# ANSWERS & EXPLANATIONS
# GENERAL STUDIES (P) TEST – 2986 (2020)

**Q 1.D**

- In the paper titled "India's Great Slowdown: What happened? What's the way out?", Subramanian, along with IMF's former India head Josh Felman, discuss the reasons and possible remedies for India's current economic slowdown.
- In a nutshell, they argue that Indian economy is facing both structural (that is, more long-term issues related to the overall framework of the economy such as the flexibility or inflexibility of labour laws etc.) and cyclical (that is, more short-term issues such as a bad monsoon that disrupts production of food articles etc.) challenges. Since the causes are both structural and cyclical, they say, arresting this economic slowdown is proving to be so difficult - measures that would have alleviated a cyclical slowdown fall flat because structural reasons are also involved.
- The authors discuss that India is facing a new 'Four balance sheet challenge'. The Four Balance Sheet challenge includes the original two sectors - **infrastructure companies and public sector banks, plus NBFCs and real estate companies. Hence, option (d) is the correct answer.**
- The authors argue that apart from issues of over-leveraged infrastructure sector and bad loan-saddled public sector banks, two major issues have also cropped up - failure of NBFCs and Real estate sector.
- **NBFCs**
  - The trigger for the slowdown was the collapse of ILFS in September 2018. This was a seismic event," state the authors. "One reason was obvious: ILFS was a behemoth, with Rs 90,000 crores of debt, so its failure sent shockwaves throughout the financial system. But there was also a deeper reason: the failure was completely unexpected, prompting markets to wake up and re-assess the entire NBFC sector. What the markets discovered was profoundly disturbing. Much of the NBFC lending had been channeled to one particular sector, real estate which itself was in a precarious situation.
- **Real estate sector**
  - After the Global Financial Crisis, the demand for flats, as well as bank funding for builders, collapsed. The NBFCs, however, took the lead in lending to the real estate sector. By June-end 2019, the real estate sector reached a breaking point with close to 10 lakh unsold units (as against an annual demand of just 2 lakh units) in just the top 8 cities in the country.
  - This meant that the real estate sector was unable to pay back to the NBFCs , which, in turn, starting defaulting.

**Q 2.A**

- Ecotones often have a larger number of species and larger population densities than the communities on either side. This tendency for increased biodiversity within the ecotone is referred to as the "**edge effect**." Those species which occur primarily or most abundantly in the ecotones are called "edge" species. Although ecotones support an increase in density for some species, other species need interior habitat blocks to survive and show avoidance or poor survival on edges. An increase in anthropogenic fragmentation of landscapes creates more ecotones, which may result in an increased occurrence of edge species while simultaneously resulting in increased negative effects for interior species.

**Q 3.D**

- Mangroves are the **characteristic littoral plant formation of tropical and subtropical sheltered coastlines.** Mangroves are trees and bushes growing below the high water level of spring tides which exhibits a remarkable capacity for saltwater tolerance.
- They are basically evergreen land plants growing on sheltered shores, typically on tidal flats, deltas, estuaries, bays, creeks and the barrier islands. Mangroves have many special features for adapting to such a stressful coastal environment.

- Mangroves occur in a variety of configurations. Some species (e.g. Rhizophora) send arching prop roots down into the water. While others (e.g. Avicennia) send **vertical Pneumatophores or air roots up from the mud.**
- Most mangrove vegetation has **lenticellated bark** which facilitates more water loss, produces coppices. Mangroves exhibit **Viviparity mode of reproduction. i.e. seeds germinate in the tree itself** (before falling to the ground). This is an adaptative mechanism to overcome the problem of germination in saline water.
- Some secrete excess salt through their leaves and some others block absorption of salt at their roots. The roots of some mangrove species (e.g. Bruguiera gymnorrhiza, Kandelia obovata) form into **"knees"** that project above the mud surface to facilitate gaseous exchange.
- **Salt glands are present in the leaves of some mangrove species** (e.g. Aegiceras corniculatum). Salt glands are used to concentrate and actively excrete the absorbed salts so as to regulate the salt concentration inside the mangroves.
- **Hence option d is the correct answer.**

