



Drishti CURRENT AFFAIRS TODAY

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SPECIAL SUPPLEMENT

PT 2020 Compendium Part I

- Learning Through Maps
- Academic Vitamins
- Current Affairs
- Target Mains
- To The Point

Extensive Current Affairs Coverage:

Powers of Election Commission to Delay Polls
Privatisation of Railways, UN 75 Declaration
New National Logistics Law, Open Sky Agreement
STARS Programme: World Bank,
and much more...



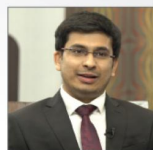
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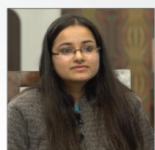
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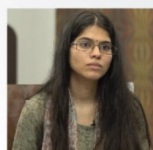
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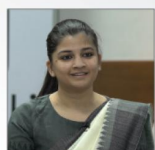
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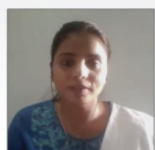
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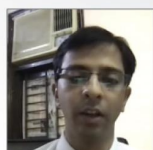
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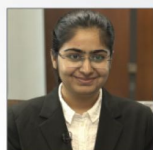
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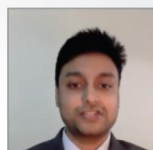
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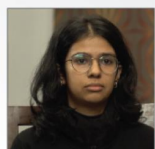
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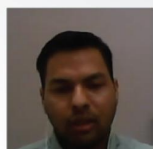
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THIS MAGAZINE IS A RESULT OF TEAM COLLABORATION. WE EXPRESS OUR GRATITUDE TO ALL OUR TEAM MEMBERS. APART FROM THE GIVEN NAMES, SEVERAL FREELANCE WRITERS HAVE ALSO MADE IMPORTANT CONTRIBUTIONS.

DEAR ASPIRANTS,

The Union Public Service Commission (UPSC) has declared the results of Civil Services Examination 2019 after it completed the Personality Test of the candidates left out due to the COVID-19 and the imposition of the lockdown. Like the recent years, the final selection rate remained around 0.1% to the number of candidates who applied for this examination. This figure of selection rate is not a danger mark, rather it is to be taken as motivation and should direct you in orienting the efforts that are required from your side to be in that narrow margin.

With the declaration of result of CSE-2019, the next cycle of examination i.e. for CSE 2020 is gaining momentum. This year has been totally different given the emergency like situation caused by the COVID-19 pandemic. It has rescheduled and postponed everything around the world. UPSC too has changed its examination schedule. Aspirants got nearly four months extra time for the Prelims examination which is now slated to be conducted on 4th of October, 2020. This ample time can be of utmost importance to the candidates as they can brush up their knowledge and revise things repeatedly.

The next 50 days are very crucial for the aspirants of CSE 2020. As an aspirant we should focus more on revision and solving multiple choice questions for the preliminary examination. Our daily routine should be full of productivity. This should be accompanied with adhering to the precautionary measures to protect ourselves against the virus. UPSC tests aspirants for their patience, knowledge retention, conceptual clarity and point of view through various stages of the exam. Keep learning and practising to be ahead in the race.

We at Drishti sincerely work to provide you ample and relevant study material. This edition of Drishti Current Affairs Today comes with the special supplement - PT 2020 Compendium Part I. It comprises the compilation of static portion of the subjects relevant to Prelims like Polity, Geography and History among others. The facts, figures and concepts that are important for Prelims have been presented in bulletised and tabular format for quick revision and easy retention. It will be of enormous use to our readers.

Wishing you all the best in your future endeavours.

We look forward to your feedback and suggestions

With Best Wishes

(Dr. Vikas Divyakirti)

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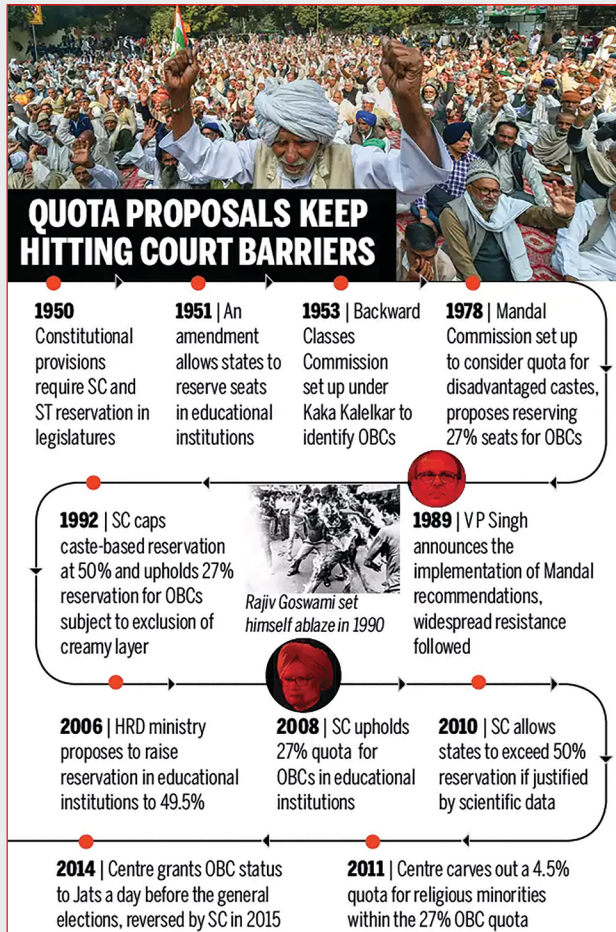
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Polity & Governance

Extension to OBC Sub-Categorisation Commission

Recently, the Union Cabinet has approved a six-month extension to the commission appointed to examine sub-categorisation of Other Backward Classes (OBCs), up to 31st January 2021.



Key Points

■ Commission:

- Headed by **Justice (Retd.) G Rohini**, the commission was constituted under **Article 340** of the Constitution with the approval of the President in 2017.
 - ◆ Article 340 deals with the appointment of a commission to investigate the conditions of backward classes.

- It had been constituted to complete the task of **sub-categorising 5000-odd castes in the central OBC list** so as to ensure more equitable distribution of opportunities in Central government jobs and educational institutions.
- In 2015, the National Commission for Backward Classes (NCBC) had recommended that OBCs should be categorised into **extremely backward classes, more backward classes and backward classes**.
 - ◆ The benefits of the reservation in OBCs are being cornered mostly by the dominant OBC groups over the years so there is a need to recognise sub-quotas for the extremely backward classes within the OBCs.
 - ◆ NCBC has the authority to examine complaints and welfare measures regarding socially and educationally backward classes.

OBC Reservation

- The **Kalelkar Commission**, set up in **1953**, was the first to identify backward classes other than the Scheduled Castes (SCs) and Scheduled Tribes (STs) at the national level.
- The **Mandal Commission Report, 1980** estimated the OBC population at 52% and classified 1,257 communities as backward.
 - It recommended increasing the existing quotas, which were only for SC/ST, from 22.5% to 49.5% to include the OBCs.
- The Central government reserved **27% of seats** in union civil posts and services for OBCs [Article 16(4)]. The quotas were subsequently enforced in central government educational institutions [Article 15 (4)].
 - In 2008, the Supreme Court directed the Central government to exclude the creamy layer (advanced sections) among the OBCs.
- The **102nd Constitution Amendment Act, 2018** provided constitutional status to the National Commission for Backward Classes (NCBC), which was previously a statutory body under the Ministry of Social Justice and Empowerment.

• Mandate:

- ◆ Examine the uneven distribution of reservation benefits among different castes in the central OBC list. For example, certain castes were left out of the ambit because of a difference in spelling in a State.
- ◆ Work out mechanism and parameters for sub-categorisation of OBCs, to identify

Nation & States

Introduction of Locally Produced Millets in ICDS, PDS

Recently, **Odisha** has decided to introduce **locally produced millets for the first time** into Integrated Child Development Services (ICDS) Scheme and Public Distribution System (PDS).

- The initiatives will be carried out as a part of the **Odisha's Millet Mission (2017)**.
 - The State's millet mission aims to popularise local production of millets among farmers and increase local household consumption for better dietary diversity and nutritional gains.
- It is an attempt to develop decentralised infrastructure for processing and re-popularising millets.

Millets

- Millet is a collective term referring to a number of **small-seeded annual grasses** that are cultivated as grain crops, primarily on marginal lands in dry areas in temperate, subtropical and tropical regions.
- Some of the common millets available in India are Ragi (Finger millet), Jowar (Sorghum), Sama (Little millet), Bajra (Pearl millet), and Variga (Proso millet).

Key Points

- **Aim:**
 - The initiative intends to **integrate** locally grown millets as part of public food systems such as ICDS and PDS, mid-day meals.
 - It also aims to build climate resilience among farmers and promote agroecological farming methods for cultivation that draw on chemical-free agriculture practices and locally sustained food systems.
 - Ideally, the aim is to make the **districts self-sufficient** with produce, procurement and distribution.
- **Need:**
 - Odisha has an **immense malnutrition burden** to address, with about **45%** children who are stunted.
 - The State also has almost **41% women** who have a **below-normal body mass index**, according to the National Family Health Survey, 2015-16.

■ Features:

- The districts will be using their District Mineral Foundation (DMF) funds to implement the initiative.
 - ◆ District Mineral Foundation (DMF) is a **non-profit body**, in those districts affected by the mining works, to work for the interest and benefit of persons and areas affected by mining related operations.
 - ◆ Its manner of operation comes under the jurisdiction of the **respective State Government**.
- The **money will be credited in the farmers' account** at the end of the sowing and harvest season based on the report submitted by local implementation agencies and vetted by the district administration.
- Additionally, all the districts will provide 1.5 kilogrammes ragi per person (out of the five kg per person entitlement) through PDS.

■ Complementary to Agricultural Practices:

- The millet drive is **largely focused on local food diversity** and ensuring **availability of food to farmers** unlike the consumer and urban market-driven approach.
- Farmers who have adopted **bio-inputs** and follow the system of millets intensification will be given incentives for three years.
- The state government will also be incentivising agronomic practices including pest and weed management through organic methods. However, it **does not exclude farmers who will be using chemical-based fertilisers**.

Way Forward

- The focus on non-chemical approaches coupled with a focus on nutrition and food security so far distinguishes the Odisha approach from that of the Union government.
- Often, such interventions are driven towards creating attractive markets and ignore household nutrition and food security. The fact that this endeavour approaches millets from the point of nutrition and safe food is important.

Economic Scenario

New Purchasing Power Parities: ICP 2017

Recently, the World Bank has released **new Purchasing Power Parities (PPPs) for reference year 2017**, under International Comparison Program (ICP).

- It adjusts for differences in the cost of living across economies of the world.

International Comparison Program

- It is the largest worldwide data-collection initiative, under the guidance of the **United Nations Statistical Commission (UNSC)**.
 - The next ICP comparison will be conducted for reference year 2021.
- The main objectives of the ICP are to:
 - Produce PPPs and comparable Price Level Indices (PLIs) for participating economies.
 - Convert volume and per capita measures of Gross Domestic Product (GDP) and its expenditure components into a common currency using PPPs.
- India is a **co-chair of the ICP** Governing Board along with Statistics Austria for the ICP 2017 cycle.
 - The **Ministry of Statistics and Programme Implementation** is the National Implementing Agency (NIA) for India, which has the responsibility of planning, coordinating and implementing national ICP activities.

Purchasing Power Parity

- It is the rate at which the currency of one country would have to be converted into that of another country to buy the same amount of goods and services in each country.
- The PPP exchange rates are constructed to ensure that the same quantity of goods and services are priced equivalently across countries.
- PPP exchange rates are used to convert the national poverty lines from some of the poorest countries in the world to determine the Global Poverty Line.

Key Points

- Globally, **176 economies** participated in the **2017 cycle of ICP**.
- In 2017, **India** retained and consolidated its global position, as the **third largest economy** and accounted for **6.7% of global GDP** in terms of PPPs.
 - China was at first position with 16.4% and the USA at the second position with 16.3%.
- India is also the third largest economy in terms of its PPP-based share in Global Actual Individual Consumption (AIC) and Global Gross Fixed Capital Formation (GCF).

Actual Individual Consumption

- It consists of goods and services actually consumed by individuals, irrespective of whether these goods and services are purchased and paid for by households, by government or by non-profit organisations.

Gross Fixed Capital Formation

- It refers to the net increase in physical assets (investment minus disposals). It does not account for the consumption (depreciation) of fixed capital.
- GFCF is not a measure of total investment because only the value of net additions to fixed assets is measured and all kinds of financial assets as well as stocks of inventories and other operating costs are excluded.

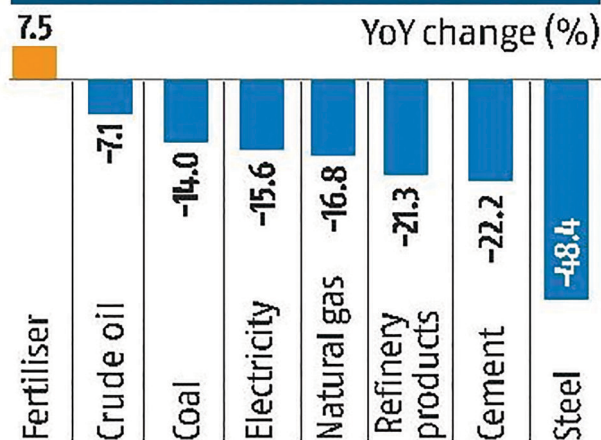
Core Sector Shrinks by 23.4%

According to the data released by the Ministry of Commerce and Industry, the eight core sector industries **contracted by 23.4% in May 2020**.

- In April 2020 the eight core sectors had contracted by 37%.
- In May 2019 the eight core sectors had grown by 3.8%.

COVID CRIPPLES GROWTH

Sectoral performance in May



Key Points

- Core Sector Data:** Except fertiliser, all **seven sectors** — **coal, crude oil, natural gas, refinery products, steel, cement, and electricity** — had recorded negative growth in May.

International Relations

36th ASEAN Summit

Recently, the 36th Association of Southeast Asian Nations (ASEAN) Summit was held via video conference to focus on the Covid-19 pandemic response, post-pandemic recovery and further cooperation with partner countries.

- The theme for the Summit was **“Cohesive and Responsive ASEAN”**.
- The Summit was **chaired by Vietnam** which is also holding the chairmanship of ASEAN currently.

Key Points

■ ASEAN Covid-19 Response Fund:

- The summit has decided to establish the ASEAN Covid-19 response fund with a reserve for medical supplies to meet urgent needs during epidemics.
- It has also decided to build the ASEAN standard procedures of epidemic response in case of health emergencies.

■ Crippling Economies:

- The Summit has stated that the ASEAN region's economy is **expected to contract for the first time in 22 years**.
- It has also focussed on the crippling cost of the coronavirus, which has ravaged the economies of tourism and export-reliant countries such as Thailand and Vietnam.

