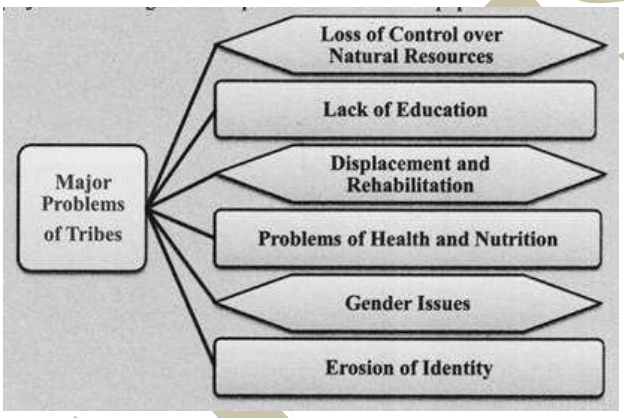
The tribal population in India lags behind other social groups on various social parameters, such as child mortality, infant mortality, number of anaemic women -Annual report of the Ministry of Tribal Affairs. Tribal population, with a vast majority engaged in agricultural labour, has a higher incidence of anaemia in women when compared to other social groups. The community also registered the highest child mortality and infant mortality rates, when compared to other social groups. The gross enrolment ratio among tribal students in the primary school level has declined from 113.2 in 2013-14 to 109.4 in 2015-16. Besides, the dropout rate among tribal students has been at an alarming level.

While the overall poverty rates among the tribal population have fallen compared to previous years, they remain relatively poorer when weighed against other social groups.

GS-I EXPLANATIONS

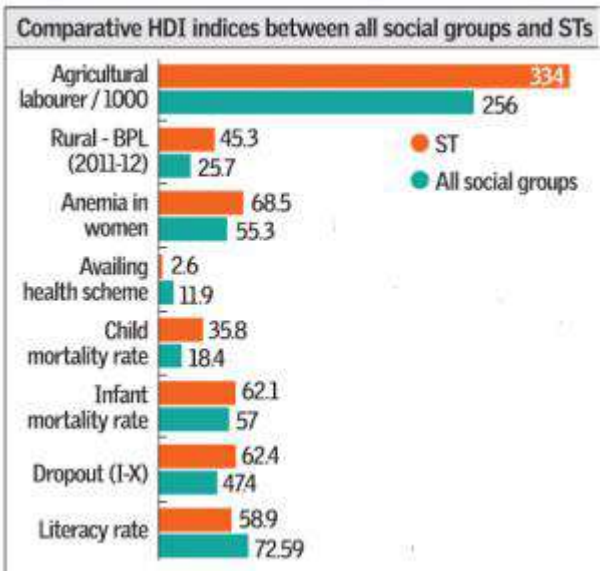
With the impetus to the development process after independence, pressure on land and forests increased. This resulted in loss of ownership rights over land, owing to chronic indebtedness, unscrupulous landlords, money-lenders, contractors and officials. With the concepts of protected forests and national forests gaining currency, the tribals felt themselves uprooted from their cultural moorings and with no secure means of livelihood.

According to the 2011 Census, only 59 per cent of the tribals are literates against the national literacy level of 74.04 percent.
Acquisition of tribal land by the government for various projects led to large scale displacement of the tribal population. There has been a gap in rehabilitation of tribal community members displaced by various development projects. Out of an estimated 85 lakh persons displaced due to development projects and natural calamities, only 21 lakh were shown to have been rehabilitated so far.



The tribals face health problems, such as prevalence of disease, like malaria, cholera, tuberculosis, diarrhea and jaundice, problems associated with malnutrition like iron deficiency and anaemia, high infant mortality rates, low levels of life expectancy, etc.

The opening of the tribal belts to mining, industries and commercialization has exposed tribal men and women to the ruthless operations of the market economy, giving rise to consumerism and to commodification of women.



In 2011, while 40.6 per cent tribals were below the poverty line, the proportion among the rest was 20.5 per cent1. In the health area, the key indicators among tribes remain very poor. For example, according to the National Family Health Survey 4 (NFHS-4) (2015-2016), the under-5 mortality among the tribal population was 57.2 per 1000 live births compared to 38.5 among others, and the infant mortality rate (IMR) 44.4 per 1000 live births versus others of 32.

A child born to a ST family in India has 19 per cent higher risk of dying in the neonatal period and 45 per cent greater risk of dying in the post-neonatal period compared with other social classes.

The tribal districts (having ≥30% of the population considered as tribal) which comprise about eight per cent of the country's population contribute to 70 per cent of the dangerous malaria strain Plasmodium falciparum and 47 per cent total malarial deaths in the country.

Conditions such as haemoglobinopathies and thalassaemia are unique and important health challenges for tribal population.

Tribal societies have remained obscured from the main historical current of development for centuries in India. In several instances, industrialisation and mining operations have led to the uprooting of tribal villages, forcing them to live like industrial nomads.

They have lost their traditional occupations, agricultural land and houses. They continue to lose employment and face bigoted competition with others in the highly unorganised Indian labour market.

Reduced access to forests and common property resources have increased their dependence on back-breaking and low-paying menial wage labour, especially during lean season. Children too join their parents at the worksites to support additional household income and that hampers their education.

Final Thought

Despite several development programmes, the affirmative actions and provisions, pro-poor laws and Acts, the tribal communities are still among the poorest communities.

It's **time to bridge the gap that exists between tribal and non-tribal population** in regards to the issues mentioned above. Mere establishment of more health facilities or launching new schemes cannot overcome the problems of tribal population. It is high time and states should act swiftly to assess the needs, priorities of their own tribal population and set goals, targets to achieve the same through proven strategies.

Pragmatic and collective efforts can address these issues, so that tribal community can come out of their poverty and attain a visible and significant measure of self-reliance and wellbeing.

11. 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 British period, the "States" were known as Provinces and it was the provinces which first came into existence.

By 1851, the East India Company's vast and growing holdings across the sub-continent were grouped into just four main territories:

- Bengal Presidency with its capital at Calcutta.

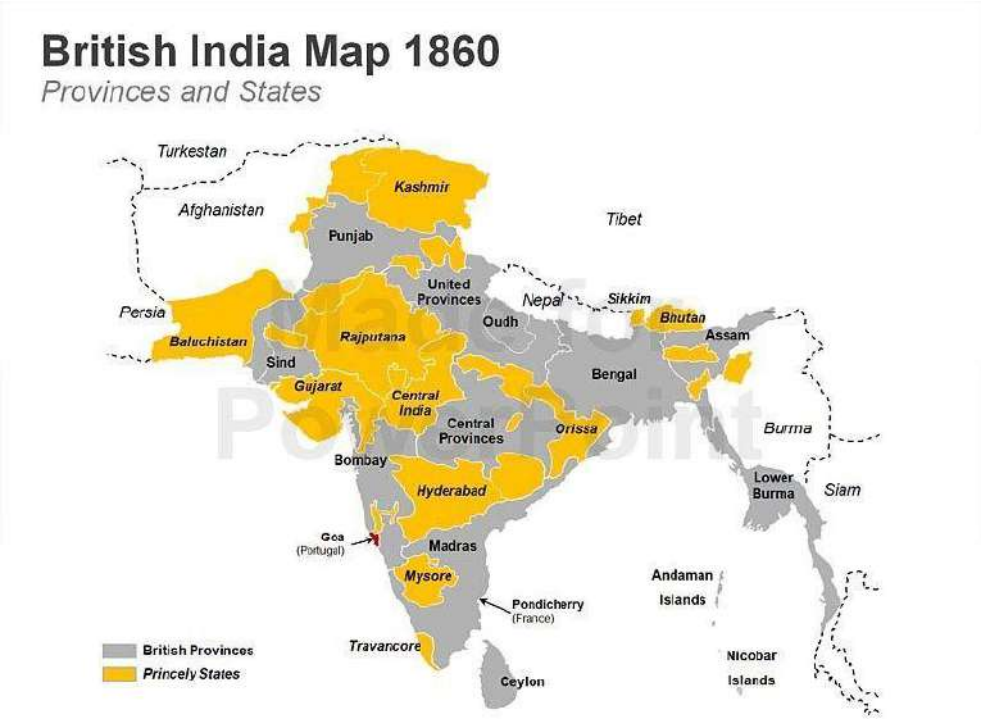
- Bombay Presidency with its capital at Bombay.
- Madras Presidency with its capital at Madras.
- North-Western Provinces with the seat of the lieutenant-governor at Agra.

Company rule, however, ended with the Government of India Act 1858 following the events of the War of 1857. From then known as British India, it was thereafter directly ruled by the British Crown as a colonial possession of the United Kingdom and India was officially known after 1876 as the British Indian Empire.

Since 1857, **to consolidate their power The British tried to convert territories into administrative blocks that had little administrative, cultural or historical homogeneity.** India was divided into provinces and Indian (princely) states.

The following developments in terms of reorganization of states and territories could be summarised as follows:

Bombay Presidency: expanded after the Anglo-Maratha Wars.
Madras Presidency: expanded in the mid-to-late 18th century Carnatic Wars and Anglo-Mysore Wars.
Bengal Presidency: expanded after the battles of Plassey (1757) and Buxar (1764), and after the Second and Third Anglo-Maratha Wars.
Penang: became a residency within the Bengal Presidency in 1786, the fourth presidency of India in 1805, part of the presidency of the Straits Settlements until 1830, again part of a residency within the Bengal Presidency when the Straits Settlements became so, and finally separated from British India in 1867.
Ceded and Conquered Provinces: established in 1802 within the Bengal Presidency. Proposed to be renamed the Presidency of Agra under a governor in 1835, but proposal not implemented.
Ajmer-Merwara: ceded by Sindhia of Gwalior in 1818 at the conclusion of the Third Anglo-Maratha War.
Coorg: Annexed in 1834.
North-Western Provinces: established as a lieutenant-governorship in 1836 from the erstwhile Ceded and Conquered Provinces.
Sind: annexed to the Bombay Presidency in 1843.
Punjab Province: Established in 1849 from territories captured in the First and Second Anglo-Sikh Wars.
Nagpur Province: Created in 1853 from the princely state of Nagpur, seized by the doctrine of lapse. Merged into the Central Provinces in 1861.
Oudh State annexed in 1856 and governed thereafter until 1905 as a chief commissionership, as a part of North-Western Provinces and Oudh.



In a nutshell,

Provinces of India (1858–1947)

Central Provinces: Created in 1861 from Nagpur Province and the Saugor and Nerbudda Territories. Berar administered since 1903, renamed the Central Provinces and Berar in 1936.

Burma: Lower Burma annexed 1852, established as a province in 1862, Upper Burma incorporated in 1886. Separated from British India in 1937 to become administered independently by the newly established British Government Burma Office.

Assam: separated from Bengal in 1874. Incorporated into new province of Eastern Bengal and Assam in 1905. Re-established as a province in 1912.

Andaman and Nicobar Islands: established as a province in 1875.

Baluchistan: Organised into a province in 1887.

North-West Frontier Province: created in 1901 from the north-western districts of Punjab Province.

Eastern Bengal and Assam: created in 1905 upon partition of Bengal, together with the former province of Assam. Re-merged with Bengal in 1912, with north-eastern part re-established as the province of Assam.

Bihar and Orissa: separated from Bengal in 1912. Renamed Bihar in 1936 when Orissa became a separate province.

Delhi: Separated from Punjab in 1912, when it became the capital of British India.

Aden: separated from Bombay Presidency to become province of India in 1932; separated from India and made the Crown Colony of Aden in 1937.

Orissa: Separate province by carving out certain portions from the Bihar-Orissa Province and the Madras Province in 1936.

Sind: Separated from Bombay in 1936.

Panth-Piploda: made a province in 1942, from territories ceded by a native ruler.

Reorganization since 1947

After Independence, the nation-building exercise of the new state began and it was based on a more **robust, democratic and participative pattern**. At the time of independence in 1947, India consisted

of 571 disjointed princely states that were merged together to form 27 states. The grouping of states at the time was done on the basis of political and historical considerations rather than on linguistic or cultural divisions, but this was a temporary arrangement. On account of the multilingual nature and differences that existed between various states, there was a need for the states to be reorganized on a permanent basis.

In 1948, SK Dhar - a judge of the Allahabad High Court - was appointed by the government to head a commission that would look into the need for the reorganization of states on a linguistic basis. However, the Commission preferred reorganisation of states on the basis of administrative convenience including historical and geographical considerations instead of on linguistic lines.

In December 1948, the JVP Committee comprising Jawaharlal Nehru, Vallabh bhai Patel and Pattabhi Sitaramayya was formed to study the issue. The Committee, in its report submitted in April 1949, rejected the idea of reorgansation of states on a linguistic basis but said that the issue could be looked at afresh in the light of public demand.

In 1953, the first linguistic state of Andhra for Telugu-speaking people was born. The government was forced to separate the Telugu speaking areas from the state of Madras, in the face of a prolonged agitation and the death of Potti Sriramulu after a 56-day hunger strike. Consequently, there were similar demands for creation of states on linguistic basis from other parts of the country.

On December 22, 1953, Jawaharlal Nehru appointed a commission under Fazl Ali to consider these new demands. The commission submitted its report in 1955 and it suggested that the whole country be divided into 16 states and three centrally administered areas. The government, while not agreeing with the recommendations entirely, divided the country into 14 states and 6 union territories under the States Reorganisation Act that was passed in November 1956.

In 1960, the state of Bombay was bifurcated to create the states of Gujarat and Maharashtra following violence and agitation. In 1963, the state of Nagaland was created for the sake of the Nagas and total number of states stood at 16.
The areas of Chandernagore, Mahe, Yaman and Karekal from France, and the territories of Goa, Daman and Diu from the Portuguese, were either made union territories or were joined with the neighbouring states, after their acquisition.

Based on the Shah Commission report in April 1966, the Punjab Reorganisation Act was passed by the Parliament. Following this, the state of Haryana got the Punjabi-speaking areas while the hilly

areas went to the Union Territory of Himachal Pradesh. Chandigarh, which was made a Union Territory, would serve as the common capital of Punjab and Haryana.

In 1969 and in 1971, the states of Meghalaya and Himachal Pradesh came into being respectively. With the Union Territories of Tripura and Manipur being converted into states, the total number of Indian states rose to 21.

Thereafter, Sikkim in 1975 and Mizoram, Arunachal Pradesh in February 1987 also acquired the status of states. In May 1987, Goa became the 25th state of the Indian Union, while three new states of Jharkhand, Chhattisgarh and Uttaranchal were formed in November 2000. On June 2, 2014, Telangana officially became India's 29th state.

Presently, India has 28 states and 8 union territories. The states are: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttaranchal, West Bengal and Telangana. The union territories are: Delhi, Chandigarh, Puducherry, Andaman and Nicobar Islands, Lakshadweep, Daman and Diu and Dadra and Nagar haveli, Jammu and Kashmir, Ladakh.

Conclusion

States reorganisation has had a long history beginning from the British rule and continuing even today.

The reorganisation process in the post-Independence era tells us a story wherein the state attempted to strike a balance between linguistic-cultural plurality and political centrality.

However, it is argued that any further reorganisation of states **should be based on a "cosmopolitan model of democracy" and should be anchored in theories of constitutionalism, consociationalism and multiculturalism.**

12. Discuss the main contributions of Gupta period and Chola period to Indian heritage and culture.

Gupta Period

During the Gupta period (c. 320 – 647 C.E.) there were tremendous advances in poetry, prose, and drama as well as important discoveries in mathematics and astronomy. The Gupta period is rightly termed as the **"Golden Age of Indian Culture".**

Architecture

The Gupta Era is considered the **pinnacle of Indian rock-cut architecture**. The most prominent architectural marvels of the period are temples with **standing figures of gods and goddesses**. The best-known temples of the period include the **Dashavatara Temple at Deogarh, Uttar Pradesh.**

Other famous temples include the **Bhumara Temple and Nachna Hindu temples in Madhya Pradesh. Udayagiri Caves near Vidisha in Madhya Pradesh is another architectural marvel of the Gupta Period.**

The **Siva temple at Nachana, the Parvati temple at Ajaya Garh in Uttar Pradesh, the Vishnu temple in the Central Province**, the **Ekkalinga Shiva temple at Satana** are some of the other examples of temple architectures belonging to this Dynasty.

The **rock-cut monastery in the Ajanta Caves** is well known. This monastery consisted of **various Chaitya halls along with numerous residential Viharas.** Its portico, as well as its interiors, has graceful sculptures on them. Different kind of splendid murals filled up the interiors of this structure. **Bronze and hard black stone images have also been excavated at Nalanda** and such other places which indicate their deep focus towards ornamentation as well as fabrication. In addition to

this, there were two Buddhist stupas which stand as prototypes of stupa architecture from this period. The **"Mirpur Khas Stupa" built in the 4th century AD consisted of a variety of arches**.

Sculptural Art

The main centres of Buddhist art during the Gupta period were **Mathura, Sarnath and Nalanda in the north.** The Buddhist images of Mathura and Sarnath are some of the best specimens of Indian art. The other places where we get to see Gupta sculptures are the **Vishnu sculptures in Udayagiri rock-cut Caves, Dhamek stupa at Samath, Bhitargaon, Buddhist caves in Ajanta, Ahichchattra, and Dasavatara Temple in Deogarh**.

The **rock temple at Elephanta** (near Bombay) contains a powerful**, eighteen-foot statue of the three-headed Shiva**, one of the principle Hindu gods. The period also saw dynamic building of Hindu temples.