■ South China Sea Issue:

- The Summit noted concerns over land reclamations and recent developments in the South China Sea.
 - ◆ China claims most of the resource-rich South China Sea but is also contested by **Vietnam, the Philippines, Malaysia and Taiwan**.
 - ◆ Vietnam had also accused China of sinking its trawler. This incident had prompted the USA to warn that China is trying to exploit the pandemic situations of other states to expand its unlawful claims.
- ◆ The **USA is not a claimant to any territories in the South China Sea** but has sent its navy to patrol the area in support of freedom of

navigation, while China had slammed this move as an interference in regional affairs by an outside power.

- Both Vietnam and Philippines lodged protests with China after it unilaterally declared the creation of new administrative districts on islands.
 - ◆ Also, in April **China has officially named 80 islands** and other geographical features in the disputed waters to which Vietnam and the Philippines also have competing claims.
- The Summit has also called on parties to refrain from escalating tensions and abide by responsibilities under international laws.

Association of Southeast Asian Nations

- ASEAN is a regional grouping that promotes economic, political, and security cooperation.
- It was established in **1967 in Bangkok, Thailand**, with the signing of the **ASEAN Declaration (Bangkok Declaration)** by the founding fathers of ASEAN, namely **Indonesia, Malaysia, Philippines, Singapore and Thailand**.



- It consists of **ten members** namely, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.
- Chairmanship of ASEAN rotates annually, based on the alphabetical order of the English names of Member States.
- ASEAN countries have a total population of 650 million people and a combined Gross Domestic Product (GDP) of \$2.8 trillion.

Way Forward

- The pandemic has already thrown the challenges within the political, economic and social environment of the world and in each region.

Environment & Ecology

Increased Ozone Pollution

Recently, the Centre for Science and Environment (CSE) has observed **an increase in ozone (a harmful pollutant) levels** in the several cities of the country.

- The analysis is based on Central Pollution Control Board (CPCB) data from **22 cities in 15 States**.
- It has also observed that the **particulate matter and nitrous oxide levels fell** during the lockdown to control Covid-19 outbreak.

Key Points

■ Ozone Gas:

- The **'good' ozone** present in the earth's ozone layer protects human beings from harmful Ultraviolet (UV) radiation whereas the ground level ozone is highly reactive and can have adverse impacts on human health.
- Even **short-term exposure of an hour** is dangerous for those with respiratory conditions and asthma. Thus, an 8-hour average is considered for ozone instead of the **24-hour average** for other pollutants.
- **Ozone is not directly emitted** by any source but is formed by photochemical reactions between oxides of **nitrogen (NOx)**, **other volatile organic compounds (VOCs)** and **gases** in the air under the influence of sunlight and heat.
 - ◆ Ozone pollution is thus also a clear indicator of vehicular pollution, which results in higher concentration of NOx.

■ Concept of Summer Pollution:

- The ozone is primarily a "sunny weather problem" in India as the presence of sunlight has a direct impact on formation of ground level ozone.
 - ◆ **Heat acts as a catalyst**, facilitating photochemical reactions. Hence, higher concentrations of ozone are seen during the summer months.
- Additionally, the intense heat waves are one of the factors responsible for increased ozone levels in the country.

- Usually, the **ozone levels tend to spike** when winter conditions subside, and its presence is felt most during the day. At night, ozone levels tend to deplete, before spiking again during the afternoon, when sunlight is available.
- Thus, the characteristics of summer pollution include high winds, intermittent rains, thunderstorms, high temperature and heat waves.

Way Forward

- The government needs to take active steps to mitigate primary pollutants, which lead to ground ozone formation.
- These steps involve curbing private vehicle usage, increasing electric mobility, scaling up public transport and pedestrian infrastructure, deploying citywide parking management, and aggressively controlling industrial emissions.

Money Laundering and the Illegal Wildlife Trade

Recently, the Financial Action Task Force (FATF) has released the **first global report** on the Illegal Wildlife Trade (IWT) namely, **"Money Laundering and the Illegal Wildlife Trade"**.

- The report comes amid **increasing international concern that the crime could lead to more zoonotic diseases** in the future.
- The report has also described IWT as a **"global threat"**, which also has links with other organised crimes like modern slavery, drug trafficking and arms trade.

Key Points

■ Transnational Organised Crime:

- The illegal trade is estimated to generate revenues of up to USD 23 billion a year.
- According to the 2016 UN World Wildlife Crime report, criminals are illegally trading products derived from over 7,000 species of wild animals and plants across the world.

■ Origin and Route of IWT:

- Usually, the countries that are **rich in biodiversity** and/or where there may be weaker law

Science & Technology

Private Sector Participation in Space

Recently, the Union Cabinet has approved the creation of the **Indian National Space Promotion and Authorization Centre (IN-SPACe)** to provide a level playing field for **private companies** to use Indian space infrastructure.

- These reforms are aimed at giving a boost to private sector participation in the entire range of space activities.

Key points

- **IN-SPACe:**
 - It will act as a single-point interface between Indian Space Research Organisation (ISRO).
 - It will also hand-hold, promote and guide the private industries in space activities through encouraging policies and a friendly regulatory environment.
- **Indian National Space Promotion Board:**
 - It would be set up to strengthen the Department of Space and for the promotion of the private space entrepreneurs or non-government space entrepreneurs,
- **Demand Driven Model:**
 - By the support of **New Space India Limited (NSIL)**, It would endeavour to **reorient space activities from a 'supply driven' model to a 'demand driven' one**, thereby ensuring optimum utilisation of the nation's space assets.
 - The main objective of NSIL is to scale up industry participation in Indian space programmes in comparison to IN-SPACe which gives emphasis on the participation of the private sector.

Way Forward

- Space sector can play a major **catalytic role in the technological advancement** and expansion of our Industrial base.
- Therefore, the creation of IN-SPACe will work towards a greater involvement of private industry, academic institutions and research organisations in India's space sector.

New Space India Limited

- NSIL is a **Central Public Sector Enterprise** established in 2019 under the administrative control of the **Department of Space**.
- It is headquartered in **Bengaluru**.
- NSIL is the commercial arm of Indian Space Research Organisation (ISRO) with the primary responsibility of enabling Indian industries to take up high technology space related activities and is also responsible for promotion and commercial exploitation of the products and services emanating from the space industry.
- NSIL differs from ISRO's existing commercial arm Antrix Corporation:
 - **Antrix** will handle ISRO's commercial deals for satellites and launch vehicles with foreign customers.
 - **NSIL** will deal with capacity building of local industry for space manufacturing.

Kala azar Disease

A team of researchers from the National Centre for Cell Science (NCCS).

- Recently, Pune have found **new biomolecules to fight drug resistance in Kala-azar** (visceral leishmaniasis).
- The **only drug available against leishmaniasis, miltefosine**, is rapidly losing its effectiveness because of emerging resistance to this drug due to a decrease in its accumulation inside the parasite.

Leishmaniasis

- It is a **neglected tropical disease** affecting almost 100 countries including India.
 - **Neglected tropical diseases** are a diverse group of communicable diseases that prevail in tropical and subtropical conditions in 149 countries.
- It is caused by a **parasite called Leishmania**, which is transmitted through the bite of sand flies.
- There are three types of leishmaniasis:
 - Visceral leishmaniasis, which affects multiple organs and is the most serious form of the disease.
 - ◆ It is commonly known as Kala-azar in India, is fatal in over 95% of the cases, if left untreated.
 - **Cutaneous leishmaniasis**, which causes skin sores and is the most common form.
 - **Mucocutaneous leishmaniasis**, which causes skin and mucosal lesions.
- A protein called '**P4ATPase-CDC50**', is responsible for intake of the drug by the parasite, and another

History, Art & Culture

Ashadhi Bij

- Ashadhi Bij is the **Kutchi New Year** that falls on the second day of Shukla paksha of Ashadha month of Hindu calendar.
- The festival is associated with the beginning of **rains in the Kutch region of Gujarat**.
- During Ashadhi Bij, the moisture in the atmosphere is checked to predict which crop would do best in the coming monsoon.

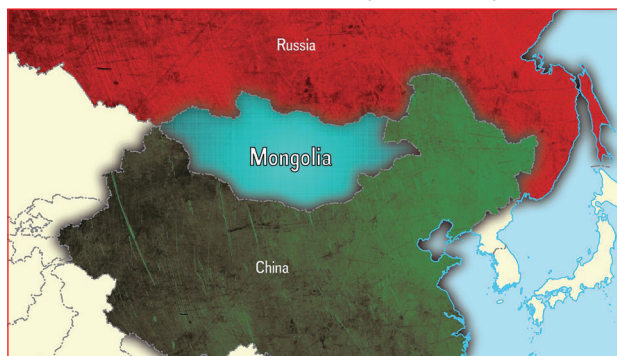
Traditional New Year Festivals in India

Name	Features
Chaitra Shukla Pratipada	It marks the new year of the Vikram Samvat which is based on the day when the emperor Vikramaditya defeated Sakas, invaded Ujjain and called for a new era.
Gudi Padwa and Ugadi	Celebrated in the month of Chaitra Shukla Pratipada in the deccan region including Karnataka, Andhra Pradesh and Maharashtra.
Navreh	It is the lunar New Year that is celebrated in Kashmir. It falls on the very first day of the Chaitra Navratras.
Sajibu Cheiraoba	It is celebrated by Meiteis (an ethnic group in Manipur) which is observed on the first day of Manipur lunar month Shajibu, which falls in the month of April every year.
Cheti Chand	It is celebrated by Sindhi community. Chaitra month is called 'Chet' in Sindhi. The day commemorates the birth anniversary of Ishta Deva Uderolal/Jhulelal, the patron saint of Sindhis.
Bihu	It is celebrated three times a year. Rongali or Bohag Bihu is the Assamese new year and spring festival.
Baisakhi	It is celebrated as the Indian thanksgiving day by farmers. It also has religious significance for the Sikhs community as the foundation of the Khalsa Panth was laid on this day by Guru Gobind Singh.
Losoong	Losoong also known as Namsong is the Sikkimese New Year. It is mostly celebrated in the month of December every year with traditional gaiety and colour both by the Lepchas and Bhutias.

Mongolian Kanjur Being Reprinted

The **Ministry of Culture** has taken up the project of reprinting 108 volumes of Mongolian Kanjur by March 2022 under the **National Mission for Manuscripts (NMM)**.

- Some copies were presented to the government of Mongolia on the occasion of Guru Purnima, also known as Dharma Chakra Day, on 4th July, 2020.



Key Points

- **Mongolian Kanjur:**
 - It is a **Buddhist canonical text in 108 volumes** and is considered to be the **most important religious text** in Mongolia. It is a source of providing a cultural identity to Mongolia.
 - In the Mongolian language '**Kanjur**' means '**Concise Orders**'- the words of Lord Buddha in particular.
 - It has been translated **from Tibetan** and is written in classical mongolian.
- **Cultural Relations Between India and Mongolia:**
 - Buddhism was carried to Mongolia by Indian cultural and religious ambassadors during the early Christian era. As a result, today, **Buddhists form the single largest religious denomination** in Mongolia.
 - India established formal diplomatic relations with Mongolia in **1955**. The publication of Mongolian Kanjur by the Government of India for the Government of Mongolia will act as a symbol of cultural harmony between India and Mongolia and will contribute to furtherance of bilateral relations during the coming years.

Social Issues

Global Education Monitoring Report 2020: UNESCO

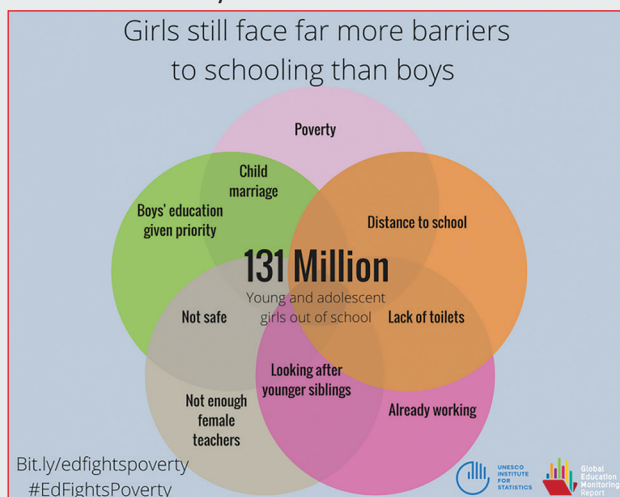
Recently, the **Global Education Monitoring Report, 2020** was released by the **United Nations Educational, Scientific and Cultural Organization (UNESCO)**.

- It highlighted that Covid-19 had worsened the inequalities in education systems worldwide.

Key Points

■ Global Findings:

- During the height of school closures in April 2020, almost **91% of students around the world** were out of school.
- About 40% of low and lower middle income countries have not supported learners at risk of exclusion during this crisis, such as the poor, linguistic minorities and learners with disabilities.
- Education systems responded with distance learning solutions, all of which offered less or more imperfect substitutes for classroom instruction.
 - ◆ India has used a mix of all three systems (radio, TV and online platforms) for educational continuity.



■ Challenges:

- Governments increasingly rely on technology but the **digital divide** limits the approach because not all students and teachers have access to an adequate internet connection.

- School closures interrupt support mechanisms for various **disadvantaged students**.
 - ◆ Resources for blind and deaf students may not be available outside schools.
 - ◆ Children with learning disabilities or those who are on the autism spectrum may struggle with independent work in front of a computer or the disruption of daily school routines.
 - ◆ Poor students who depend on school for free meals or even free sanitary napkins have suffered.
- **Higher drop-out rates** are also a concern because, during an earlier Ebola epidemic in Africa, many older girls never returned to school once the crisis was over.

Way Forward

- Teachers who are intimidated by technology now have to take the bull by its horns. For many who are proficient at planning and teaching in the traditional classroom, planning for an online setting requires some re-learning.

India TB Report 2020

Recently, the **Ministry of Health and Family Welfare** has launched the **annual Tuberculosis (TB) Report 2020**.

- India is committed to **eliminating tuberculosis from the country by 2025**, five years ahead of the global target by the World Health Organisation (WHO) i.e. 2030.
 - **National Tuberculosis Elimination Programme:** To align with the ambitious goal, the programme has been renamed from the Revised National Tuberculosis Control Programme (RNTCP) to National Tuberculosis Elimination Programme (NTEP).

Key Points

■ State TB Index:

- On the basis of the score in State TB Index, **Gujarat, Andhra Pradesh and Himachal Pradesh**



DID YOU KNOW?

YUKTI 2.0: Platform for Higher Education Institutes

- The **Ministry of Human Resource Development** has launched an initiative 'YUKTI 2.0'.
- It intends to help systematically **assimilate technologies** having **commercial potential** and information related to incubated startups in higher education institutions.
- It is an extension of 'YUKTI (Young India combating Covid with Knowledge, Technology and Innovation) Portal' which was launched to identify ideas relevant in Covid pandemic.