The **art of terracotta and casting figures in stucco reached its zenith in this period**. The artist tried clay figurines on a small scale whereas the stucco figurines are in large dimensions. The terracotta figurines were used in the brick temples. These figurines were of great variety and beauty.

Sculptures include beautiful depictions **of Hindu Gods and Goddesses; large scale depictions of Buddha; and Jain tirthankara figures.**

The **Shiv-Parvati relics in Kosam, the Ramayana panel in Deogarh and also at Sarnath** were some of the main sculptures so erected during the Gupta period. The sculpture of this period truly depicts the artistic perfection of the Gupta period artists. Additionally, the **Gandhara School of art and sculpture**, as well as the **Mathura school of art, also contributed heavily to the art of sculpting.**

Gupta Period sculptures gradually liberates itself from Gandharan influences, and the statues of the Buddha are now characterised by decorated haloes, close-fitting transparent garments, and peculiar arrangement of the hair.

The craftsmen of the Gupta age were experts in working metals. This is evident from the discovery of several colossal **copper statues of the Buddha and an iron pillar at Mehrauli near Delhi.** The **bronze Buddha image from Sultanganj** and also **one from Dhanesar Khera** together with a number of specimens found in north-western part of India are excellent specimens. It represents the triumph of Gupta metallurgical skill.

Gupta sculpture is known for its serenity of countenance and grace of pose. These qualities can be clearly seen in the **erotic sculptures in the Khajuraho temples.**

The **sculptures at Sondani and surrounding areas of Mandsaur** are a good marker for the final period of Gupta Art

Literature

Gupta literature consists of fables and folktales written in Sanskrit. These stories **spread west to Persia, Egypt, and Greece**. The **Panchatantra and Kamasutra** were written during this period. The **greatest writer of the time was Kalidasa.** Poetry in the Gupta age tended towards a few genres: **religious and meditative poetry, lyric poetry, narrative histories** and drama. The **Nalanda University in Bihar, came to fame** during the Gupta rule.

During this period, Sanskrit Literature was at its highest point because Gupta Emperors made Sanskrit their court language. Famous works by Kalidasa include the **Abhijnashakuntalam, Raghuvamsha and Kumarasambhavam; Meghaduta** etc.

Panchatantra, written by Vishnu Sharma; Mudra Rakshasa and Devichandra Gupta, by Visakhadutta are other important contributions.

Puranas, were written during the age of Gupta emperors.

Painting

Painting as an art reached its perfection in Gupta period. These paintings are to be found in the **Bagh Caves in Madhya Pradesh and Bedsa Caves and the Ajanta caves in Maharashtra.**

The **wall-frescoes of Ajanta Cave** in the central Deccan are considered among the **greatest and most powerful works of Indian art.**

The **discoveries at Sarnath** and other places show that the **plastic art reached a high level of perfection during the Gupta age**.

These paintings are characterised by **instinctive beauty of line, majestic graceful figures, decorative imagery and dramatic expressiveness**. The refined art of Ajanta is clearly the culmination of hundreds of years of cultivation and practice.

The **mural paintings are among the best of Ajanta art.** A painting of the mother and child before Lord Buddha is a great example.

These paintings depict **various scenes from the life of the Buddha**. The skill with which the **human, animal and plant figures** have been drawn shows the **refined and sensitive nature of Gupta art**.

Jataka tales, as well as the life of Gautam Buddha, were the two most common subjects when it came to painting. As a matter of fact, the **Bodhisattva Padmapani was considered as one of the best paintings** to have been produced during this period.

Culture

Gupta emperors were patron of learning and culture. They endowed many cities with wonderful Hindu temples and Buddhist monasteries. The great **university of Nalanda,** which would become the leading international centre of Buddhist learning, was founded by one of later Gupta emperors. Revival of Brahminism was marked by the long **Junagadh rock inscription of Rudradaman**. Allahabad pillar inscription showcases **Samudragupta's poetical attainments and proficiency in music.**

Chola period

Architecture

Built in the early 11th century, the two magnificent temples **at Thanjavur and the Gangaikonda Cholapuram** show the best of Chola art and architecture. The Dravidian feature initiated by the Pallavas acquired the classical forms and **features under the Cholas such as gopurams, mandapams and vimanas**. Initially, the **gopuram features were more prominent but in the later stages, the vimanas took the forefront.** The sanctums of the Chola temples were both circular and square in size and the walls of the inner sanctum sanatorium were beautified. On the upper side of the sanctum special **vimanas are built with dome shaped sikhara and kalasa which were also there on the top of gopurams.** The walls of the passage around the **Brihadeshwarar Temple sanctum** are covered with panels of exquisite paintings. The **108 dance poses of Shiva carved on the inner walls of this temple** testify to the heights attained by the Cholas in the field of art and architecture. The 16 feet Nandi at the entrance of the temple is a monolithic structure and the second largest in the country. Largest and tallest of all Indian temples this temple is known to be the finest creation of Chola craftsmen.

The **Shiva temple at Gangaikonda Cholapuram** (182 feet or 55 m) and **the Airavatesvara temple at Darasuram** dedicated to Lord Shiva. The Airavatesvara temple complex, built by Rajaraja II, at Darasuram features a 24-m vimana and a stone image of Shiva. The temples testify to the brilliant achievements of the Chola in architecture.

Art and Sculpture

The temples of the Imperial Cholas are covered **with exquisite well composed sculptures and frescoes**. The **artists used the lost wax technique and followed the complete Indian Shilpa**

Shastra. The sculptures during this period are described as the cultural epitome of Chola period and are the best specimen of Chola art. The Cholas sculpture of the temples the **combination of stone pillars, Gopurams, magnificent sculptures and well-carved relief works.** During Chola period the artists did many **experiments in doing bronze sculptures**. Nataraja bronze sculpture is the best example.

Portraits

The Cholas excelled the Pallavas in the art of portrait making. The best specimens of portraits are found on the walls of **Koranganatha temple and Nageswarasamy temple.** The portraits of Cholamadevi and Kulothunga-III are there in Kalahasti temple. They are good examples of Chola art of portrait making.

Paintings

The proficiency of' the Chola painters are seen on their paintings. **Figures were painted with realism**. Paintings in Big temple are good examples. Scenes of Periyapuranam are beautifully depicted Kailasanathar temple at Kanchipuram, Vishnu temple at Malayadipatti contain fine specimen of the Chola paintings. Rajaraja-I and Rajendra contributed more for the development of the art of painting during the Chola period. There were **paintings on the themes of Puranas painted on the inner walls of the Raja Rajeswara Temple and Gangaikonda Cholapuram Temple and the Nataraj Temple at Chidambaram.**

Music

During the Chola period the art of music was developed. Twenty three panns were used in music. The seven music alphabets sa. ri, ga, ma, pa, da, ni were used. The hymns of Aiwars and Nayanmars were sung in every temple. **Nambiandar nambi and Nathamuni** contributed much for the development of music. Books were written on music. Several musicians were appointed in Brahadeeswarar temple. **Drums, udukkai, veena, flute were famous music instruments.** Sagadakkottigal formed a group of musicians. Endowments were made to promote music. Musicians were honored by the kings. Temples and mutts imparted training in vocal and instrumental music.

Dance

The Chola kings patronized the art of dance. **Bharatha natyam and kathakali** were two types of dances performed during the Chola period. Lord Siva was represented as the **exponent of Karana dance**. Natarajar temple at Chidambaram and Sarangapani temple at Kumbakonam have **dancing poses of Lord Nataraja**. Rajaraja I appointed 400 dancing girls in the big temple at Tanjore. There were two dance directors to coordinate these dancing girls. Dance dramas were also performed on stages at festival times. Chola kings made endowments to promote the art of dancing.

Drama

The Cholas promoted the art of drama. **Rajarajeswara natakam and Rajarajavijayam** were the dramas enacted during festival times. Drama actors received honors from the Chola kings. **Koothu is one type of drama**. Koothus were also there. **Inscriptions refer about Ariyakuthu, Chakki koothu and Santhi koothu.**

Final Thought

Whether it was through the paintings or through sculpture or by way of temple architecture, the varied forms of art have consistently displayed an artist's perfection as well as finesse of Gupta and Chola period thereby contributing to Indian heritage and culture.

13. Discuss the significance of the lion and bull figures in Indian mythology, art and architecture.

ANIMALS played a very significant role in early Indian art and iconography. Certain select animals were associated with the divinities in Brahmanical Hindu, Buddhist and Jaina religions. These include Lion and Bull.

Lion symbolism

The Asiatic lion has long been celebrated as **Lord of Beasts,** and it became **a symbol for human power and sovereignty**. In ancient societies in India, to fight with a lion was considered to be the ultimate test of leadership. This gradually shifted to a somewhat safer, more symbolic gesture of a leader clothing himself in or standing on a lion skin. There were magnificent **depictions of lions amongst the statues at Mahabalipuram**. The most important use of the **lion as a symbol of power and strength was associated with the Emperor Asoka in Sarnath, 2000 years ago**. This depiction of a lion eventually became the Emblem of India.

Going back, **Neolithic cave paintings of lions were found in Bhimbetka rock shelters** in central India, which are at least 30,000 years old.
And Lion has played a major part in the symbols and folklore of Indian culture for over 2000 years. Mythologically, the lion symbolism and its cultural depictions can be **found in Hindu and Buddhist art of India.**
Narasimha ("man-lion"), is described as **an incarnation (Avatara) of Vishnu in the Puranic texts of Hinduism**. It is worshiped as "Lion God" and considered sacred by all Hindus in India.
Lions are also found in Buddhist symbolism. Lion pillars erected during the reign of Emperor Ashoka show **lions and the chakra emblem**.
The magnificent capitals of the Mauryan pillars consisting mainly of lion as their crowning feature, in form, shape and appearance represent an unprecedented and unique category in the Indian art history. **Lion as the crowning animal of Mauryan pillars** have been found from several places. Such as, Lion capital at **Bakhira, Lion capital of Lauåiyā Nandangaåh, Rāmpurvā Lion Capital, Sārnāth Lion capital, Sāñchī Lion capital.** Besides these, lion capital has been found at **Masadh village in Arrah district of Bihar**. A number of lion figures on coins in India is during the time of Chandragupta II showcases the significance of Lion in Indian culture and heritage.

Bull

In Prehistoric Art

Since, 1880 about 3000 caves and rock shelters have been discovered in India. Among the various animals drawn on rock surface, a number of figures indicate the presence of Bull.
Representations both real and mythical, in the rock shelters have been **found from Bhimbetka and from Ramgudiwar Tolkoli in Badami.**

In Bhimbetka Caves at one place, a bull is shown chasing another animal while a human figure and a crab are shown running ahead of this figure. Since **this theme has been multiple times it is presumed that Bull occupied important place in the lives of Prehistoric people.**
The **Rock Paintings of Kupgalu and Lal Gairik exhibit horns of Bulls tied with Bows**. Pottery Fragments discovered from areas near Chambal river, are painted with Bulls with decorated horns. Similarly, paintings on rocks of Raicur in Hyderabad shows the predominance of Bulls. Reference can be made of a figure in Monteraga rock-shelter at Panchmarhi in which a man is shown subduing a lion and a bull. This theme **symbolizes the supremacy of man over wildlife (lion) and agricultural life (Bull).**

The significance of the bull as a symbol of fertility and strength was widespread in India as early as the Indus Valley Civilization (about 2000 BC).

Mythology

Nandi, which means "giving delight" or "giving joy," is the sacred bull of the Hindu god Shiva and Nandi is identified as the god's vehicle **since the Kushan dynasty (c. 1st century CE).** Most Shaivite temples have the figure of a humped white bull reclining on a raised platform and facing the entrance door of the shrine so that he may perpetually gaze on the god. Nandi is one of Shiva's chief attendants and occasionally is depicted in sculptures. Nandi is considered to hold truth and righteousness.

Art and Architecture

Ancient Indian seals and sealing incorporated the figures of bull- example – seals found from Mohenjo-Daro and Harappa, of Indus Valley Civilization.

The bull, appeared **on the silver punch marked coins,** on copper cast coins of the different tribes and localities, the copper and gold coins **of the select Kusana emperors and on the coins of Skandagupta, issued from Malwa.**

Monolithic Bull **(Nandi) sculpture carved out of a huge granitic rock of Sri Veerabhadra temple.** This monolithic sculpture is a unique example of its kind. It faces west and is looking towards the mentioned Naga-linga located at Sri Veerabhadra temple. Bull is depicted in the contemporary **art of Amaravati, Nagarjunkonda, Goli**, etc., in the Andhra Pradesh, **patronized by the Satavahanas and Iksvakus.**

During the Mauryan period a few ring stones were made in which pictures of bull appeared. Ashoka, the great Mauryan ruler, patronized the erection of a number of freestanding columns. In some such pillars, the figure of bull was embossed on their capital or found relieved on abacus. The pillar capital shows the presence of single bull or double bulls or, even, on a rare occasion, four bulls.

The **Rampurva bull capital is noted** as one of the seven remaining animal capitals from the Pillars of Ashoka. It is composed of a lotiform base, with an abacus decorated with floral designs, and the **realistic depiction of a zebu bull.**

The **art of Sunga period (second-first century BC)** was predominantly characterized by Buddhist narrative art. In the Buddhist narrative art of **Bharhut, Bodh-Gaya, Sanci, Amaravati** and narrative art of a few other sites, such as, **Khandagiri**, we can see presence of bull figures.

The **bull in the Kusana art of Gandhara and Mathura** affiliate with Hindu, Buddhsit and Jaina religions.

Finally, the **bull in Gupta sculpture became established as a religious symbol**. It appeared in the narrative panels, attached to the contemporary temples and also as mount of a number of divinities. Bull figures were painted in a number of ways **on the murals of Ajanta, particularly, such panels that were painted in the Gupta-Vakataka period**.

Final Thought

The above discussion clearly substantiates the importance of Lion and Bulls not only in Indian arts of sculptures, paintings, architecture and design but also in Hindu, Jain, and Buddhist mythology. The depiction of these animals are expressions of human imagination that were often used as religious symbols of power, grace, beauty, dignity, opulence and wisdom. They truly represent India's culture.

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

Ocean currents refer to the **steady movement or flow of surface ocean water in a prevailing direction.** Various forces act upon ocean water, causing it to move. These forces determine the size, speed direction, and shape of ocean currents. The water can either move horizontally – known as currents, or vertically – known as downwellings or upwellings.

Forces that influence ocean currents

Solar heating

it causes water to expand. The water around the equator is roughly 8cm high than in middle latitudes. It causes a slight slope in the water and it flows down the slopes. Warm water flows towards the cold Polar Regions and cold water flows towards the warmer equatorial regions.

Wind

The Wind is responsible for ocean currents as it blows the water on the surface, causing the currents. The wind is responsible for surface currents where ocean water is redistributed based on its density and temperature. These strong winds are not random breezes; the major winds that most often effect the creation of ocean currents are the Westerlies, which blow west to east, and the Trade Winds, which blow east to west.

Gravity

Gravity tends to pull items towards the surface of the earth. When the wind blows ocean water, the water piles up in the direction of the wind. Gravity, therefore, pulls the water down the 'hill' against the pressure gradient.

The salinity of the water

When water moves towards the poles, it gets cold and freezes into ice, leaving a share of salt behind. It makes the underlying water saltier, making it denser. The cold, saltier and denser water sinks to the floor of the ocean and is replaced by surface water in the process.

Temperature

Warm water tends to stay on the surface of the ocean. When the denser, saltier, and cold water moves towards the equator, where it is warmer, it warms up and becomes less dense, rising to the surface of the ocean, resulting in upwellings.

Coriolis Effect

When a rotating object collides with another moving or stationery force, it creates a new motion. The Earth's rotation creates two currents: one, a clockwise movement of water in the Northern Hemisphere; the other, a counter-clockwise movement of water in the Southern hemisphere. When these currents are deflected by land masses, they create huge ocean currents called gyres.

Underwater earthquakes

They can trigger ocean currents, moving masses of water inland. Earthquakes can also trigger downslope movements of water-saturated sediments, resulting in strong turbidity currents.

Water Density

Another major factor in the creation of currents is water density, caused by the amount of salt in a body of water, and its temperature. Water with a higher salinity, or colder water, is more dense and likely to sink. Sinking water pushes the water below it up. The combination of sinking and rising in the same area causes a current.

Ocean Bottom Topography

Water contours to the topography of the ocean floor or bed. If the ocean bottom "drops out," like in a valley or trench, the moving water will move downward. If there is a rise in the ocean bottom, like a ridge or mountain, the water moving along it will be forced upward. The sudden upward or downward change of direction causes water displacement, creating a current.

Role of Ocean Currents in Fishing Industry

Ocean currents are important in the fishing industry as they affect the growth of plankton which provides fish food. Warm ocean currents restrict the growth of plankton hence give rise to poor fishing grounds. **Cold ocean currents encourage the growth of plankton** as they are rich in nutrients. These **give rise to rich fishing grounds.**

Rich fisheries often occur **where different currents meet and mix in ocean fronts.** Because of convergence, there is strong mixing of ocean waters. In such areas the nutrients so essential for marine organisms are in abundance. So the marine life is rich in such areas.
The most important fishing grounds in the world are located in shallow water close to the land where there is mixing of cold and warm currents from different regions.
Current eddies are also fertile feeding grounds for marine life. So are areas with strong current flow over submerged ridges and mounds. Currents **affect** the availability of nutrients for plant growth, and thus **the availability of food for marine animals**. Eggs and larvae of fish and other animals drift with the currents from the spawning grounds to nursery areas where they feed and grow. Currents also influence where bottom-dwelling species such as crabs, lobsters, and shellfish settle as adults.