Turant Customs

- The Central Board of Indirect Taxes and Customs (CBIC) unveiled a **Secure QR coded Shipping Bill** that would be electronically sent to exporters. This will enable **end to end paperless exports** under 'Turant Customs'.
- The Ministry of Finance (Central Board of Indirect Taxes and Customs) also launched two Information Technology (IT) initiatives - ICEDASH and ATITHI.
 - **ICEDASH**: For improved monitoring of customs clearance of imported goods.
 - **ATITHI**: For facilitating arriving international passengers.

Ocean Mapping: Seabed 2030 Project

- Seabed 2030 is a collaborative project between the **Nippon Foundation of Japan and the General Bathymetric Chart of the Oceans (GEBCO)**.
 - GEBCO is the only intergovernmental organisation with a mandate to map the entire ocean floor. It aims to provide the most authoritative publicly-available bathymetry of the world's oceans.
- It was launched at the United Nations Ocean Conference in June 2017 and is aligned with the UN's Sustainable Development Goal (SDG) 14 to conserve and sustainably use the oceans, seas and marine resources.

Anthropause Period

- Recently, researchers have coined the term '**anthropause**' to refer to the **Covid-19 induced lockdown period** and they will study its impact on other species.
- The shortened form of prefix '**anthropo-**' (for '**human**') and '**pause**'. It is a more precise term for the lockdown period which is also being **referred to as the 'Great Pause'**.
 - It refers specifically to a considerable global slowing of modern human activities and notably travel.

Advanced Torpedo Decoy System: Maareech

- The Indian Navy has inducted an **Advanced Torpedo Defence System (ATDS)** called '**Maareech**' that is capable of being fired from all frontline ships.
 - Torpedoes are self propelled weapons with a warhead and can be used under or on the water surface. They are one of the mainstay of sea-warfare attack systems.
- '**Maareech**' has been designed and developed indigenously by the Defence Research and Development Organization (DRDO).
- It **detects and locate the incoming torpedo** and **applies countermeasures** to protect the naval platform against attack.

National Statistics Day

- **Every year**, the Statistics Day is celebrated on **29th June, the birth anniversary of Prof. Prasanta Chandra Mahalanobis**, to recognise his invaluable contribution in establishing the National Statistical System.
- The day is celebrated to popularise the use of statistics in everyday life and sensitise the public as to how statistics help in shaping and framing policies

A 3D bar chart with five bars of increasing height from left to right. A green line graph with a wavy path is overlaid on the bars. A small orange car is positioned on the grid floor in front of the bars. To the right, a word cloud contains various political terms such as 'POLITICS', 'ELECTION', 'VOTING', 'POLL', 'REGULATION', 'UNION', 'INTEREST', 'MISSION', 'RESULTS', 'SHOW', 'CANDIDATE', 'POLITICAL', 'POLLING', 'STATE', 'USE', 'THAT', 'MISSION', 'STATE', 'USE', 'THAT', 'MISSION', 'STATE', 'USE', 'THAT'. The background is a light blue and white grid.

ACADEMIC VITAMINS

The Supreme Court's decision in the Secretary, Ministry of Defence vs Babita Puniya and Others (2020) is being widely hailed as a victory for women officers in their fight against gender discrimination as well as enforcement of their right to equality of opportunity and equal access to appointment and engagement in the Indian Army.

- The “women’s question”, with respect to the military, includes crucial matters pertaining to appointments, posts, service categories, cadres, remuneration and criteria for grant of Permanent Commission to Short Service Commission (SSC) officers.
- These matters invite limited judicial review because they constitute policy decisions and lie exclusively in the domain of executive functions as per Section 12 of the Army Act, 1950 and Article 33 of the Constitution.
- No wonder, the Union of India contended before the Supreme Court that restrictions on the employability of women in the army were “inescapable due to the peculiar operational compulsions of the Army.”

- Women's position in the Indian military has been distressing with respect to the availability of the bundle of benefits, facilities, and privileges that were accessible to only men till now.
- Among the 40,825 officers in the Indian Army, there are some 1,653 women officers.
- The gender-blind approach of the military is quite problematic because this so-called claim of neutrality is often a cover for the typically male-oriented and discriminatory military policies and practices.
- The one-size-fits-all approach cannot work effectively when it comes to the military as an institution.
- Rather, the prevailing circumstances, biological needs, and social vulnerabilities of women must be studied, and the military policy and practices are rethought, redesigned, and returned accordingly, to accommodate "Her".

- The Supreme Court in the Babita Puniya case observed that through the grant of Permanent Commission as well as leadership roles to women in the Indian Army “except in combat roles,” the Government of India had recognised that the physiological features of a woman have no significance to equal entitlements under the Constitution.
- No wonder, women have been restricted to ancillary categories like Combat Support Arms and Service. Although 30% of all women officers in the Indian Army have been posted in combat zones - sensitive places and field areas.
- It would be grossly incorrect to think that the fight against male domination within the military is over with a legal pronouncement from the ivory towers of justice.

- At this juncture, we must not forget that it took SSC women officers almost two decades of sheer perseverance and patience to achieve this landmark victory inside the courtroom in their fight against a male-dominated Indian Army.
- With these insights, it can be reasonably concluded that a people-centric approach must be adopted by the Indian state and military rather than blindly applying a male-centric approach to address the women's question in the armed forces.

In exploring whether capitalism is an appropriate economic system for a country like India, its future prospects and long-run viability, in general, are delimited by the accentuating threats of ecological imbalance and growing inequality that it brings with itself.

- Capitalism may be defined as an economic system based on private ownership of the means of production where the producers work to maximise their profits.



GIST OF MAJOR ARTICLES FROM THE JULY 2020 ISSUE

Ethical Wealth Creation for a Self-reliant India

The wealth of nations stems from the drive and creativity of its people. A self-reliant India will be built by self-reliant citizens. India is a family of 130 crore Indians. If each one of the family members gainfully contributes to the economy and thereby Rashtra Nirman, then our population becomes our collective strength and not a weakness.

Inclusive Growth through Employment

- A self-reliant economy has to mean self-reliance for each and every member of India's population.
- Self-reliance can only be achieved through economic policies that increase equality while generating growth.
- Seeing equality and growth as complements rather than substitutes has to be the transformative change we have to bring in our economic strategy for a self-reliant India.

Wealth and Skill through Private Enterprise and Government

- Self-reliance means recognising the complementary roles of the private sector and the government.
- As market forces allocate resources based on prices and profits, they promote economic efficiency in normal times. Therefore, promoting private enterprise has to be an important component of self-reliance.
- In fact, Indian businesses have always clubbed Riddhi (wealth and prosperity) and Siddhi (skill) together, thereby internalising the fact that expertise and success cannot be decoupled.

Produce for The Bottom of the Pyramid

- Self-reliance means that Indian firms focus on producing goods and services that cater to the needs of our huge population.
- The poor may not have the financial wherewithal to buy products in large volumes. However, they also rightly aspire to consume products that the rich in India use.

- Therefore, the development strategy for a self-reliant India can benefit from small and medium enterprises producing goods and services that are tailored to the needs of a large number of consumers at the base of the income pyramid.

Importance of Agriculture for a Self-reliant India

- Increasing productivity and output in the agricultural sector would improve food security and the balance of payments (through reduced food imports and increased exports), sustain agro-processing, manufacturing of agricultural inputs, and a host of services upstream and downstream from farms, creating employment and boosting incomes across the economy.
- There are opportunities for increasing exports of agricultural goods; the transformation should entail identifying high-value-added crops for which there is demand elsewhere.
- The successful agricultural transformation will reduce the pressure arising from urban migration and the dilemmas it poses.

India Must Rediscover its

Spiritual Ethos of Ethical Wealth Creation

- The COVID-19 induced lockdown illustrated how excessive economic activity influences our environment detrimentally.
- Economic dominance over such long periods manifests by design; not by mere chance.
- This year's Economic Survey establishes clearly that India dominated the global economy because our age-old traditions commended "ethical wealth creation" as a noble human pursuit.
- To ensure that economic development occurs without detrimentally impacting the planet, ethical wealth creation advocated in the Indian ethos now needs to become a global model for development. For that purpose, India needs to take the lead in exemplifying it domestically.



GIST OF MAJOR ARTICLES FROM THE JULY 2020 ISSUE

MGNREGA - A Social Security Net

The COVID-19 and prolonged lockdown of economic activities have caused health and income insecurity amongst the vulnerable, especially the migrants, daily wage earners and the casual labourers.

Rural Employment and MGNREGA

- Farm risks and uncertainties, population pressure on cultivable land, lack of alternate occupational choices, rural-urban income differentials and rising rural economic distress had earlier prompted massive rural-urban migration in India.
- But, the nation, with a migrant population of more than 423 million (Census 2011) in cities and metros from states other than the origin, is now witnessing unrelenting reverse migration due to COVID-19.
- The farm and non-farm sectors are expected to face various ill-effects of under-development and unemployment due to swelling in the workforce, in the respective regions.
- MGNREGA, an entitlement-driven and self-target-oriented employment generation scheme, aims at enhancing the livelihood and economic security of the rural poor households.
- Since poverty alleviation and employment generation have been the major objectives of the 1950s, the government has its renewed focus of reviving rural economic growth through broadening wage employment opportunities to the job seekers.

MGNREGA's Role in Self-reliant Rural India

- MGNREGA, being a public works programme, has the capability to effectively harness the productive power of rural unemployed towards their socio-economic development.
- Considering the employment generation and productive absorption capacity of the surplus workforce during and after the pandemic.

- It has the capability to empower poor rural households and can manage to deal with the situation to address the effects of business cycles in a largely rural economy like India.
- It can give stimulus to the rural economic activities via wage income disbursements resulting in rising purchasing power of the rural population.

Changing the Game

- MGNREGA permits several categories of public works relating to
 - Natural Resource Management (NRM) works,
 - Works on individual assets for vulnerable sections,
 - Setting up of common infrastructure for National Rural Livelihood Mission compliant Self-Help Groups,
 - Building rural infrastructure.
- At least 60% of public works in terms of cost at the district level under MGNREGA should be devoted to creation of quality productive assets directly linked to Agriculture and Allied activities.
- States must take immediate steps to ensure social protection and productive absorption of the surplus rural workforce.
- All job-seekers should be made aware of the processes leading to the offer of works.
- Programme administration should ensure timely wage payments to encourage job response.
- States need to ensure implementing a strong quality management system to ensure that the assets created under the Act are functional by location, design, operational management, etc.

Conclusion

MGNREGA is capable of meeting challenges of economic shocks and rural income and employment during the post-COVID period and can be a productive and active catalyst in building a self-reliant rural India.

DOWN TO EARTH



GIST OF MAJOR ARTICLES FROM 30 JUNE AND 15 JULY ISSUES

Pride Under Threat

It has been observed that Asia's only remaining population of lions in Gir National Park, Gujarat has been decreasing.

Key Points

- The government recently announced that India's Asiatic lion population recorded a historic increase of 151 in the past five years, it hid a worrying fact.
- The country has lost 92 Asiatic lions since January 2020 and nearly 40% have died in May alone.
- India is witnessing one of the worst outbreaks of **canine distemper virus** which was the reason behind most of the deaths.
- The numbers also suggest the current outbreak is more lethal than that of 2018 when 26 lions died within a month.

Way Forward

The Supreme Court has ordered the relocation of these Lions to Kuno Palpur wildlife sanctuary in Madhya Pradesh which has to be fastened in order to provide them an alternate habitat.

Cash, on Delivery

India has employed its direct benefits transfer (DBT) system to help people tide over the ongoing health and economic crises. Its real test will begin when the crisis deepens.

Evolution of DBT

- Currently, 420 schemes across the country are delivered through DBT.
- The erstwhile Planning Commission made the blueprint for the cash transfer method in 2011.
- The idea of DBT was triggered by an expensive way of delivering these schemes. To provide 1 rupee of development, India spent 3.65 in delivery in 2000.
- The Economic Survey of 2010-11 for the first time propounded the transition to a complete DBT mode with more unconditional cash transfer schemes.

- In the Union Budget of 2011-12, the government declared a task force led by entrepreneur Nandan Nilekani to explore ways and means to implement DBT, particularly for subsidies.
- The Economic Survey of 2014-15 proposed JAM trinity - a Jan Dhan bank account, Aadhaar as the verification tool, and Mobile phone as the personal operating system.
- In the past seven years, DBT has become the accepted way of delivering development schemes and India has delivered some 450 schemes to over 900 million people through this mode.

Benefits in Kind

- Of the 63 "in-kind" schemes, the most prominent ones are subsidised ration supplementary nutrition programmes through Anganwadi services, mid-day meal schemes, fertiliser subsidy Pradhan Mantri Fasal Bima Yojana, Ayushman Bharat and Ujjwala.
- Under "in-kind" schemes, the government or its agency incurs internal expenditure to procure and provide goods to targeted beneficiaries at free or subsidised rates.

Beneficiaries, Exclusions

- The most fundamental and troublesome aspect of DBT is the identification of the beneficiaries.
- Most of the DBT schemes are managed by states, except a few like MGNREGA, PM-KISAN or PMUY, where the money is transferred to beneficiaries' accounts directly by the Centre.
- The problem is that during a crisis, the government randomly selects beneficiary lists to transfer benefits, which leads to exclusions.
- In 2017, the Centre decided to use Socio-Economic Caste Census (SECC)-2011 data, instead of the poverty line, to identify beneficiaries and to transfer funds for social schemes in rural areas.
- In a crisis like the current one, the government should have identified beneficiaries using both



TO THE POINT

Designed to hit the bull's eye: Point wise, short, crisp material in an easy-to-understand format.

The Quad

The recent parallel exercises in the Indo-Pacific, including a trilateral exercise between the U.S., Australia and Japan in the Philippines Sea, and an Indo-U.S. naval exercise in the Indian Ocean have fuelled speculation that Quadrilateral (Quad) exercises will be launched soon between all four navies.

What is Quad?

- The Quadrilateral Security Dialogue or Quad is the grouping of four democracies – India, Australia, US and Japan – which was first mooted by Japanese Prime Minister Shinzo Abe in 2007.
- Perceived as the league of like-minded democracies converging across the Indian and Pacific Oceans, the Quad is symbiotically linked with the geopolitically ascending region, the Indo-Pacific.
- For China, Quad is the strategy for restraining Chinese dominance in the Indo-Pacific. However, India sees the Indo-Pacific as a “geographical concept” and not a strategy or a club of limited members.

Origin and Progress of Quad

- The Quad exercises in 2008 were cancelled as the U.S., which was trying to gain China's support in the six-party talks on North Korea, dampened enthusiasm for a Quad Foreign Ministers' meeting, and the government in Australia then pulled out of the exercises. The Quad was shelved for the next decade.
- In 2017, the Quad returned, now named Quad 2.0, coinciding with the revision in Washington's assessment of the challenge from China, and similar reassessments in New Delhi, Tokyo and Canberra.