The most important fishing grounds in the world are **located in shallow water close to the land** where there is mixing of cold and warm currents from different regions.
The major fishing grounds on earth comprise the **seas north of Japan where the warm Kuroshio Current meets the cold Kamchatka Current**; the **Grand Banks off Newfoundland where the North Atlantic Drift encounters the cold Labrador Current**; and the sea **around Iceland where the North Atlantic Drift meets the East Greenland Current.** All these areas are located in the Northern Hemisphere in areas of shallow waters. There the chemical nutrients on the floor of the sea can be mixed upward so that they are readily available to fish in surface waters where there is sufficient light and adequate quantity of oxygen.

Even though in the southern hemisphere also the cold and warm currents meet at high latitudes, there are no such fishing grounds rich in marine life. This is because of the fact that in those latitudes there is dearth of land and consequently of shallow waters full of land-derived nutrients.

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

Rubber is one of the most important polymers for human society. It is an essential raw material used in the creation of more than 40,000 products.

Production and Distribution of Rubber

There are two types of rubber, synthetic and natural, that differ greatly in terms of the production process. Synthetic rubber is oil-based, produced in a chemical factory, while natural rubber comes from trees grown in tropical climates.
The U.S., China, Japan and several Western European countries lead the market in producing synthetic rubbers.

There are 28 countries worldwide that produce natural rubber. The most distinct characteristic they share is a tropical climate. Tropical climates with consistent temperatures around 82°F support healthy rubber trees. Rubber trees also thrive in deep soil with resistance to flooding and in areas where the annual rainfall remains between 60 and 78 inches.

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

According to statistics released by the Association of Natural Rubber Producing Countries (ANRPC), three countries produce about 70% of the world's current natural rubber supply, all of which are located in Southeast Asia.

For decades, **Thailand has been the world's biggest producer of rubber.**

Rubber Production by Country 2022

Top 10 Rubber Producing Countries in 2020

Rank	Country	Avg rubber production per annul (1000 tons)
1	Thailand	4,305
2	Indonesia	3,088
3	Malaysia	997
4	India	891
5	China	864
6	Vietnam	790
7	Philippines	548
8	Côte d'Ivoire	411
9	Guatemala	356
10	Brazil	186

Thailand is the world's largest rubber producing country representing nearly **36% of the world's total natural rubber production**. In 2020, Thailand produced about 4,500 metric tons of natural rubber.
Just six countries provide 95% of global natural rubber production: **Thailand, Indonesia, Malaysia, Vietnam, India and China.**
The top consumers of natural rubber are China, USA, Malaysia, Japan and South Korea.

Environmental issues caused by Rubber Industry

Natural rubber is widely considered a more eco-friendly and better product than synthetic rubber, but it still presents some issues. Natural rubber **contributes to deforestation, biodiversity loss, pollution, and more**.
Natural rubber processing sector **consumes large volumes of water and energy and uses large amount of chemicals as well as other utilities. It also discharges massive amounts of wastes and effluents.** The most common environmental issues are wastewater containing chemicals and smell, hazardous waste, noise, and thermal emission. Its wastewater contains high biological oxygen demand and ammonia.

MAJOR ENVIRONMENTAL PROBLEMS

High concentration of BOD, COD, & SS

Wastewater discharged from latex rubber processing usually contains high level of BOD, COD and SS . These characteristics vary from country to country due to difference in raw latex and applied technique in the process. The main source of the pollutants is the coagulation serum, field latex coagulation, and skim latex coagulation. These compounds are readily biodegradable and this will result in high oxygen consumption upon discharge of wastewater in receiving surface water.

Acidic effluent

Effluent from latex rubber processing industries is basically acidic in nature. Different extents of acid usage in the different factories attribute to pH variation of different effluent. Due to the use of acid in latex coagulation, the effluent discharged from latex rubber factories is acidic and re-dissolves the rubber protein. The effluent comprises mainly of carbonaceous organic materials, nitrogen and sulfate. The quantity of acid used for coagulation of the latex, specifically in skim latex after centrifugation operation, is generally found to be higher than the actual requirement.

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 level of nitrogen & ammonia to a nearby river or canals leading to a water pollution problem. If high level of ammonia is discharged to water bodies, it could lead to death of some aquatic organisms living in the water. Land treatment system has been conducted to treat and utilize nitrogen in treated wastewater from the concentrated latex factory.

High level of sulfate

The effluent from latex concentrate factories contains high level of sulfate which originated from sulfuric acid used in the coagulation of skim latex. The high level of sulfate in this process can cause problem in the biological anaerobic treatment system as high levels of H_2S will be liberated to the environment and generates malodor problem. The free H_2S also inhibits the digestion process, which gives lower organic removal efficiency (Yeoh et. al., 1993).

High level of odor

The odor causing compound such as hydrogen sulfide, ammonia, amines, can be produced by many of wastewater treatment process. Most odor of organic nature arises from the anaerobic decomposition of compounds containing nitrogen and sulfur. The odor is detectable even at extremely

low concentrations and makes water unpalatable for several hundred miles downstream from the rubber plants. The problems presents varies considerably depending on the plant site, the raw material used, and the number of intermediary product.

Effects on Water Availability

Rubber plants require 60-80 per cent more water in comparison to other plants in a forest, which not only depletes ground water but also take away from the share of other plants. Soil and ground water contaminating in many rubber processing centres and the latex processing industries discharging partly treated or untreated waste water in the surrounding places which contaminate environment.

Effect on Soil Health

Soil erosion is a global problem and rubber plantation can play a role in reinstating soil erosion. Rubber tree can reduce erodibility of soil considerably. Oxidation of soil organic matter can reduce and help for built up due to the reducing the soil temperature. It happens due to the shading of the rubber plantation. The enhancement of decomposition of the organic matter, discharge of nutrients, failure of the collective arrangement of the surface soil, due to the impact of rainfall.

Effect on Biodiversity

It has been found **in Thailand that at least 60 percent biodiversity reduced for rubber plantation** with insectivores and frugivores suffering greater losses. For rubber plantation, forest are cleared in many regions and it is not economically sustainable and have negative impact on water balance and soils. The rubber plantation not only destroyed natural homestead forests, agro-forestry lands (occupied by horticultural plants), but also in some places even forests (both planted and natural).

Loss of Diversity

Most of the rubber plantation is monoculture — growing only one plant species in an area. Scientists term monocultures as **"biological deserts" because unlike natural forests, they don't house diverse plant and animal species.**

Scientists have also linked rubber monoculture to reduction in water reserves, soil productivity and biodiversity in South-East Asia.

Example: In Kerala, rubber plantations replaced natural vegetation and were pushed in regions which were environmentally unsuitable. Studies linked this to reduced biodiversity, river flow, and soil nutrients.

Deforestation

In the past 30 years, one-sixth, or 376,000 km² of the jungles in Southeast Asia have been deforested. This is more than the landmass of Germany.

In a nutshell,

Through planting rubber trees in monocultures, there are severe longterm consequences on different levels.

- Natural Habitat for plants and animals is lost.
- Artificial fertilizers have to be added to have enough nutrients for the trees to grow.
- The lack of biomass through other plants and direct input of sunlight causes soil erosion.
- Monocultures are more susceptible to climate change resulting in loss of harvests and long term soil degradation - making the ground less fertile and more susceptible to having to put huge amounts of fertilizer to be able to grow something at all.

Final Thought

Further, **conversion of forests into rubber plantations needed to be regulated**. Rubber could be combined with other crops such as banana, coffee and agar to support livelihood and to minimise environmental stress. Reduction in the utilization of ammonium sulfate fertilizer to its optimum level has the potential to reduce the GHGs emission for the cultivation of rubber trees. Agroforestry can be a solution to the problems in the industry, a farming technique that enables forests to remain biodiverse, protecting natural habitats and providing alternative sources of income for farmers.

To avoid the negative effects of expanding rubber plantations, land use planning should be based on a solid understanding of rubber farming constraints and their ecological impacts. Local governments and research institutes can **use remote sensing studies as a reference point to promote sustainable rubber cultivation.**

Before establishing a plantation, growers need to **obtain land use permission from indigenous communities** who live on or near the land, a process the United Nations Permanent Forum on Indigenous Issues defines as free, prior and informed consent (FPIC).

There are growing sustainability challenges in the natural rubber sector which will require a **strong and unified response from businesses in the rubber supply chains, their investors, governments, and civil society organisations** that monitor and engage with these actors. To respond to these risks greater industry transparency will be required in order to bring about targeted change.