Potential of Quad

- The Quad grouping has met biannually, discussing connectivity, sustainable development, counter-terrorism and cybersecurity, stability and prosperity in an increasingly inter-connected Indo-Pacific region.

- Quad has been promoting a coordinated effort to provide financing and sustainable alternatives to China's Belt and Road Initiative (BRI).
- Quad countries are coordinating their responses on infrastructure projects in their spheres of influence, including Indian and Australian efforts in the Pacific islands, India-U.S. coordination in South Asia and the Indian Ocean region, and India-Japan joint efforts to develop projects in Sri Lanka, Bangladesh and Myanmar.

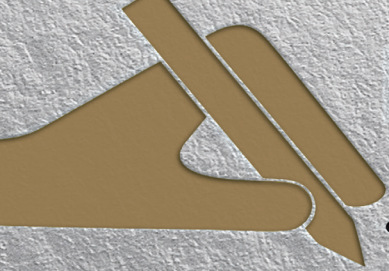
Why is it Not Fully Functional?

- Unlike the U.S., Japan and Australia, which are tied by military alliances, India is a member of other strategic forums, such as the Shanghai Cooperation Organisation, BRICS and RIC, which appear to be at cross purposes with a Quad alliance.
- Differences in the concept of Indo-Pacific. While India defined the “Indo-Pacific” region from Africa and the U.S. west coast, the U.S. limited it to the Indian coast. It is only in 2020, that the U.S. aligned its definition with that of India's.
- India is the only country in the Quad that shares a land boundary with China, and the militarisation of the Quad will not help India deal with that threat and India may face a direct threat on the border front.
- India has also been wary of joining any exercise that could be construed as an alliance.
- The China factor may be playing an important role in averting its progress, given China's fierce opposition to the militarisation of a coalition seen as a counter to its claims in the Pacific and inroads in the Indian Ocean.

Conclusion

Enumerating its Indo-Pacific strategy in largely ‘plurilateral formats’, India seeks to avoid restricting its Indo-Pacific strategy to the Quad at its helm and also by keeping its options open to engaging with Russia in the region, as also by making conscious decisions not to provoke China.

D C A T



ESSAY WRITING

COMPETITION

“A drop of ink may make a million think.”

- PAPER-I (250 Marks, UPSC CS Main Examination): “Essay: Candidates may be required to write essays on multiple topics. They will be expected to keep closely to the subject of the essay to arrange their ideas in orderly fashion and to write concisely. Credit will be given for effective and exact expression.” That is what the UPSC says about the Essay paper in the CSE notification. Through an essay, the commission wants to know if you will make the right civil servant who has balance of judgement, variety and depth of interest, logical exposition and other such bureaucratic qualities.
- Keeping this in mind, we present a forum where you are asked to practice your writing skills by writing essays on the given topics. The topics are decided keeping in view the thematic trends in CS (Mains) examination.
- If that is not all, the best essays shall be rewarded and published. We’ll judge the essay based upon four parameters viz. Structure of the essay, Content, Flow and Language.
- The prize details are as follows:

First Prize: 6 Months Subscription

Second Prize: 4 Months Subscription

Third Prize: 2 Months Subscription

Essay Writing Competition—52

Topic:

‘National security is irreversibly linked to good economic growth.’

Terms and Conditions—

1. The essay shall be of length between 1000-1200 words.
2. It should be neatly written or printed on A4 sheets.
3. Only one entry per participant is allowed.
4. Entries are to be sent by Registered/speed post only on following address: EXECUTIVE EDITOR, DRISHTI CURRENT AFFAIRS TODAY, 641, FIRST FLOOR, DR. MUKHERJEE NAGAR, DELHI-110009. Please mention ‘For Essay Competition’ in capital letters on the envelope.
5. Remember to submit your personal details on the form printed on this page after neatly tearing it off the marked pointers. Submissions without this form shall not be entertained.
6. Your essay must reach the given address before **20th August, 2020**. Entries reaching us after the given date will not be accepted.
7. Essays should be original and not plagiarized or copied except for properly quoted references. Prior published or awarded essays will not be accepted.
8. All rights related to the results of the competition are secure with ‘Drishti Current Affairs Today’. The winners shall be announced in the subsequent issue of the magazine and the winners shall be contacted by email and telephone.
9. Copyrights of the rewarded essays will lie with the magazine which may be used in any way by ‘Drishti Publications’.



Form for Essay Competition-52

(Kindly cut and attach this form along with your essay. Use original form and not photocopy.)

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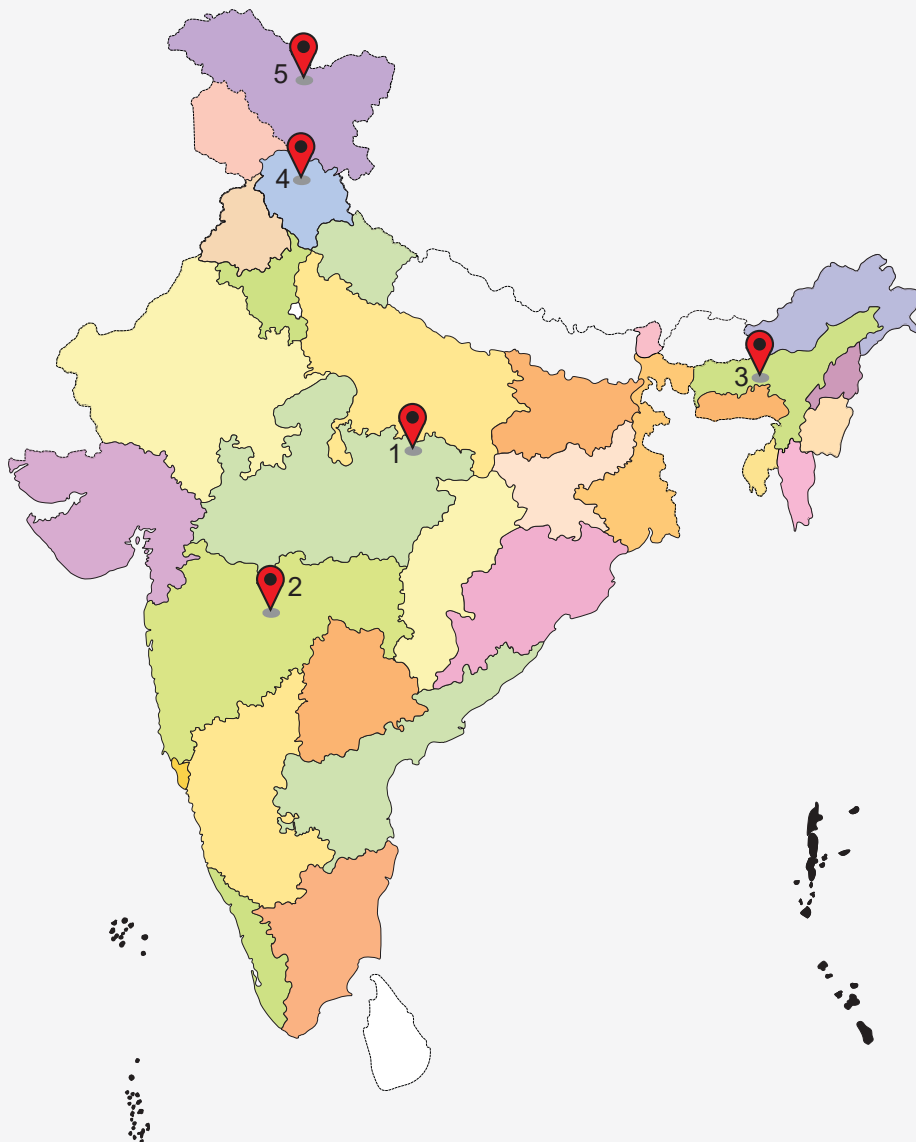
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LEARNING

MAP-1

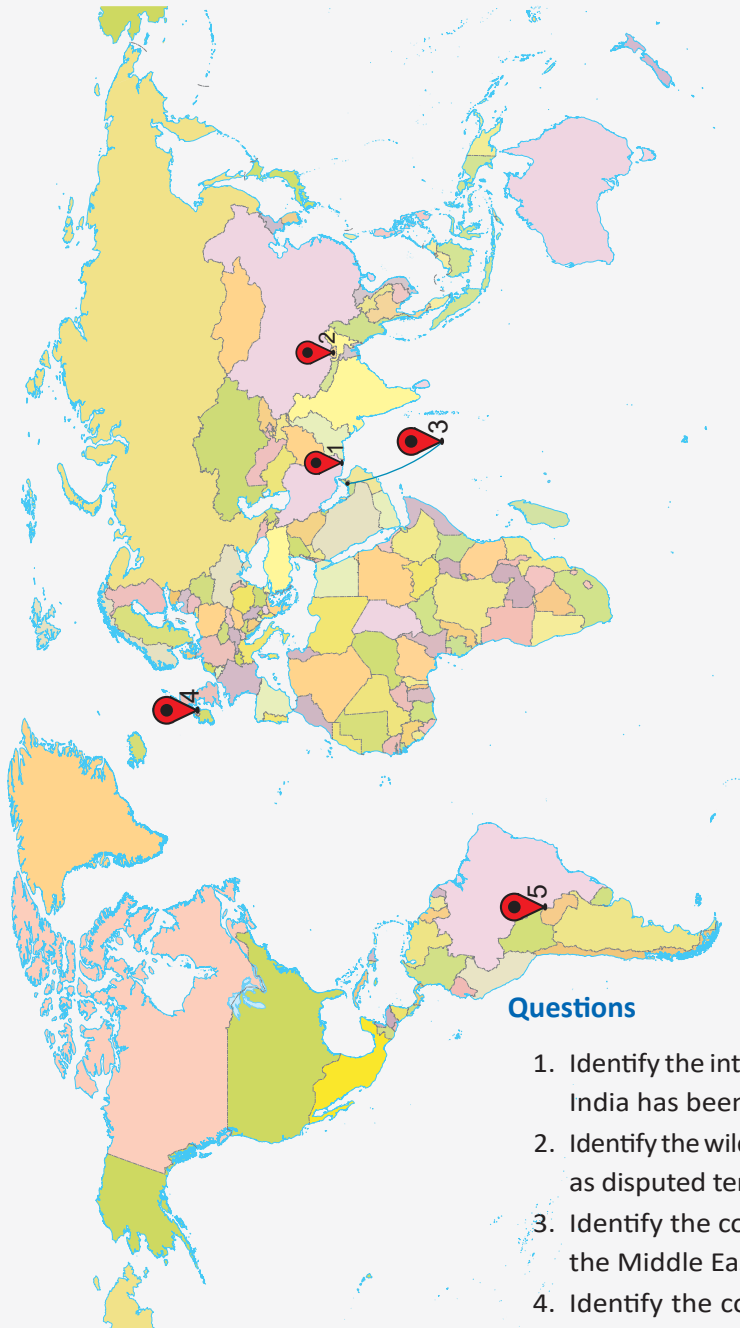


Questions

1. Identify the place where Asia's largest solar project has been installed.
2. Identify the lake which had turned pink recently.
3. Identify the state where Ambubachi Mela was postponed due to COVID-19.
4. Identify the state which has launched an awareness campaign Nigah.
5. Identify the valley region which was recently opened for civilians.

(Answers : Refer to Page No. 162)

THROUGH MAPS



Questions

1. Identify the international railway line project from where India has been dropped recently.
2. Identify the wildlife sanctuary in Bhutan which was claimed as disputed territory by China.
3. Identify the country which became the first country in the Middle East to launch a Mars mission.
4. Identify the country which recently launched Jet Zero Plan.
5. Identify the world's largest wetland where fire incidents have increased.

(Answers : Refer to Page No. 162)

TARGET MAINS

PAPER-I

Question 1. *Veer Savarkar had been a proponent of a modern and unorthodox India. Comment.*

Answer: Veer Savarkar was a prominent figure through the struggle for independence of India. Born as Vinayak Damodar Savarkar, he grew to be an astounding scholar, writer, poet and philosopher. His role in the freedom struggle was instrumental and pivotal.

As a proponent of modern and unorthodox India

- He and his brother founded a secret society called Abhinav Bharat Society. Savarkar took the lead to bring together the patriots to safeguard the fundamental rights of the people.
- Savarkar founded the Free India Society to organise Indian students studying in England to fight for independence.
- He established the Mitra Mela as a foundation towards the struggle for an independent Bharat. The members of this organization were inclined towards the vision of absolute political independence.
- In his view, the social transformation had to be carried out logically, according to the time period of living.
- He further emphasized that the personalities in the Hindu documentations like the Pandavas are not children of Gods but rather a proof of inter-caste mixing. Thus, caste boundaries have to be blurred.
- He was a strong advocate for inter-caste marriages and often indicated how this inter-caste blending is the reason for a varied population in India.
- He also published books like the Indian War of Independence advocating complete Indian independence by revolutionary means.

It is clear that his relentless efforts for the existence of a free and independent country have been very underappreciated. With the risk and never-ending drive to see a free nation with the values of futuristic India, he truly stands to be a figure of modern and unorthodox India.

Question 2. *What is South Atlantic Anomaly? Discuss its significance and implications over the Earth.*

Answer: The South Atlantic Anomaly (SAA) is a weak spot in Earth's magnetic field. Its extent area at the

Earth's surface is continuously growing since the intensity instrumental measurements are available covering part of the Southern Hemisphere and centred in South America. Scientists have discovered that Earth's magnetic field has lost around 9% of its strength over the last 200 years.

Significance

- The current weakening of the field is speculated to be a sign of the pole reversal of the earth, in which the north and south magnetic poles may switch places.
- Additionally, the SAA is expected to help to understand the processes in Earth's core and future developments in the earth's interior.

Implications

- The magnetic shield has an important role to protect the planet from high doses of solar wind and cosmic radiation. The anomaly could bring a change in the way we access technology.
- The reversal and apparent shift, which could keep extending could actually impact satellite and telecommunication systems, which means that some of the internet and mobile phone functioning which depend on satellite signals can possibly get disrupted. It could also affect the mapping and navigation systems.
- The weakening of earth's magnetic field could also impact migratory movement. Birds, animals- all those who migrate with the change in the season depending on the earth's mapping to move about can find it a little difficult.

Earth's magnetic field is often visualised as a powerful dipolar bar magnet at the centre of the planet, tilted at around 11° to the axis of rotation. However, the growth of the South Atlantic Anomaly indicates that the processes involved in generating the field are far more complex.

Question 3. *What do you mean by heatwaves? Enumerate the reasons for the increase in their number and impacts associated with them.*

Answer: A heatwave is a period of unusually hot weather that typically lasts two or more days. To be considered a heatwave, the temperatures have to be outside the historical averages for a given area.

- With this, India has joined the league of leading nations and economies including the US, the UK, EU, Australia, Canada, France, Germany, Italy etc.

On this line, India recently launched National AI Strategy and National AI Portal, and has also started leveraging AI across various sectors such as education, agriculture, healthcare, e-commerce, finance, telecommunications to attain the goals of judicious use of AI.