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

Straits and Isthumuses as Trade Routes

A strait is a narrow body of water that connects two larger bodies of water. Straits serve as **significant strategic and trade routes.** As almost 80 percent of the world's trade is carried over the waves, these **straits provide navigable routes to various ships thus playing a critical role in the trade of the world.**

Similarly, an isthmus is a **narrow strip of land that connects two larger landmasses and separates two bodies of water**. Isthmuses have been strategic locations for centuries. They are **natural sites for ports and canals linking terrestrial and aquatic trade routes.**

Examples:

Strait of Malacca

The Strait of Malacca runs between Malaysia, Singapore, and Indonesia, and has been **a major gateway for trade**. According to the United Nations Conference on Trade and Development (UNCTAD), 60 percent of the maritime trade by volume passes through Asia, and the South China Sea carries about one-third of the global shipping. This route **relies on the Strait of Malacca** as it connects the South China Sea and the Pacific Ocean to the Indian Ocean.

This route **holds much importance to Japan, Taiwan, South Korea, and especially China** – China's economic security is highly associated with this route. Roughly, **100000 vessels pass through this strait each year which makes almost 40% of the global trade.**

The inauguration of the Suez Canal in 1869 increased its importance as it became the main link between the Indian and Pacific Oceans. It is serving as the main transit route for supplying essential commodities to fuel the fast-growing economies of Asia and other regions.

Strait of Hormuz

The Strait of Hormuz lies between Iran and Oman, linking the Arabian Sea and the Gulf countries (Bahrain, Iraq, Saudi Arabia, Kuwait, the United Arab Emirates, and Qatar). The shipping lanes in both directions are merely 3km wide, while the narrowest point in this strait is only 33km wide. It provides the **single most important oil passage of the globe** that forms a chokepoint between the Gulf of Oman and the Arabian Gulf.

This 39km long stretch is the **single route to the open ocean for more than 1/3rd of the globe's Liquified Natural Gas (LNG) and 1/6th of the world's oil production**. This strait is the **only way to transport goods to the rest of the world by the waterway from Gulf countries**. That is why Saudi Arabia and the UAE have repeatedly proposed to build more oil pipelines to avoid this problematic strait as they have hostile relations with Iran. Most of the **oil from the Organization of Petroleum Exporting Countries (OPEC) members is transported through this strait which stands almost at 17.2 million barrels per day.**

Bab al-Mandab strait

The Bab-el-Mandeb is a **strait between Yemen on the Arabian Peninsula, and Djibouti and Eritrea in the Horn of Africa. It connects the Red Sea to the Gulf of Aden.**
Most of the exports of natural gas and petroleum from the Persian Gulf that pass the Suez Canal have to cross this strait to reach their destined location. The Gulf countries rely heavily on this strait for the transport of their oil. More than 21000 oil vessels pass through this strait per year and almost 57 oil vessels pass each day. Saudi Arabia alone sent 600000 barrels a day of crude oil to its buyers in North America and Europe in 2018.

Isthmus of Suez and Suez Canal

The Isthmus of Suez is the 125-km wide land bridge that lies between the Mediterranean Sea and the Red Sea, east of the Suez Canal, the boundary between the continents of Africa and Asia. Suez Canal near it is an artificial waterway in Egypt links the Red Sea and the Mediterranean Sea. The canal provides a direct path between the northern Indian oceans and the North Atlantic via Red Seas and the Mediterranean. It is considered to be the shortest link between the west and the east.
The significance of this canal can be gauged from the fact that the recent six-day blockade of the Suez Canal resulted in a $90 million loss in toll revenue to the Egyptian government.
About **12% of global trade passes through this strait annually, representing 30% of all global container traffic**, and more than $**1 trillion of goods per annum.**

Isthmus of Panama and Panama Canal

There is a tiny isthmus lying between the Pacific and Atlantic Oceans connecting North and South America called the Isthmus of Panama.
This isthmus is of strategic importance to global trade and the world of shipping because it contains the country of Panama and the Panama Canal. The Panama Canal is located inside Panama and is an artificial waterway **that connects the Pacific Ocean and the Atlantic Ocean.**
Panama Canal is one of the world's most important trade assets. Roughly **$270 billion worth of cargo crosses the canal each year. It serves more than 140 maritime routes to over 80 countries.**

Turkish Straits

Bosphorus Strait, also known as the Strait of Istanbul, is a natural strait that connects the Black Sea to the Sea of Marmara and is located in northwestern Turkey. It links the Asian part of the country with the European part. In maritime trade, the Bosphorus Strait has played a major role. Roughly, 48,000

ships pass through the Turkish Straits every year. About 2.4 million barrels of oil pass through the Bosphorus every day.

Bering Strait

The Bering Strait is a significant water passage between the westernmost point of North America and the easternmost point of Asia which divides Alaska and Russia. It provides the only marine gateway between the Pacific Ocean and the icy Arctic.

Danish Straits

The Danish Straits are a series of channels that provide a link between the North Sea and the Baltic Sea, and separate Greenland and Iceland. It is a significant route for the Russian seaborne exports of oil to Europe.

Isthmus of Tehuantepec

The Isthmus of Tehuantepec is an isthmus in Mexico. It represents the **shortest distance between the Gulf of Mexico and the Pacific Ocean.** Before the opening of the Panama Canal, it was a major overland transport route known simply as the Tehuantepec Route.

Final Thought

Historically, straits and isthmuses have had great strategic importance from trade and economic perspective. Whoever controls a strait is likely to control the sea and shipping routes of the entire region. Straits play a huge role in sea transport; they shorten navigation time in transport of cargoes between sea ports and contribute to reduce transport costs. So, they are commercially very significant.

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

The troposphere is the lowest layer of the atmosphere, ranging from the Earth's surface to an altitude of about **10–15 km** depending on latitude and time of year.

It contains 75% of the total mass of the planetary atmosphere, 99% of the total mass of water vapour and aerosols. Most types of clouds are found in the troposphere, and almost all weather occurs within this layer. The air here is 78% nitrogen and 21% oxygen. The last 1% is made of argon, water vapor, and carbon dioxide.

The uneven heating of the regions of the troposphere by the sun (the sun warms the air at the equator more than the air at the poles) **causes convection currents, large-scale patterns of winds that move heat and moisture around the globe.**

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.

Let's see How Troposphere, determines Weather Processes:

Aerosols

For aerosols, 99% exist in the troposphere. They trap heat, keeping the planet warm.

Water Vapour

Temperature and water vapor content in the troposphere decrease rapidly with altitude. **Water vapor plays a major role in regulating air temperature because it absorbs solar energy and thermal radiation from the planet's surface.**

Global Wind Pattern

In the Northern and Southern hemispheres, air rises along the equator and subpolar (latitude about 50 to about 70 north and south) climatic regions and sinks in the polar and subtropical regions. Air is deflected by the Earth's rotation as it moves between the poles and equator, creating belts of surface winds moving from east to west (easterly winds) in tropical and polar regions, the winds moving from west to east (westerly winds) in the middle latitudes. This global circulation is disrupted by the circular wind patterns of migrating high and low air pressure areas, plus locally abrupt changes in wind speed and direction known as turbulence.

Smog

A common feature of the troposphere of densely populated areas is smog, which restricts visibility and is irritating to the eyes and throat. Smog is produced when pollutants accumulate close to the surface beneath an inversion layer (a layer of air in which the usual rule that temperature of air decreases with altitude doesn't apply), and undergo a series of chemical reactions in the presence pollutants from escaping into the upper atmosphere.

Water Cycle

The exchange and movement of water between the earth and atmosphere is called the water cycle. The **cycle, which occurs in the troposphere,** begins as the sun evaporates large amounts of water from the earth's surface and the moisture is transported to other regions by the wind. As air rises, expands, and cools, water vapor condenses and clouds develop. Clouds cover large portions of the earth at any given time and vary from fair weather cirrus to towering cumulus clouds. When liquid or solid water particles grow large enough in size, they fall toward the earth as precipitation. The type of precipitation that reaches the ground, be it rain, snow, sleet, or freezing rain, depends upon the temperature of the air through which it falls.

Average Global Temperature

As sunlight enters the atmosphere, a portion is immediately reflected back to space, but the rest penetrates the atmosphere and is absorbed by the earth's surface. This energy is then remitted by the earth back into atmosphere as long-wave radiation. Carbon dioxide and water molecules absorb this energy and emit much of it back towards the earth again. This delicate exchange of energy between the earth's surface and atmosphere keeps the average global temperature from changing drastically from year to year.

Jet streams

Jet streams flow through the tropopause where the latitudinal variations in temperature are great.

In Conclusion,

The troposphere is where the majority of our weather occurs: clouds, rain, and snow. It is rightly called as the **"zone of weather".** All of the precipitation, winds, storms, and clouds (except a few observed in the stratosphere and mesosphere) we observe occur in this bottom-most layer.

18. Analyze the salience of 'sect' in Indian society vis-a-vis caste, region and religion.

Like all other human societies in the world, from historical times, people in India, have been socially differentiated through **religion, region, tribe, caste, sect, gender, and language.**

From the Indian context, it is important to note that Caste systems are based on systems dealing with hierarchical issues, while religion is focused on divine worship, morals, and ethical issues.

Sects on the other hand are denominations with various traditions and sub-traditions centered on one or more philosophies. A sect is thus a subgroup of a religious or philosophical belief system. They can be considered as different schools of thought.