PAPER-IV

Question 10. *Nepotism and favouritism can hinder the effectiveness and efficiency of local public service delivery and diminish public trust. Discuss.*

Answer: Favouritism can be defined as unfair support shown to one person or group, especially by someone in authority.

Nepotism is a specific form of favouritism whereby a public official uses his/her authority or position to provide an undue advantage (job, favour, preferential treatment etc.) to a family member.

- Nepotism and favouritism in all its forms are types of corrupt behaviour that have the potential to undermine the proper functioning of the state and compromise the

ability of public authorities to serve the public good.

Implications on efficiency and effectiveness of public service delivery:

- When applied in the recruitment process, the practices of nepotism may lead to the hiring of individuals (from family, friends or political circles) who are not capable or qualified to execute their allocated tasks of public delivery of services.
- Nepotism while awarding tenders of public works leaves out the better who could have been more effective in doing that work that again emancipates into public mistrust.
- Targeted allocation or delivery of services may miss out to reach the real beneficiary. It undermines the accountability of the authority and the public starts to lose out trust from the office.

Public trust levels in public institutions are often linked to the quality and performance of their staff. Special preference given to certain people distorts the principle of fairness, creates unequal opportunities, facilitates corruption and broadens the gap further between the rich and the poor.

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PT 2020 COMPENDIUM

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Section: 1 (Geography)

INTERIOR OF THE EARTH

Sources of information

Direct Sources

- Deep earth mining and drilling reveal the nature of rocks deep down the surface.
- Volcanic eruption forms another source of obtaining direct information.

Indirect Sources

- Seismic waves, meteors, gravitation, magnetic field, etc.
- The gravity values differ according to the mass of material and are influenced by many other factors. These readings differ from the expected values. Such a difference is called *gravity anomaly*.

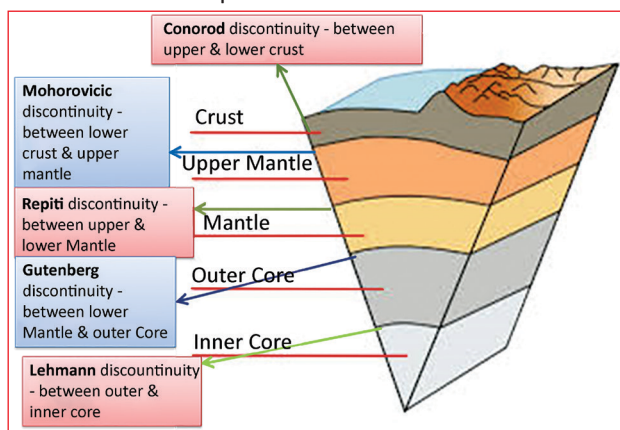
Earth's Layers

Crust

- Oceanic crust is thinner as compared to the continental crust.
- The continents – silica + aluminium (also called 'sial')
- Oceans – silica + magnesium (also called 'sima').

Mantle

- The upper portion of the mantle is called the asthenosphere.
- The crust and the uppermost part of the mantle are called the lithosphere.



Core

- The earthquake wave velocities helped in understanding the existence of the core of the earth.
- Mainly composed of Nickel and iron (**nife**). The outer core is liquid while the inner core is solid.

EARTH MOVEMENTS

Deformations in the earth are caused by:

- The heat generated by the radioactive elements.
- Movement of the crustal plates.
- Forces generated by the rotation of the earth.
- Climatic factors like winds, precipitation, pressure belts, etc.

Endogenetic Movements

Diastrophism:

- It is the slow bending, folding, warping and fracturing of Earth's crust.
- Orogeny is a mountain building process, Epeirogenic is uplift or warping of large parts of the earth's crust and Plate tectonics is horizontal movements of crustal plates.
- **Sudden Movements:** Earthquake and volcanoes

Exogenetic Movements

- **Physical and chemical processes** that are a direct result of stress-induced earth materials due to various forces that come into existence due to sun's heat.
- The basic reason that leads to weathering, erosion and deposition is the development of stresses in the body of the earth materials along with important climatic forces: Temperature and precipitation

WEATHERING

- It is breaking down or dissolving rocks and minerals on the surface of the Earth.
- There are three processes of weathering:

NOTE: Erosion is the displacement of solids (soil, mud, rock etc.) usually by the agents of currents such as wind, water, or ice.

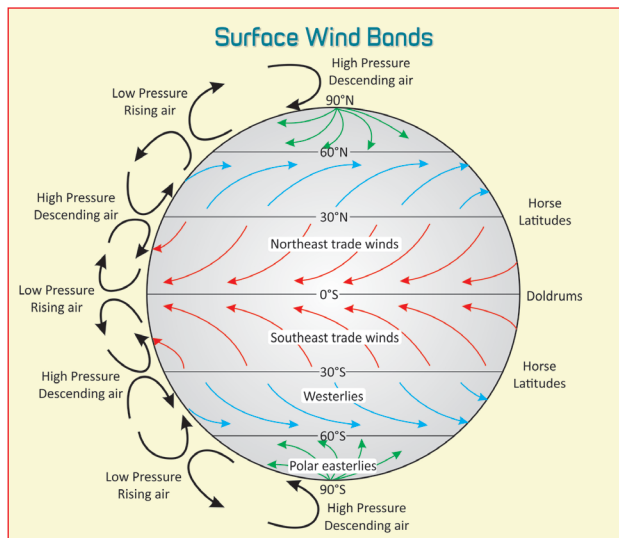
Pressure Systems

Air expands when heated and gets compressed when cooled. This results in variations in the atmospheric pressure. Wind moves from high pressure to low pressure.

- **Adiabatic Process:** There is no heat exchange between the air parcel and the external environment. All the temperature changes are internal. Temperature changes are only due to change in pressure or volume or both.
- **Katabatic Wind:** It is a hot dry wind that blows down a mountain slope. It is an example of a falling parcel of air in which the temperature changes happen adiabatically.
 - When a katabatic wind is warmed by compression during its descent into denser air, it is called a **foehn**.

Factors Affecting Wind Movement

Pressure gradient force, Frictional force, Coriolis force and Gravitational force.



Temperature Inversion

- A reversal of the normal behaviour of temperature in the troposphere, in which a layer of cool air at the surface is overlain by a layer of warmer air.
- Ideal Conditions for Temperature Inversion are long nights, clear skies and calm air.
- Inversions play an important role in determining cloud forms, precipitation, and visibility.

Jet Streams

- Jet streams are relatively narrow bands of strong wind in the upper levels of the atmosphere.
- Jet streams travel in the tropopause - the area between the troposphere and the stratosphere - at heights of about 8 to 15 km.
- The winds blow from west to east in jet streams but the flow often shifts to the north and south. Jet streams follow the boundaries between hot and cold air.
- Jet streams are stronger in winter in the northern and southern hemispheres, because that's when air temperature differences that drive them, tend to be most pronounced.

Fronts

- Fronts are the typical features of temperate region (30°- 65° N and S).
- The front is a three-dimensional boundary zone formed between two converging air masses with different physical properties (temperature, humidity, density etc.).
- The type of **front** depends on both the direction in which the air mass is moving and the characteristics of the air mass.
- In the northern hemisphere, **Frontogenesis** (convergence of air masses) happens in an **anti-clockwise direction** and in the southern hemisphere, **clockwise direction**. This is due to the Coriolis effect.

Humidity

- Water vapours present in the air is known as Humidity.
- The actual amount of water vapour present in the atmosphere is known as the absolute humidity. Warm air can hold more moisture than cold air.
- The percentage of moisture present in the atmosphere as compared to its full capacity at a given temperature is known as the relative humidity.

Dew point

- The temperature to which air must be cooled to become saturated with water vapours.
- The measurement of the dew point is related to humidity. A higher dew point means there is more moisture in the air.
- Devices called hygrometers are used to measure dew point over a wide range of temperatures.

Section: 2 (Polity)

SALIENT FEATURES OF THE CONSTITUTION

The Indian Constitution is unique in its contents and spirit with the following features:

Longest written constitution
Drawn from various sources
Quasi-rigid, Quasi-federal
Parliamentary form and Three-tier government
Judicial supremacy, Integrated and independent judiciary
Universal Adult Franchise
Single citizenship
Emergency provision
Secular state
Fundamental Rights and Duties, Directive Principle of State Policy

PREAMBLE

- It is based on the **Objective Resolution** drafted and moved by Nehru in 1946 and adopted by the Constituent Assembly in 1947.

TEXT OF THE PREAMBLE

“We, **THE PEOPLE OF INDIA**, having solemnly resolved to constitute India into a **SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC** and to secure to all its citizens:

JUSTICE, Social, Economic and Political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all;

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY**

ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION”.

- The Preamble has been amended only once so far in 1976, by the 42nd Constitutional Amendment Act, and added three new words - Socialist, Secular and Integrity.
- In the historic case of *Kesavananda Bharati* (1973), the Supreme Court held that the Preamble is a part of the Constitution and it can be amended, subject to the condition that no amendment is done to the ‘basic features’.
- K.M. Munshi**: Preamble is the horoscope of our sovereign democratic republic.
- Pandit Thakur Das Bhargava**: Preamble is the soul of the constitution; key of the constitution.
- Sir Ernest Barker**: Preamble is the keynote to the constitution.

CITIZENSHIP

Article 5 to 11 deals with citizenship. Unlike the Dual citizenship of the USA, India has single citizenship.

ARTICLE	PROVISIONS
Article 5	Citizenship at the commencement of the Constitution
Article 6	Rights of citizenship of certain persons who have migrated to India from Pakistan
Article 7	Rights of citizenship of certain migrants of Pakistan
Article 8	Rights of citizenship of certain persons of Indian origin residing outside India
Article 9	Persons voluntarily acquiring citizenship of a foreign state not to be citizens
Article 10	Continuance of the rights of citizenship
Article 11	Parliament to regulate the right of citizenship by law

Citizenship Act, 1955

- The Citizenship Act of 1955 prescribes five ways of acquiring citizenship, viz, by birth, descent, registration, naturalisation and incorporation of territory.
- The Act has been amended several times, the recent being The Citizenship (Amendment) Act, 2019.

Loss of Citizenship

- Renunciation**: Person can declare on their own.
- Termination**: Voluntarily acquired another country's citizenship except in case of war.

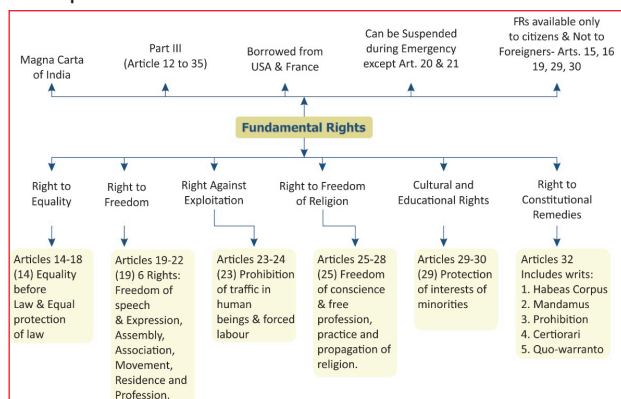
- **Deprivation:** The Central government can deprive citizenship of some specific reasons.

Citizenship (Amendment) Act of 2019

The Act has amended the Citizenship Act, 1955 to give eligibility for Indian citizenship to illegal migrants who are Hindus, Sikhs, Buddhists, Jains, Parsis and Christians from Afghanistan, Bangladesh and Pakistan, and who entered India on or before 31 December 2014.

FUNDAMENTAL RIGHTS

- They are enshrined in Part III of the Constitution from Articles 12 to 35. It has derived inspiration from the Constitution of the USA (i.e., Bill of Rights).
- The Fundamental Rights are meant for promoting the idea of **political democracy**.
- They are not sacrosanct or permanent. They can be amended except for the basic structure.
- Fundamental Rights under Article 15, 16, 19, 29 and 30 are available only to Indian citizens and not foreigners.
- They are justiciable allowing persons to move the courts for their enforcement.
- They are not absolute but qualified. The state can impose reasonable restrictions.



DIRECTIVE PRINCIPLES OF STATE POLICY

- They resemble the 'Instrument of Instructions' enumerated in the Government of India Act of 1935. They embody the concept of a 'welfare state' and not that of a 'police state'.
- It helps the courts in examining and determining the constitutional validity of a law. They are non-justiciable.
- They ensure that they constitute the **philosophy** of social justice in all the precepts for the authorities of the state.

Important DPSPs	
Article 38	State to secure a social order for the promotion of the welfare of the people
Article 40	The organisation of village panchayats
Article 43	To ensure to all workers, industrial or otherwise, work, a living wage, conditions of work ensuring a decent standard of life
Article 44	Uniform civil code for the citizens
Article 45	Provision for early childhood care and education to children below the age of 6 years
Article 46	Promotion of educational and economic interests of scheduled castes, scheduled tribes and other weaker sections
Article 48A	To protect and improve the environment and to safeguard forests and wildlife
Article 50	Separation of judiciary from the executive
Article 51	Promotion of international peace and security

FUNDAMENTAL DUTIES

Fundamental duties were incorporated in the Constitution by the 42nd Amendment Act in 1976 exclusively for Indian Citizens. In 2002, one more Fundamental Duty was added (no.11 in the list).

Fundamental Duties	
1	To abide by the Constitution and respect its ideals and institutions, the national flag and the national anthem
2	To cherish and follow noble ideals, which inspired our national struggle for freedom
3	To uphold and protect the sovereignty, unity and integrity of India
4	To defend the country and render national service when called upon to do so
5	To promote harmony and the spirit of common brotherhood amongst all people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women
6	To value and preserve the rich heritage of our composite culture
7	To protect and improve the natural environment, including forests, lakes, rivers and wildlife and to have compassion for living creatures
8	To develop scientific temper, humanism and the spirit of inquiry and reform
9	To safeguard public property and to abjure violence
10	To strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement
11	Who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen

Powers of the Supreme Court			
Original	Writ	Appellate	Advisory
<ul style="list-style-type: none"> ■ Power to hear by way of the first instance ■ The dispute between Centre and state or state and state 	<ul style="list-style-type: none"> ■ Guarantor of fundamental rights ■ The SC is empowered to issue writs: Habeas corpus, mandamus, prohibition, quo-warranto and certiorari. 	<ul style="list-style-type: none"> ■ It hears appeals against the judgements of the lower courts on constitutional matters, civil matters, criminal matters and appeals by special leave. 	<ul style="list-style-type: none"> ■ Article 143: Law of public importance or any of the pre-independence treaty. ■ Dispute of pre-constitutional treaty or sanad

GOVERNOR

The Governor is the chief executive head of the state. The governor also acts as an agent of the central government. The 7th Constitutional Amendment Act of 1956 facilitated the appointment of the same person as a governor for two or more states.

Veto Power of Governor

With Regard to Ordinary Bills

- He may give his assent, withhold assent, send for reconsideration where it is necessary to give assent after passing again or hold for Presidential assent.
- If the Bill is returned by the President for reconsideration then the role of the Governor gets diminished and the bill will be passed with the presidential assent only.

With Regard to Money Bills

He may give his assent, withhold assent or hold for Presidential assent. The President can not send a money bill for reconsideration.

NOTE: Governor **cannot** send the money bill for reconsideration to the Assembly.

STATE LEGISLATURE

The state legislature comprises the governor, the legislative council and the legislative assembly. The legislative council (Vidhan Parishad) is the upper house, while the legislative assembly (Vidhan Sabha) is the lower house.

Composition

Legislative Assembly

- Directly Elected by the people. Maximum strength at 500 and minimum at 60 except Arunachal Pradesh, Sikkim and Goa. One member nominated by the Governor from the Anglo-Indian community (now revoked).
- The chief minister can be a member of either House of the State legislature.

Legislative Council

- **Legislative Council** forms a part of the state legislatures in six of **India's** 28 States (Uttar Pradesh, Bihar, Karnataka, Maharashtra, Telangana and Andhra Pradesh)
- The members are indirectly elected. The maximum strength of the council is fixed at one-third of the total strength of the assembly and the minimum strength is fixed at 40.
- Thus, 5/6 of the total number of members of a legislative council are indirectly elected and 1/6 are nominated by the governor.

HIGH COURT

- The Seventh Amendment Act of 1956 authorised the Parliament to establish a common high court for two or more states or union territory.
- The Constitution does not specify the strength of a High Court and leaves it to the discretion of the President.

JURISDICTIONAL POWER OF SUPREME COURT	JURISDICTIONAL POWER OF HIGH COURT
The Supreme Court can issue writ only for the enforcement of fundamental rights.	The High Court can issue writ not only for the enforcement of Fundamental Rights but also for any other purpose.
The Supreme Court can issue writs against a person or government throughout the territory of India. Thus, the territorial jurisdiction of the Supreme Court for the purpose of issuing writs is wider than that of a high court.	A High Court can issue writs against a person residing or against a government or a authority located within its territorial jurisdiction only or outside its territorial jurisdiction only if the cause of action arises within its territorial jurisdiction.
The Supreme Court may not refuse to exercise its writ jurisdiction. The Supreme Court is thus constituted as a defender and guarantor of the fundamental rights.	Remedy under Article 226 is discretionary and hence, a high court may refuse to exercise its writ jurisdiction.

Section: 3 (Modern Indian History)

European Penetration into India

Portuguese	Dutch	Danish	British	French
<ul style="list-style-type: none"> ■ Vasco de Gama reached Calicut via the Cape of Good Hope in May 1498. ■ Blue Water Policy by Francisco de Almeida. ■ The real founder of Portuguese power in India was Alfonso de Albuquerque. ■ Tobacco cultivation, ship making (Calicut and Gujarat) and use of printing press began after the arrival of Portuguese. 	<ul style="list-style-type: none"> ■ Cornelis de Houtman was the first Dutch to arrive. ■ Trade posts in Gujarat, Bengal, Bihar and Orissa. ■ In 1741, they were defeated by the king of Travancore, Martanda Verma, in the Battle of Colachel. ■ Defeated by the British in the Battle of Bedara in which the English were led by Clive. 	<ul style="list-style-type: none"> ■ The Danish colonies in India included the towns of Tranquebar (Tamil Nadu), Serampore (West Bengal) and the Nicobar Islands. 	<ul style="list-style-type: none"> ■ In 1608, British emperor James I sent Captain William Hawkins to the court of Jahangir to seek permission to establish trading posts in India. ■ Set up a factory at Surat in 1613. ■ These privileges were called 'the Magna Carta of East India Company'. 	<ul style="list-style-type: none"> ■ The first French factory in India was established at Surat in 1668 which was followed by the factory at Masulipatnam in 1669.

BRITISH EXPANSION IN INDIA

Acquisition of Bengal

- Bengal had the right to grant 'Dastaks' or permits to allow the passage of duty-free goods through port authorities.
- The political stability of Bengal was dependent on a delicate balance of power.
- The "**black hole tragedy**" took place on June 20, 1756, in which it was alleged that hundreds of British soldiers captured by the Nawab perished as a result of being held in inhuman confinement.

Battle of Plassey

- The decisive Battle of Plassey took place on 23rd June 1757 which not only sealed the fate of Bengal and Nawab but also of India.
- The East India Company emerged as a Kingmaker in the politics of Bengal as it chose to favour Mir Kasim and subsequently Mir Jafar.

Revolution of 1760

- After the Battle of Plassey, Mir Jafar was made the Nawab of Bengal and as he showed reluctance in meeting demands and sought to win the favour of Dutch, he was replaced by Mir Kasim.
- Vansittart had referred to this event as the Revolution of 1760.

Battle of Buxar

- The Battle of Buxar, 1764, was one of the most significant victories of the British East India Company.

- After the decisive victory of the Company, Lord Clive signed the treaties of Allahabad.

Diarchy in Bengal, 1765 - 72

The British got the Diwani rights i.e. the authority to collect revenue and dispense criminal justice as the Mughal ruler signed it off to them in the treaty of Allahabad.

Anglo-Mysore War

First Anglo-Mysore War, 1767 - 69

Fought between Hyder Ali and the English; later concluded in the **Treaty of Madras** in 1769.

Second Anglo-Mysore War, 1780-84

- Hyder Ali was defeated at the Battle of Portonovo (Tamil Nadu) in November 1781.
- The **Treaty of Mangalore** was signed between Tipu Sultan and the British East India Company on 11 March 1784 to bring an end to the Second Anglo-Mysore War.

Third Anglo-Mysore War, 1790-92

- It was a conflict in South India between the Kingdom of Mysore and the East India Company and its allies, including the Nairs of Travancore, the Maratha Empire and the Nizam of Hyderabad.
- In this battle, Tipu Sultan was defeated and therefore had to sign the Treaty of Seringapatam.

Fourth Anglo-Mysore War, 1799

- The British captured the capital of Mysore. The ruler Tipu Sultan was killed in the battle.

Red Fort Trial

- The joint trial of Shah Nawaz Khan, Prem Sahgal and Gurubaksh Singh Dhillon, followed by the trials of Abdul Rashid, Shinghara Singh, Fateh Khan and Captain Malik Munawar Khan Awan.
- The INA Defence Committee was formed by the Indian National Congress and included prominent Indian legal figures, among whom were Jawaharlal Nehru, Bhulabhai Desai, Kailashnath Katju and Asaf Ali.

FREEDOM AND PARTITION**Royal Indian Navy Mutiny, 1946**

- On February 18, 1946, the mutiny started as a strike by the ratings to protest against:
 - Racial discrimination (demanding equal pay for Indian and white soldiers), Unpalatable food,

Arrest of a rating B.C. Dutt for scrawling “Quit India” on HMIS Talwar, INA trials and Use of Indian troops in Indonesia.

- The mutineers hoisted three flags tied together on the ships which they had captured – one of Congress, one of Muslim League, and the third of the Communist Party of India, signifying the unity.

C.R. Formula: 10th July, 1944

- It was formulated by Chakravarthi Rajagopalachari to solve the political deadlock between the All India Muslim League and Indian National Congress.
- With plan of Muslim League to endorse Congress demand for independence and subsequently, C.R. formula became the basis of the partition of India.

Wavell Plan: 14 th June, 1945	Cabinet Mission Plan, 1946	Mountbatten Plan, June 3 rd , 1947	Indian Independence Act, July, 1947
<ul style="list-style-type: none"> ■ In order to discuss the proposal with the leaders, Wavell summoned a conference in Shimla on June 25, 1945. ■ The plans failed on the issue of nomination of Muslim members. INC opposed the Leagues demand to solely nominate all the Muslim members. 	<ul style="list-style-type: none"> ■ Under Lord Pethick-Lawrence, Sir Stafford Cripps, and A. V. Alexander. ■ A Union of India consisting of British India, and the Indian States. ■ The Interim Government was to hold all the portfolios including that of 'war'. ■ The States would be free to negotiate their status in the Union. 	<ul style="list-style-type: none"> ■ Lord Mountbatten held several rounds of talks with Indian leaders. Frustrated at the stalemate over these talks he proposed 'Plan Balkan'. ■ Both India and Pakistan were to be assigned dominion status in the initial stages and to seek membership of the British Commonwealth of the Nations. 	<ul style="list-style-type: none"> ■ This Act of the Parliament of the United Kingdom partitioned British India into two new independent dominions of India and Pakistan. ■ Conferment of complete legislative authority on the two respective constituent assemblies.

Tribal Movements

- Paharias' Rebellion by the martial Pahariyas (1778; Rajmahal Hills); against the British expansion on their lands.
- Chuar Uprisings by the Chuar aboriginal tribesmen (1776; West Bengal) against rise in demands and economic privation by the British.
- Kol Uprisings by the Kols of Chota Nagpur led by Buddho Bhagat (1831); against expansion of British rule on their lands and transfer of their lands to outsiders; the revolt was suppressed.
- **Ho and Munda Uprisings**
 - by Ho tribals led by Raja Parahat (1827; Singhbhum and Chottanagpur); against the occupation of Singhbhum by British.
 - by Ho tribals and the Mundas (1831); against the newly introduced farming revenue policy.
 - by the Mundas led by Birsa Munda (1899-1900; south of Ranchi); Birsa was captured and imprisoned.
- Santhal Rebellion by the Santhals led by Sido and Kanhu (1855-56; Bihar); against the practices of zamindars and moneylenders; the rebellion later turned anti-British and was suppressed.
- Kondh uprisings led by Chakra Bisoi (1837-56 and later in 1914; hilly region extending from Tamil Nadu to Bengal; in Orissa in 1914); against interference in tribal customs and imposition of new taxes.
- Bhil Revolts (1817-19 and 1913; region of Western Ghats); against Company Rule (in 1817-19) and to form Bhil Raj.
- Koya Revolts by the Koyas and the Khonda Sara Chiefs - led by Tomma Sora in 1879-80 and by Raja Anantayyar in 1886 (eastern Godavari region Andhra Pradesh); against oppression by police, moneylenders; new regulations and denial of their rights over forest areas.
- Tana Bhagat Movements among the Mundas and Oraon tribes led by Jatra Bhagat, Balram Bhagat who preached that God's benevolent delegate would arrive to free the tribals (1914-1915; Chottanagpur); against the interference of outsiders; began as a Sanskritisation movement.
- Rampa Revolts led by Alluri Sitarama Raju of the Koyas (1916, 1922-1924; Rampa region in Andhra Pradesh); against British interference; capture and execution of Raju in 1924.

Peasant Movements	
Movement	Causes and Consequences
Titu Mir Movement (1782-1831; West Bengal)	Against Hindu landlords who imposed beard-tax on the Farazis.
Pagal Panthis Movement (1825-1835; Mymensingh district, earlier in Bengal)	Against hike in rents; the movement was violently suppressed.
Moplah Uprisings (1836-1854; Malabar)	Against the rise in revenue demand and reduction of field size.
Indigo Revolt by Bengal indigo cultivators led by Digambar and Bishnu Biswas (1859-1860; Nadia district)	Against terms imposed by European indigo planters; the Indigo Commission was set up in 1860 to view the situation.
Eka Movement by members of Pasi and Ahir castes (1921-22; Hardoi, Barabanki and Sitapur districts)	Against hike in rents.
Tebhaga Movement by poor peasants and tenants and bargadars or share-croppers (Bengal)	Against zamindars and moneylenders; Bargadari Bill was passed.

Section: 4 (Art and Culture)

ARCHITECTURE

Architecture is the art of building. Over the millennia, the art of building has evolved from simple shelters to complex skyscrapers.

Indus Valley Civilization

- The Indus Valley Civilization was an urban civilization that prospered during the Bronze Age (2500-1700 BC).
- The “Great Granary” in Mohenjo-Daro was built on a raised platform.
- Roads and streets were laid out along an approximate “grid” pattern, intersecting at right angles. It seems that streets with drains were laid out first and then houses built along with them.
- A watertight pool called the Great Bath, perched on top of a mound of dirt, was a large rectangular tank in a courtyard surrounded by a corridor on all four sides.
- Seals were primarily made of Steatite (terracotta, copper, gold, ivory, agate, chert and faience were also used) in a mostly square shape (other shapes like circular, rectangular or triangular).
- The script is written in the **boustrophedon style**; to write the first line from right to left and the next line from left to right and so on, probably containing the name and title of the owner.
- The casting of bronze using the lost wax technique was known and many figurines built in this fashion were found. The ‘dancing girl’ of Mohenjo-Daro and the bronze bull found in Kalibangan are famous examples.
- Harappan pottery shows evidence of mass-production. Pottery kilns were found at multiple sites like Mohenjo-Daro, Harappa, Chanhudaro and Nausharo.

Art and Architecture of the Mauryan Period

- Mauryan art was typically ‘dignified and aristocratic court art’ where great emphasis was laid on the portrayal of animals.
- The Mauryan capital, Pataliputra, had a palace built of polished wood as had been noted by Megasthenes. Another palace at **Kumrahar** was mentioned by Megasthenes in his book *Indika* as more splendid than the palaces of Iran.
- Pottery of the Mauryan period is termed as PGW (Painted Grey Ware) and NBPW (Northern Black Polished Ware). NBPW had a lustrous black finish and were used as decorative or luxury wares.

Schools of Art In The Post-Mauryan Age	
Gandhara School	<ul style="list-style-type: none"> ■ Developed in the western frontiers of Punjab, near modern-day Peshawar and Afghanistan. ■ Also known as Greco-Indian School of Art, it flourished from 50 BC to 500 AD and majorly in Kanishka’s reign. ■ Buddha with curly hair, anatomical accuracy, spatial depth, and foreshortening, etc. ■ Various Mudras of Buddha in Gandhara School of art are: <ul style="list-style-type: none"> ● Abhaya Mudra: Don’t fear ● Bhumisparsha Mudra: Touching the earth ● Dhyana mudra: Meditation ● Dharmachakra Mudra: A preaching mudra
Mathura School	<ul style="list-style-type: none"> ■ Flourished on the banks of the river Yamuna in the period between 1st and 3rd centuries B.C. ■ Influenced by the stories and imageries of all three religions of the time – Buddhism, Hinduism and Jainism. ■ The Hindu Gods were represented using their avayudhas. ■ The Mathura style focuses on internal beauty and facial sentiments rather than bodily gestures. ■ Yaksha images found during the Mauryan period.

Amravati School	<ul style="list-style-type: none"> ■ In the southern parts of India, the Amravati School developed on the banks of Krishna River, under the patronage of the Satavahana rulers. ■ Amravati sculptures have a sense of movement and energy with profound and quiet naturalism in human, animal and floral forms. ■ Later, this style got transformed into Pallava and Chola architecture. ■ The sculptures of this school made excessive use of the Tribhanga posture.
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Art and Architecture of The Gupta Age

From the 4th century onwards, the Gupta Empire came into being. This period is called the 'Golden Age of Indian Art and Architecture'.