Transition from Varna to Jati: Social Hierarchy

In ancient times, four varna categories were constructed to organize society along economic and occupational lines. With the transformation of the society from pastoral to agrarian economy, the **old form of social differentiation (Varna) gave way to the new form of social differentiation, i.e., jati or Caste.** The Indian Caste System is considered a closed system of stratification, which means that a person's social status is obligated to which caste they were born into.

Caste organized social life not only among Hindus and **also in Muslim, Christian, Sikh and Buddhist communities.**

Among Hindus four castes based on karma and "purity"—how he or she lived their past lives. Those born as Brahmans are priests and teachers; Kshatriyas are rulers and soldiers; Vaisyas are merchants and traders; and Sudras are laborers. The practice of untouchability in the historical perspective is construed as a social evil emanating from caste-based prejudices.

Among Muslims Ashrafs are the Brahmin equivalent, Ajlafs are the Vaisya equivalent and Shudras, and Arzals are the Atishudras or Dalit equivalents of Islam.

In the Sikh community, the powerful land-owning caste, Jat-Sikhs, are at the top, followed by converts from Hindu trading communities in the middle and converts from lower caste Hindu communities, Mazhabi Sikhs, at the bottom.

In Christians, Anglo-Indians are at the top of the hierarchy. This small community includes individuals of mixed descent from Indian and British parents. Those who converted to Christianity, even generations ago, from middle level Hindu castes come next, followed by those from Indigenous backgrounds. Those who converted to Christianity from Dalit castes are placed at the bottom.

While Buddhism in India is close to being casteless, its dominant versions in Sri Lanka and Nepal have caste-based hierarchies.

Prevalence: Although discrimination on the basis of caste has been outlawed in India, it still exists in the community today.

Sect focuses on Organized Tradition: Social cohesion

Sect does not denote a split or excluded community (As observed in Untouchability of Caste System), but rather an organized tradition where the focus is on adherents and followers.

Example, in Hinduism, four major traditions are: **Vaishnavism, Shaivism, Shaktism and Smartism**. These are referred to as the denominations of Hinduism, and **they differ in the primary deity at the centre of the tradition (Vishnu, Shiva, Shakti and so on)**.
Its important to note that though Hinduism contains many sects, it is linked by shared concepts, recognisable rituals, cosmology, shared textual resources, pilgrimage to sacred sites and the questioning of authority.

Similarly, the two different branches in Islam are **Sunni and Shia sects**. There are also their sub-denominations or other orders such as Ahmadiyya, Alawi, Druze, Hanafi, Ismaili, Jafari, Kharijite, Maliki, Shafi, Sufi, Wahabi, Zaidi, etc. Each sect developed several distinct jurisprudence systems reflecting their own understanding of the Islamic law during the course of the history of Islam.

Similarly, Jains are divided into two major sects; the Digambara (meaning sky clad) sect and the Svetambara (meaning white clad) sect. Each of these sects is also divided into subgroups. The **two sects agree on the basics of Jainism, but disagree on: details of the life of Mahavira**.

Ajivika, an ascetic sect emerged in India about the same time as Buddhism and Jainism and that lasted until the 14th century; the name may mean “following the ascetic way of life.” It was founded by Goshala Maskariputra a friend of Mahavira, the 24th Tirthankara of Jainism. The Ajivikas supposedly held that the affairs of the entire universe were ordered by a cosmic force called niyati (“destiny”) that determined all events, including an individual’s fate.

Though Sectarian violence and/or sectarian strife fuelled by discrimination, hatred or prejudice is devastating various parts of the world, even today, there have been hardly any conflict and violence in Indian society based on Sects. Thus, sects exist as an organized and integrated set of beliefs, behaviours, and norms centred on basic social needs and values in Indian context. Many social evils emanated over centuries but they are not exclusive of any sect, region or religion.

Movement based on sects countered Caste System and Religious superstitions

Movements based on sects have countered the caste system and religious and social superstitions of the Indian society in the past.

Examples:

Bhakti Movement

In the 7th-8th century AD the social fabric of India was torn by all round degradation and cultural distortion. Evil practices in Indian Society prevailed: Example:

- Brahminical dominance
- Rigidity of caste system,
- Irrelevant rituals and religious practices,
- Blind faiths and social dogmas.
- Polytheism,
- Segregation,
- Severe economic disparity due to casteism, untouchability etc
- Sufi artists faced death threats and active opposition from orthodox Muslim communities and fundamentalists
- Various malpractices were committed in the name of religion, which vitiated the social structure included animal and human sacrifices, magical rites, spels, casteism etc. The poor and downtrodden people became victims of these ghastly practices.

It was at this juncture, that the Bhakti Movement developed around different gods and goddesses, and some sub-sects were **Vaishnavism (Vishnu), Shaivism (Shiva), Shaktism (Shakti goddesses), and Smartism.** The movement provided an individual-focused alternative path to spirituality regardless of one's birth or gender. Bhakti movement **preached against the caste system using the local languages so that the message reached the masses.**

Liberals like Ramanuja, Chaitanya Mahaprabhu, Kabir, etc emphasized aspects like equality irrespective of caste, creed, and colour, virtues of kindness of heart and mind, devotion to one God (monotheism), freedom from all kinds of ritualism and preaching in the language of the common people. Bhakti movement provided women and members of the SO CALLED Shudra and untouchable communities an inclusive path to spiritual salvation.

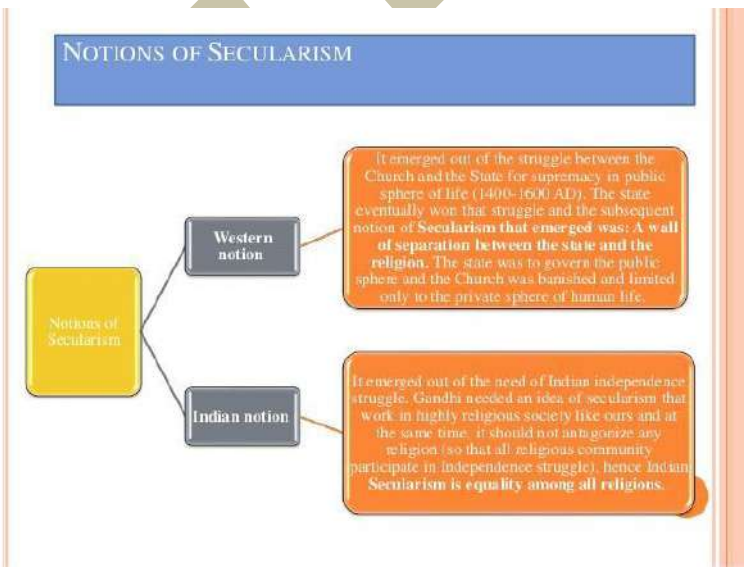
Conclusion

In a nutshell, Casteism and Religious dogmas have been challenged from time to time by various sects and their reformist movements in Indian Society.

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

India over thousands of years had become a **'melting pot' of religious, linguistic and cultural diversity,** and thereby created a unique cultural fabric **based on the principles of multiculturalism and pluralism.**

The ancient Indian philosophy was based on the ideals of ***vasudaivakutumbakam*** - the whole world is one family and ***sarvadharmasambhava-*** all religion leads to the same destination. These philosophical notions have attained legal status in the India.



Secularism in the Indian Context of Multiculturalism and Pluralism

Secularism as an integral part of constitutional norms was evolved in the West. In the west it means complete separation of religion from the state. Post-Independence in 1947, India adopted a constitution based on liberal democratic values and principles, but made attempts to contextualize and integrate these principles within the broad milieu of multi-lingual, multi-cultural and multi-religious society. Thus, the model of secularism in India is uniquely different from the Western ideas of secularism. India recognized that there could not be one official state religion nor strict separation of state from religion. Secularism in India refers to the equal status and treatment of all religions. Also,

the key elements of Secularism in India are Pluralism and Tolerance. This can be substantiated through the various Constitutional provisions:

Article 14 prohibits the state from denying 'to any person equality before the law or the equal protection of the laws'
Articles 15 and 16 prohibit the state from making any discrimination, including employment with the state, against any citizen on the grounds of religion or sex.
Articles 25 to 28 lay down the scope and extent of the right to freedom of religion in India. Article 25 secures to all persons, irrespective of their nationality, the right to freely profess, practise and propagate religion, but subject to public order, morality and health, and to other fundamental rights. Every religious denomination has been given the right to establish, maintain and manage institutions for religious and charitable purposes. Similarly, the Constitution guarantees every individual that neither one would be compelled to pay any tax for religious purposes nor any religious instructions would be imparted in any government-aided educational institutions.