Ajanta caves	Ellora caves
<ul style="list-style-type: none"> ■ Caves were made as Viharas and Chaityas during the period 200 BC to 650 AD. ■ Walls were originally covered in paintings, but today there are only nine surviving images, the most famous being the Bodhisattva Padmapani. ■ Avalokiteshvara's painting can be found to the left on the main shrine. ■ Both the Chinese traveller Fa Hien and Hieun Tsang mention the Ajanta caves in their writings. 	<ul style="list-style-type: none"> ■ In Maharashtra, were made for Buddhist, Jain and Brahmanical followers. These were made between 5th and 11th century AD. ■ Kailasa temple, a marvel of Ellora, is the largest rock-cut structure, 8th century, Krishna I of Rashtrakuta dynasty.

Major Architecture Styles	
Dravida Style	Nagara Style
<ul style="list-style-type: none"> ■ Temples which are situated between the Krishna River and Kanyakumari. ■ Pyramidal shaped central tower called Vimana. ■ Gopuram is the most prominent. ■ Dwarpalas are there on the entrance. ■ Temples serve as religious centres, administrative activities, controlling vast areas of land and were also centres of education. ■ Panchayatana style of architecture ■ Kanchipuram, Thanjavur or Tanjore, Madurai temples 	<ul style="list-style-type: none"> ■ North Indian temples. ■ Have a curvilinear tower called a Shikhara. ■ Ganga and Yamuna rivers are depicted in the personified form at the entrance of Garbhagriha or Sanctum Sanctorum ■ Nagara style had only religious purposes. ■ Khajuraho temples

Regional Schools of Architecture	
Nayaka School	<ul style="list-style-type: none"> ■ Best known for the Meenakshi temple that flourished in the 16th to 18th century under the Nayaka rulers. ■ Largest gopurams (gateways) ■ For example, Meenakshi temple, Madurai
Vesara School	<ul style="list-style-type: none"> ■ Combined style of Nagara and Dravidian styles flourished under the Chalukya kings. ■ Great interest was given to the construction of the vimana and the mandapa. ■ For example, Somnathpura
Vijaynagar School	<ul style="list-style-type: none"> ■ Influence of the Indo-Islamic style of Bijapur can be seen. ■ The main mandapa is called the 'Kalyana mandapa'. ■ For example, Virupaksha Temple at Hampi
Hoysala School	<ul style="list-style-type: none"> ■ Style of temple building flourished around Mysore (Halebid, Sringeri and Belur) from about 1050 AD to 1300 AD. ■ Have a raised platform called Jagati. ■ For example, the Chennakesava temple of Belur and Hoysaleswara at Halebid.
Pala School	<ul style="list-style-type: none"> ■ Under the patronage of the Pala and the Sena kings of Bengal in the period 8th to 12th century AD. ■ The confluence of Hindu and Buddhism. ■ For example, Siddhesvara temple at Barakar

ARCHITECTURE OF MEDIEVAL INDIA

The establishment of Islamic rule in Delhi by the 12th century AD triggered a massive change in architectural styles. This style of architecture is called the Indo-Islamic style of architecture.

Prominent Styles

- **Arculate style** of architecture came into prominence, which relied on the building of arches and domes over buildings.
- The **Arabesque style** of drawing geometric vegetal images was used.
- **Pietra-dura** on the walls of the buildings calligraphy was used for decoration instead of the old tradition of making sculptures.
- The gardens built under this style followed the **Charbagh style** in which a squarely shaped garden was divided further into four more gardens.
- The **fore-sighting technique** was also used which allowed the inscriptions to appear of the same size from any place within the building.

Indian Dances

Classical Dances

- **Bharatnatyam (Tamil Nadu):** Abhinaya Darpana by Nandikesvara is one of the main sources
 - Late Rukmini Devi gave a new life and popularity to this dance.
 - Bharatnatyam dance is known to be ekaharya, where one dancer takes on many roles in a single performance.
 - Evolved from the Devadasi System of South Indian Temples.
- **Kathakali (Kerala):** Textual sanction from Balarama Bharatam and Hastha Lakshana Deepika.
 - It originated from the Theyyam, a ritual tribal dance of north Kerala and Kalaripayattu.
 - It requires control of body and emotion. 'Mudras' follows the song sung backstage. Use of 'eyes' and 'eyebrows' is of utmost importance.
- **Kuchipudi (Andhra Pradesh):** Its name has its origin in a place called Kuchipudi village in Krishna district of Andhra Pradesh.
 - In the 17th century Kuchipudi style of Yakshagana was conceived by Siddhendra Yogi, a Vaishnava poet.
- **Odissi (Odisha):** Archaeological evidence of this dance form dating back to the 2nd century BC is found in the caves of Udayagiri and Khandagiri in Bhubaneswar.
 - The Jain King Kharavela patronized it. For centuries maharis were the chief repositories of this dance.
 - Around this time, a class of boys called gotipuas were trained in the art.
 - It has derived a great deal from the Abhinaya Darpana Prakasha by Jadunatha Sinha, the Abhinaya Chandrika by Rajmani Patra, and the Abhinaya Chandrika by Maheshwara Mahapatra.
- **Kathak (North India):** The name Kathak has been derived from the word 'Katha' meaning stories.
 - Synthesis of Hindu and Muslim culture. Various gharanas are Lucknow, Banaras, Jaipur.
 - Under the Muslims there was a greater stress on nritya and bhava giving the dance graceful, expressive and sensuous dimensions.
- **Manipuri (Manipur):** Lai Haraoba is the earliest form of dance which forms the basis of all stylised dances in Manipur.
 - Manipur dance has a large repertoire; however, the most popular forms are the Ras, the Sankirtana and the Thang-Ta.
 - The dance also has a theme based on a popular love tale of Khamba-Thoibi of Meitei legends.
- **Sattriya (Assam):** Introduced by the great Vaishnava saint and reformer of Assam, Mahapurusha Sankaradeva in the 15th century.
 - Sattriya dance tradition is governed by strictly laid down principles in respect of hasta mudras, footworks, aharyas, music, etc.
 - There were two dance forms prevalent in Assam before the neo-Vaishnava movement such as Ojapali and Devadasi with many classical elements.
- **Mohiniyattam (Kerala):** This dance form of Kerala was structured into the present day classical format by the Travancore Kings.
 - The Tanjore Quartets (Ponnayya, Chinnayya, Sivananda and Vadivelu).
 - References of Mohiniyattam can be found in the texts Vyavaharamala written in 1709 by Mazhamagalam Narayanan Namputiri and in Ghoshayatra, written later by great poet Kunjan Nambiar.

Some Important Regional Folk Dances

Region	Dances	Region	Dances
Assam	Bagurumba, Bihu, Bhortal, Chah Baganer jhumur nach	Nagaland	Chang Lo
Arunachal	Bardo Chham	Maharashtra	Lavani, Pavri Nach
Chhattisgarh	Raut Nacha	Punjab	Bhangra, Giddha, Kiklli
Goa	Fugdi	Odisha	Chhau, Goti Pua, Baagh Naach, Dalkhai, Dhap, Gumra, Karma Naach, Keisabadi
Gujarat	Dandia Raas, Garba	Rajasthan	Ghoomar, Kalbelia, Kachhi Ghodi
Kerala	Chakyar Koothu, Duffmuttu, Margamkali, Oppana, Padyani, Theyyam, Thirayattam	Tamil Nadu	Parai Attam, Kaaragattam, Kolattam, Mayil Attam, Theru Koothu
Himachal Pradesh	Nati	Tripura	Hojagiri
Madhya Pradesh	Grida, Maanch, Matki, Phulpati	Uttar Pradesh	Mayur Nritya,
West Bengal	Gambhira, Alkap, Domni, Charukala	Sikkim	Singhi Chham

- **Puranas:** These were compiled during the Gupta Age. Puranas are divided into two forms i.e. Mahapuranas (18) and Upa-puranas (18).

Pali and Prakrit Literature

- Prakrit is a term given to vernacular dialects of ancient times which lies between Sanskrit and its derivatives.
- Pali's use as a Buddhist canonical language came about because the Buddha opposed the use of Sanskrit, a learned language.
- Buddhist Literature: They consist primarily of 'Tripitakas' and 'Jatakas' mainly in the language.
- Jain Literature: The text was produced mainly in Prakrit. Some of the Jain texts are- the Angas, the Upangas and the Parikramas.

Dravidian Literature

Tamil, Kannada, Telugu and Malayalam are the four major languages composed in Dravidian literature.

Sangam (Tamil) Literature

- The literature was composed and popular during the period between 300 BC and 300 AD called the Sangam period and is primarily secular in themes.
- Sangam Literature consists of the following works: Tolappiyam (Earlier works), Ettuthokai (Eight

anthologies), Pattuppattu (Ten Idylls), Padinen Kilkanakku (Eighteen Minor works).

Kannada Literature

- Three poets, Pampa, Ponna and Ranna were known as the 'ratnatraya' or 'the three gems' of Kannada literature.

List of Indian Festivals	
State	Festival
Assam	Bihu (Bohaag, Magh and Kaati Bihu)
Arunachal Pradesh	Torgya Monastery Festival
Meghalaya	Behdienkhlam Festival
Manipur	Ningol Chakouba
Mizoram	Chapchar Kut
Nagaland	Hornbill Festival
Tripura	Kharchi Puja
Assam	Ambubachi Mela
Ladakh	Losar festival
Kerala	Onam
Kerala	Thrissur Pooram
Tamil Nadu	Pongal
Telangana and Andhra Pradesh	Bathukamma
Jharkhand	Karma festival
Lohri	Punjab

Section: 5 (Environment)

ENVIRONMENT

The environment is the natural component in which biotic (living) and abiotic (nonliving) factors interact with each other. Abiotic factors are soil, temperature, light etc and biotic factors consist of animals and plants and other living beings.

Levels of Organisations	
Individual	An individual living being that has the ability to act or function independently. It may be any organism.
Species	A species is a group of living organisms consisting of similar individuals capable of exchanging genes or of interbreeding.
Population	The population is a community of interbreeding organisms (same species), occupying a defined area during a specific time.
Community	It is an aggregation of populations of different species living together (interdependent) in a specific area.
Ecosystem	An ecosystem is defined as an entity of a system where organisms interact with each other and with their environment.

Biome	A biome is a large naturally occurring community of flora and fauna occupying a major habitat. e.g. Rainforest biome or tundra biome.
Biosphere	The biosphere includes all living organisms on earth, together with the dead organic matter produced by them.

Niche

- Each organism has an invariably defined range of conditions that it can tolerate, diversity in the resources it utilises and a distinct functional role in the ecological system, all these together comprise its **niche**.
- No organism has the same niche.

Population

A population at any given time is composed of individuals of different ages.

BOD	<ul style="list-style-type: none"> ■ The demand for O_2 is directly related to increasing input of organic wastes and is expressed as biological oxygen demand (BOD) of water. ■ BOD is the amount of dissolved oxygen needed by bacteria for decomposing the organic wastes present in water. It is expressed in milligrams of oxygen per litre of water. ■ The higher value of BOD indicates low DO content of water. ■ BOD is limited and specific to biodegradable materials. Therefore, it is not a reliable method of measuring the pollution load in the water.
COD	<ul style="list-style-type: none"> ■ Chemical Oxygen Demand (COD) is a slightly better mode used to measure pollution load in the water. ■ COD measures the amount of oxygen in parts per million required to oxidize organic (biodegradable and non-biodegradable) and oxidizable inorganic compounds in the water sample. It is not specific like BOD.

Soil Pollution

Soil pollution is defined as the 'addition of substances to the soil, which adversely affects physical, chemical and biological properties of soil and reduces its productivity.

Bioremediation

- Bioremediation is the use of microorganisms (bacteria and fungi) to degrade the environmental contaminants into less toxic forms.

In Situ Bioremediation	<ul style="list-style-type: none"> ■ Bioventing: Supply of air and nutrients through wells to contaminated soil to stimulate the growth of indigenous bacteria. ■ Biosparging: Injection of air under pressure below the water table to increase groundwater oxygen concentrations and enhance the rate of biological degradation. ■ Bioaugmentation: Microorganisms are imported to a contaminated site to enhance the degradation process. ■ Bioremediation techniques, TERI has developed a mixture of bacteria called 'Oilzapper and Oilivorous-S' which degrades the pollutants of oil-contaminated sites, leaving behind no harmful residues.
Ex Situ Bioremediation	<ul style="list-style-type: none"> ■ Biopiles: It is a full-scale technology in which excavated soils are piled and typically constructed in a treatment area that consists of a leachate collection and aeration system. ■ Bioreactors: Bioreactor is defined as a vessel that carries out a biological reaction and is used to culture aerobic cells for conducting cellular or enzymatic immobilization. ■ Composting: Composting is nature's process of recycling decomposed organic materials into a rich soil known as compost. ■ Phytoremediation is the use of plants to remove contaminants from soil and water. Natural phytoremediation is carried out by mangroves, estuarine vegetation and other wetland vegetation.

<ul style="list-style-type: none"> ■ Phytoextraction/phytoaccumulation: Plants accumulate contaminants into the roots and aboveground shoots or leaves. ■ Phytotransformation/phytodegradation: Uptake of organic contaminants from soil, and their transformation to more stable, less toxic, less mobile form. ■ Phytostabilization: Plants reduce the mobility and migration of contaminated soil. Leachable constituents are adsorbed and bound into the plant structure. ■ Rhizodegradation: Breakdown of contaminants through the activity existing in the rhizosphere (region of soil in the vicinity of plant roots). ■ Rhizofiltration: Water remediation technique that involves the uptake of contaminants by plant roots. ■ Mycoremediation: Fungi are used to decontaminate the area. ■ Mycofiltration: Using fungal mycelia to filter toxic waste and microorganisms.

E-waste

- Irreparable computers and other electronic goods are known as electronic wastes (e-wastes). E-wastes are buried in landfills or incinerated.
- Over half of the e-waste generated in the developed world are exported to developing countries, mainly to China, India and Pakistan, where metals like copper, iron, silicon, nickel and gold are recovered during the recycling process.

Electronic Products	Hazardous Materials	Health Effects from Improper Disposal
Batteries	Cadmium, Lead and mercury	<ul style="list-style-type: none"> ■ Birth defects ■ Brain, heart, liver, kidney and skeletal system damage ■ Nervous system damage ■ Reproductive damage
Computer monitors and televisions	Lead in glass cathode ray tubes (CRTs)	
Electronic switches, light devices and flat screen displays	Mercury	
Printed circuit boards	Lead, chromium and mercury	
Solder on circuit boards	Lead	
Older televisions, computers and electrical appliances	PCBs (polychlorinated biphenyls)	

Section: 6 (Economy)

MACROECONOMICS

Basics of Economy

Macroeconomics is concerned with the aggregate economic variables of an economy and takes into account various inter-linkages that exist between different sectors of an economy.

Aggregate Demand (AD)

It is the sum total of expenditure that all households, firms and governments are willing to make on goods and services at various price levels, produced in an economy.

Aggregate Supply (AS)

It is the total monetary value of goods and services that the producers in an economy are willing to sell at different price levels.

Factors of Production

Resources available at a nation's disposal for its economic needs are called factors of production. They have an associated cost or remuneration attached to them. Land, Labour, Capital and Entrepreneur are factors of production.

National Income Accounting

National Income refers to the total income generated by residents of a country in a year. It measures the monetary value of the total output of goods and services produced in one year.

Gross Domestic Product (GDP)	Value of final goods and services in the country in a year. Nominal: Current Market Prices Real: Constant or Base Year Prices
Gross National Product (GNP)	It is GDP added with net factor income from abroad
Net National Product (NNP)	It is GNP minus depreciation (wear and tear)
Net Domestic Product (NDP)	It is GDP minus depreciation.

NOTE:

$\text{GDP@ factor cost} = \text{GDP@ market price} - \text{indirect taxes} + \text{subsidies}$

$\text{GNP@ factor cost} = \text{GNP@ market price} - \text{indirect taxes} + \text{subsidies}$

Methods of national income

- **Income Method:** Income from factors of production; rent (land), wage (labour), interest (capital) and profit (entrepreneur).

- **Product (Value Added) Method:** It estimates the value-added i.e. net contribution made by all the firms in a year.
- **Expenditure Method:** Measures national income in terms of amount spent on final consumption by households, corporates and government.
 - $\text{GDP}_{\text{MP}} = C + I + G + (X - M)$ *Where, C = Private sector's expenditure on final consumer goods, I = Firm's investment or capital expenditure, G = Government's expenditure on final consumer goods, X = Exports, M = Imports, X - M = Net exports or the export revenues*.

Sectors of Indian Economy

Primary Sector (Agriculture and Related Sector)

- Depends directly on natural resources to execute the various processes and manufacture the goods and services needed to keep the whole operation going.
- Example: Agriculture, dairy, fishing, forestry.

Secondary Sector (Industrial Sector)

- Activities in which natural products are changed into other forms through ways of manufacturing that we associate with industrial activity.
- Example: Manufacturing, industries and infrastructure.

Tertiary Sector (Service Sector)

- Activities that help in the development of the primary and secondary sectors.
- Example: Transport, storage, communication, banking, trade.

Quaternary Activities

Activities which demand a separate classification and are specialized in the knowledge sector.

Quinary Activities

Services focusing on the creation, rearrangement and interpretation of new and existing ideas. Often referred to as 'gold collar' professions.

Laffer Curve is a theory that states lower tax rates boost economic growth.

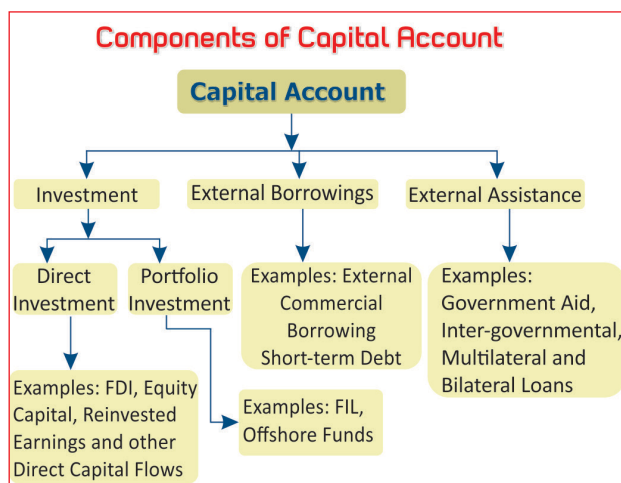
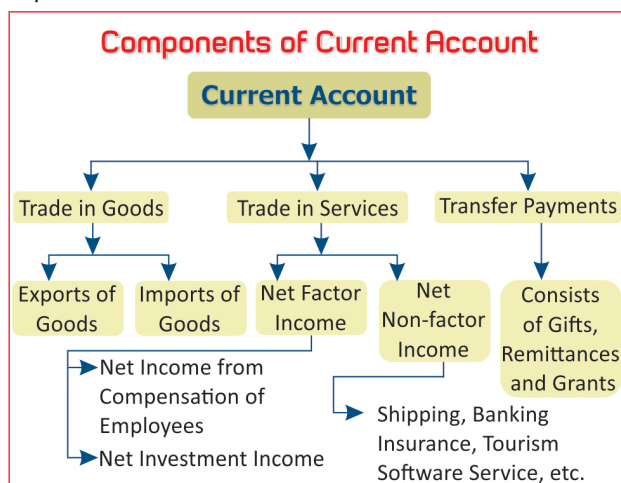
Phillips curve: Inflation and unemployment have a stable and inverse relationship.

Lorenz curve is a graphical representation of income inequality in the population

EXTERNAL SECTOR OF INDIA

Balance of Payment (BOP)

The balance of payments (BoP) records the transactions in goods, services and assets between residents of a country with the rest of the world for a specified time period, typically a year. There are two main accounts in the BoP - the current account and the capital account.



Current Account Deficit (CAD)

- A country that has a deficit in its current account (spending more than it receives from sales to the rest of the world) must finance it by selling assets or by borrowing abroad.
- $\text{Current account} + \text{Capital account} = 0$; a balance of payments equilibrium, the current account deficit is financed entirely by international lending without any reserve movements.

Convertibility

- Currency convertibility is the ease with which a country's currency can be converted into gold or another currency.
- In India, Current account is fully convertible and the capital account is partially convertible.
- **Tarapore Committee (2006)** recommended the full Capital Account Convertibility.

Foreign exchange market

- The market in which national currencies are traded for one another is known as the foreign exchange market.
- **Foreign Exchange Rate (also called Forex Rate)** is the price of one currency in terms of another. It links the currencies of different countries and enables comparison of international costs and prices.
- **Nominal Effective Exchange Rate (NEER)** of the rupee is a weighted average of exchange rates before the currencies of India's major trading partners.
- When the weight of inflation is adjusted with the NEER, we get the **Real Effective Exchange Rate (REER)** of the rupee.

Determination of the Exchange Rate

Flexible Exchange Rate	Fixed Exchange Rate
<ul style="list-style-type: none"> ■ Determined by the market forces of demand and supply. ■ Depreciation of rupee: Increase in the exchange rate that the price of foreign currency (dollar) in terms of rupees. ■ Appreciation of rupee: The price rupees in terms of foreign currency (dollars) increases. 	<ul style="list-style-type: none"> ■ The Government fixes the exchange rate at a particular level. ■ Devaluation: Government action increases the exchange rate (domestic currency cheaper). ■ Revaluation: Government decreases the exchange rate (domestic currency costlier).

NOTE: Clean floating, here the exchange rate is market-determined without any central bank intervention. In the case of managed floating, central banks intervene to reduce fluctuations in the exchange rate.

Purchasing Power Parity (PPP)

- It is an economic theory which states that residents of one country should be able to buy the same goods and services at the same price as inhabitants of any other nation over time.
- In other words, the expenditure on a similar commodity must be the same in both currencies when accounted for the exchange rate.

Reconstruction and Development (IBRD)] established in 1944 and is headquartered in Washington, DC, USA.

- Its five organizations are International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA) and International Centre for Settlement of Investment Disputes (ICSID).
- **India is not a member** of ICSID (International Centre for Settlement of Investment Disputes).

International Monetary Fund (IMF)

- The IMF was conceived at a UN Conference in Bretton Woods, United States, in 1944.
- The IMF's prime responsibility is to ensure the stability of the international monetary system - the system of exchange rates and international payments that enables countries to transact with each other.

Special Drawing Rights

- Created by the IMF in 1969, SDRs or Special Drawing Rights are supplementary international reserve assets that can be exchanged for freely usable currencies.
- The value of the SDR is based on a basket of five major currencies—the U.S. Dollar, Euro, the Chinese Renminbi (RMB), the Japanese Yen, and Pound Sterling.
- A country participating in this system needs official reserves—government or central bank holdings of gold and widely accepted foreign currencies—that could be used to purchase its domestic currency in foreign exchange markets, as required to maintain its exchange rate.

World Trade Organization (WTO)

- Established in 1995, WTO replaced the General Agreement on Trade and Tariffs (GATT) that has been in existence since 1946 to promote international trade after World War II.

- The WTO founding and guiding principles remain the pursuit of open borders, the guarantee of most favoured - nation principle and non-discriminatory treatment by and among members with a commitment to transparency.

Trade-Related Aspects of Intellectual Property Rights (TRIPS)

The WTO's intellectual property agreement amounts to rules for trade and investment in ideas and creativity.

Various Committees in News

Committee	Subject Matter
Rajiv Kumar	Privatisation of gas fields of state-owned Oil and Natural Gas Corp (ONGC) and Oil India Ltd (OIL)
Akhilesh Ranjan	New Direct Tax Legislation (Law)
Abhijeet Sen	Formulating food policy in the long term
Pradeep Kumar Sinha	To select National Anti-Profitteering Authority
Bimal Jalan	Report on RBI Surplus Funds
Nandan Nilekani	Strengthening digital payments
Tapan Ray	The framework of Core Investment Companies (CIC)
UK Sinha	MSMEs overhaul
Injeti Srinivas	Review of Competition Law
Sunil Mehta	Stressed Assets of PSBs
N.K. Singh	To review the Fiscal Responsibility and Budget Management (FRBM)
Arvind Panagariya	Timely data on the employment situation
Tarun Ramadorai	Rights-based privacy framework in household finance
Dilip C Chakraborty	To help in implementing the new risk-based capital (RBC) regime
Hasmukh Adhia	To look at the issues of the export sector and to recommend to the GST council

Section: 7 (Science and Technology)

TECHNOLOGY

Biotechnology

Genetic Engineering

- Genetic engineering, sometimes called genetic modification, is the process of altering the DNA in an organism's genome.

- Plants, bacteria, fungi and animals whose genes have been altered by manipulation are called Genetically Modified Organisms (GMO).

Transgenic Crops

- Plants can be transformed using a plasmid from a bacterium found in soil called *Agrobacterium tumefaciens*.

- Plants may be susceptible to infection, and this allows foreign DNA from the bacterium to be integrated into the plant genome.

Transgenic Animals

- RNA viruses called Retroviruses are often used as vectors to introduce foreign DNA into animal cells.
- Transformation of the germline in mammals can also be carried out using embryonic stem cells.

Gene Therapy

- Gene therapy uses sections of DNA (usually genes) to treat or prevent disease. The DNA is carefully selected to correct the effect of a mutated gene that is causing disease.
- There are two different types of gene therapy depending on which types of cells are treated: Somatic and Germline therapy.

Biopiracy

Indian basmati rice was pirated by a US company which outraged the discontent among Indian farmers who have been planting basmati rice since ages.

CRISPR

Clustered Regularly Interspersed Short Palindromic Repeats (CRISPR) is a relatively new gene-editing system that has been hailed as a groundbreaking tool in medical research.

Nanotechnology

- Nanotechnology is a field of research and innovation concerned with building 'things' - generally, materials and devices - on the scale of atoms and molecules.
- It deals with the minute particles that are 1-100 nanometer. One nanometer (nm) is one billionth, or 10⁻⁹.

Quantum dots

Quantum dots (QDs) are man-made nanoscale crystals that can transport electrons.

Carbon nanotubes

Carbon nanotubes (CNTs) are cylindrical molecules that consist of rolled-up sheets of single-layer carbon atoms (graphene).

Nanoscale filters

Filters that are structured on the nanoscale offer the promise of better water purification systems that are cheap to manufacture, long-lasting and can be cleaned.

Information and Communication Technology

Information and Communications technology (ICT) refers to all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions.

SOME COMPONENTS OF AN ICT SYSTEM

- | | |
|--------------|---------------|
| ■ People | ■ Software |
| ■ Data | ■ Hardware |
| ■ Procedures | ■ Information |

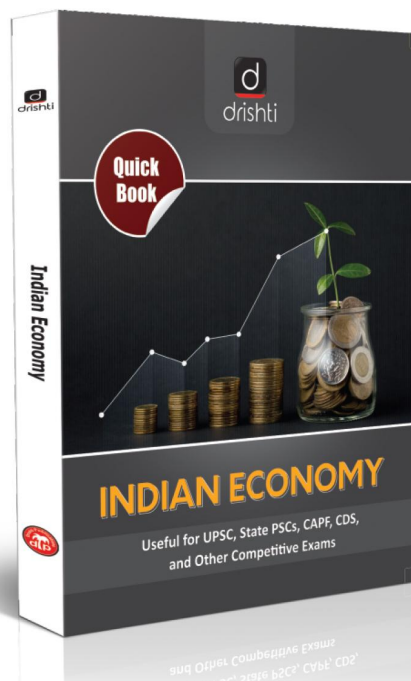
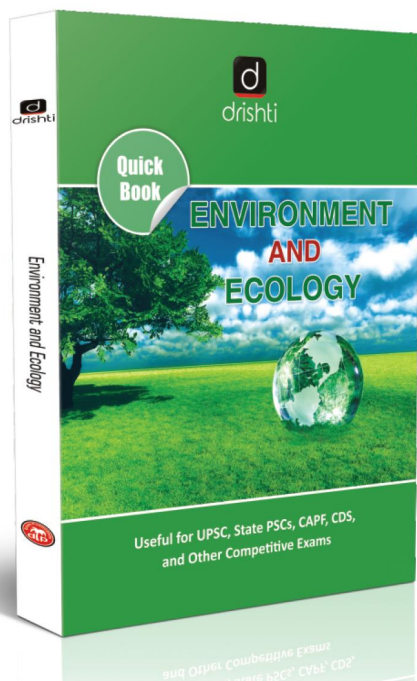
Cloud computing	<ul style="list-style-type: none"> ■ The term is generally used to describe data centres available to many users over the Internet. ■ Clouds may be limited to a single organization (enterprise clouds), be available to many organizations (public cloud) or a combination of both (hybrid cloud).
Big Data	<ul style="list-style-type: none"> ■ The term for collections of data that are so large they can't be processed through traditional data processing systems. ■ These collections come from sources like mobile devices, emails, search keywords, user database information, applications, and servers.
Blockchain Technology	<ul style="list-style-type: none"> ■ Sometimes referred to as Distributed Ledger Technology (DLT), makes the history of any digital asset unalterable and transparent through the use of decentralization and cryptographic hashing.
Internet of Things	<ul style="list-style-type: none"> ■ System of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

Bluetooth	NFC
A wireless communications technology intended to replace cables. It allows short-range connections between two or more Bluetooth compatible devices such as mobile phones, tablets, headsets or medical equipment.	NFC is a technology that lets mobile devices communicate using radio waves when they're very close to each other (about four inches or less) and is used for services like sharing files, pairing accessories, or wireless payments.



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