Mahatma Gandhi emphasizing the importance of religious tolerance and respect towards diversity, had stated that 'I do not expect India of my dreams to develop one religion, i.e. to be wholly Hindu or wholly Christian or wholly Mussalman, but I want it to wholly tolerant, with its religions working side-by-side with one another'. The concept of secularism based on **sarvadharmasambhava** implies not just non-interference by the state but also **equal treatment of all religions and equal support to all religions so that they can come to an equal level**. The actual application of this unique concept of secularism can be seen in examples of government providing **Haj subsidy, facilitating the organization of religious festivals like Kumbh Mela, organizing religious pilgrimage to Kailash Mansarovar Yatra, etc**

In the leading **case of S. R. Bommai v. Union of India**, the Supreme Court had observed that the term 'secularism' does not imply that the state should be hostile towards religions, but rather it should act with neutrality in its treatment towards all religions. In the words of Ahmadi J., secularism is **based on the 'principles of accommodation and tolerance'**.

In the subsequent case of **Ismail Faruqui v. Union of India**, the Court attempted to provide an Indianized definition of secularism by referring to ancient Indian texts such as **Yajur-Veda, Atharva-Veda and Rig-Veda and gave formal recognition to the concept of sarvadharmasambhava, largely based on the notions of tolerance.**

Thus, it can be concluded that the Indian judiciary has always recognized multiculturalism and legal pluralism as the fundamental basis for determination of the concept of secularism in India.

One of the most glorious aspects of India's pluralist cultural history is the treatment that it gave to the religious and minority groups that came to India as refugees. Persecuted by their own countries with sacred places destroyed and fellow beings being massacred, **the Jews, the Zoroastrians, the Tibetians, etc.** Our age-old traditions of tolerance and hospitality, attracted them and they found their hopes and aspirations fulfilled. The resilience and adaptability nurtured by pluralism in India **led to assimilation and synthesis, which enriched our unique culture.**

Pluralism is an understanding of social diversity. We have intense pride for Ajanta caves, the Kashi temple, the Taj Mahal, Gommatesvara of Shravanabelagola, the Golden Temple of Amritsar, etc. Though they embody different faiths, there is a sense of the emotional experience of being Indian. This explains the plurality of beliefs.

Concerning language, India never had a monopoly on one language. **More than 19,500 dialects are spoken in India** as mother tongues, according to the latest census. There are 121 languages which are spoken by 10,000 or more people in India.

Even politically, India was at no time ruled by one royal power, except in times of Ashoka or under the British. Various royal families ruled their territories simultaneously. They all ruled their domains but looked for an opportunity to overpower the other. For Example, when the **Mughals were ruling North India, the Vijayanagar rulers in the south and the Bahamani rulers in parts of Deccan and Central India were ruling their territory simultaneously.** So in many ways, plurality exists by way of co-existence.

Another perennial value that the Indian culture has taught is the universal brotherhood, which is now being called global consciousness covering the whole world was the foundation of Indian culture.

The old concept of 'Unity in Diversity' has been conserved; however, on the ground, the colour of this unity has dimmed. Three significant factors contributing to this decline are varieties of Languages. Enumerating its languages has been contentious, given the implications of legitimising and delegitimising linguistic identities. Political divides, all political parties create division amongst people for their petty vote bank. And the exclusionary nature of religion results in religion simultaneously uniting people while dividing others. The absence of pluralistic reciprocity would further widen the faultlines appearing in Indian society.

Final Thought

Unlike many other post-colonial societies, **India chose a pluralistic constitution at independence despite complex counterbalancing pressures after a bloody partition in 1947 based on the two-nation theory**. The Constitution of India continues to endure as a standard in public life and enjoys legitimacy among India's diverse groups. Therefore, combined efforts of all intellectuals and political leaders are required to forge the actual concept of pluralism and tolerance that are the building blocks of Indian form of Secularism.

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

Technology has played a pivotal role in speeding up globalization, while **globalization itself has been a constant driving force for the newer technologies to surface**. Thus, it can be said that the globalization and technology have evolved as a twin phenomenon. This twin phenomenon is of more relevance amidst scarcity of resources. Let's see how:

Scarcities in Agriculture

In the farming and agriculture sector, shrinking agriculture lands globally and scarcity of natural resources has led to urgent use of technological inputs far more than it was ever before. Experiences of different countries with the use of technology have been useful in optimizing the processes to generate profitable crop yields, predictable analysis for farm inputs, sensing and guidance technologies to curtail mis-use of agriculture inputs and timely intervention for prevention of crop diseases in different parts of the earth.

How New Technology and Globalization is helping/can help:

Happy Seeder (HS) or Turbo Happy Seeder (THS) is a tractor-operated machine developed by the PAU in collaboration with Australian Centre for International Agricultural Research (ACIAR), for in-situ management of paddy stubble (straw).

A Happy Seeder is a no-till planter, towed behind a tractor, that sows (plants) seeds in rows directly without any prior seedbed preparation. It consists of a straw managing chopper and a zero till drill that makes it possible to sow new crop in the residue of the previous crop.

A German-based tech start-up PEAT has developed an AI-based application called Plantix. Plantix can identify the nutrient deficiencies in soil including plant pests and diseases by which farmers can also get an idea to use fertilizer which helps to improve harvest quality. This app uses image recognition-based technology. The farmer can capture images of plants using smartphones. We can also see soil restoration techniques with tips and other solutions through short videos on this application.

America's Trace Genomics is another machine learning-based company that helps farmers to do a soil analysis to farmers. Such type of app helps farmers to monitor soil and crop's health conditions and produce healthy crops with a higher level of productivity.

Urban Issues

With an estimated 54 % of the world population residing in urban areas, and an increasing trend for such urban settlements, the pressure on urban administrative system to manage environment is mounting to a point that it is a huge challenge in the current day urban management situation. Here again, the experiences of the countries in different regions with the various simulation models comes in handy for developing accurate models using data about urban infrastructure, healthcare, air pollution, safety of citizens and public assets to improve the services. Many countries share common social settings and issues in this regard.

How New Technology and Globalization can help:

Indo-German Science and Technology Centre (IGSTC) proposed a **joint AI initiative on healthcare and sustainability**. IGSTC is a joint initiative by India's Department of Science & Technology and Germany's Federal Ministry of Education and Research (BMBF).

India and the US are exploring the **use of AI in healthcare, agriculture, energy, manufacturing, and building smart cities under the Indo-US Science and Technology Forum's US India Artificial Intelligence (USIAI) Initiative.**

India and UK announced a Joint Venture project – TRL Technologies India. TRL Software's ready-to-deploy solutions iROADS and iMAAP – an Infrastructure Asset Management System and a Cloud-Based Accident Analysis System are **capable of playing a significant role in road safety**. This is particularly relevant given that India suffers nearly 12% of global road fatalities despite accounting for ownership of just two percent of the world's motor vehicles.

Water Scarcity

Water scarcity in India is an ongoing water crisis that affects nearly hundreds of millions of Indian each year. A large number of Indians face **high to extreme water stress,** according to a recent report by the government's policy think tank, the NITI Aayog.

How New Technology and Globalization can help:

Today Israel recycles 90 per cent of its wastewater, making it the number one global leader when it comes to wastewater recycling. By adopting a holistic approach to water consumption that

encompasses good management, high-tech development, and public education, Israel has transformed from a water-parched nation to a global leader in the field of wate.

In the 17th EverythingAboutWater Expo 2022 Israeli water specialists are shared their knowledge with India based on Israeli model of water management, policy regulations, water technology, R&D implementation. In this way, Israeli can share its best practices and technologies for advancements in India's water management sector. They are presenting solutions for water filtration, leak detection, wastewater treatment, desalination, and water security, as well as for water distribution and management.

Financial Crisis

In financial year 2022, the Reserve Bank of India (RBI) reported a total of around 9,103 bank fraud cases across India.

How Globalization is helping?

Indian banks are increasingly using AI (a fruit of Globalization) to identify borrowers with a high tendency to default, to indicate high-risk cases, to detect lifecycle and macroeconomic events for small and medium businesses. AI applications are estimated to help banks make potential cost savings worth $447 billion by 2023- PwC-FICCI

Lack of Digital Literacy

India is lagging behind when it comes to internet connectivity. Digital deprivation has been an ongoing issue in India due to **scarcity of digital infrastructure.** As per a report from the Digital Empowerment Foundation in 2018, around 90% of India's population is digitally illiterate.

How Globalization is helping?

Recently, Facebook partnered with telecom giant Reliance Jio Platforms — in which it would eventually invest $5.7 billion — to launch "Digital Udaan," the "largest ever digital literacy program" for first-time internet users in the country. India is the biggest market for Facebook by user count.

Conclusion

Globalization enables effective fruits of Newer Technologies to be reaped; as Technology significantly impacts the quality and pace of life of the humanity, and is a powerful tool in protecting the sovereignty and nationality of a country, in maintaining and sharing its culture, social systems, ethos globally. Newer technologies, the likes of Artificial Intelligence, have a defining role in this competitive race. Technological Globalization is an indispensable tool to tackle scarcity of resources in today's times.