**Q 4.A**

- Globalization and the Fourth Industrial Revolution have generated great benefits to society, raising the living standards of billions and lifting millions out of poverty. But they have also exacerbated inequalities in our societies. Inequality is rising even in those countries that have experienced rapid growth.
- In this context, the **World Economic Forum launched The Global Social Mobility Report 2020** to provide a much-needed assessment of the current state of the paths to social mobility around the world. Traditionally, social mobility is measured across generations, thus only capturing the effect of measures taken decades ago. The Global Social Mobility Index focuses on those policies, practices, and institutions that collectively determine the extent to which everyone in society has a fair chance to fulfill their potential, regardless of their socio-economic background, the origin of their parents, or the place where they were born.
- India ranks 76th out of 82 economies. The areas of improvement for India include social protection (76th) and fair wage distribution (79th).
- The top five are all Scandinavian, while the five economies with the most to gain from boosting social mobility are China, the United States, India, Japan, and Germany.
- The Nordic nations hold the top five spots, led by Denmark in the first place (scoring 85 points), followed by Norway, Finland and Sweden (all above 83 points) and Iceland (82 points). Rounding out the top 10 are the Netherlands (6th), Switzerland (7th), Austria (8th), Belgium (9th) and Luxembourg (10th).
- Among the G7 economies, Germany is the most socially mobile, ranking 11th with 78 points, followed by France in 12th position. Canada comes next (14th), followed by Japan (15th), the United Kingdom (21st), the United States (27th) and Italy (34th).
- Among the world's large emerging economies, the Russian Federation is the most socially mobile of the BRICS grouping, ranking 39th, with a score of 64 points. Next is China (45th), followed by Brazil (60th), India (76th) and South Africa (77th).

**Q 5.C**

- **Saptamatrika refers to a group of seven mother-goddesses,** each of whom is the shakti, or female counterpart, of a god. **Hence option (c) is the correct answer.**
- They are Brahmani (wife of Brahma), Maheshvari (wife of Shiva), Kaumari (wife of Kumara), Vaishnavi (wife of Vishnu), Varahi (wife of Varaha, or the boar, an avatar [incarnation] of Vishnu), Indrani (wife of Indra), and Chamunda, or Yami (wife of Yama). One text, the Varaha-purana, states that they number eight, including Yogeshvari, created out of the flame from Shiva's mouth.
- **Recently, the Epigraphy Branch of the Archaeological Survey of India(ASI) has recently discovered earliest epigraphic evidence of the Saptamatrika cult.** It is the earliest Sanskrit inscription discovered in South India as on date and was discovered in Chebrolu village in Guntur district of Andhra Pradesh.

**Q 6.C**

- **Statement 1 is not correct:** A central Ajivika idea was that of niyati (fate), the principle that ultimately determined and controlled everything. The human effort was of no consequence in this strictly deterministic doctrine. Ajivikas were described as fatalists, they believed that there was no free will and everything that has happened, is happening and will happen is entirely preordained and nothing could change it.
- Karma and transmigration existed, but human effort played no role in it, as the paths for souls over thousands of years had already been mapped out.

- **Statement 2 is correct:** Ajivika was a religious order or a heterodox sect in the time of Buddha founded by the Makkhali Gosala, a senior contemporary of Buddha and Mahavira. Ajivikas were one of the Nastika Darsana or Heterodox Philosophies as they did not believe in the Vedas.
- **Statement 3 is not correct:** The rock-cut cave carved at Barabar hills near Gaya in Bihar is known as the Lomas Rishi cave. Barabar caves are a set of 7 rock-cut-caves dating back to the third century BC. The facade of the cave is decorated with the semicircular chaitya arch as the entrance. The elephant frieze carved in high relief on the chaitya arch shows considerable movement. The interior hall of this cave is rectangular with a circular chamber at the back. The entrance is located on the sidewall of the hall.
- Mauryan king Ashoka and his grandson Dashratha donated the Barabar caves to Ajivika sect monks. The inscription in the Sudama cave informs that the four caves on Barabar hill were assigned by King Ashoka to Ajivika monks in 261 BC. Another inscription on the Nagarjuni hill is of the grandson of King Ashoka, Dasaratha Maurya, which tells that the Ajivikas continued to enjoy imperial Mauryan patronage for long. The caves are not a world heritage site.

**Q 7.D**

- **Under Article 102 of the constitution- Disqualification for membership**
  - **A person shall be disqualified for being chosen as, and for being, a member of either House of Parliament**
    - ✓ if he holds any **office of profit** under the Government of India or the Government of any State, other than an office declared by Parliament by law not to disqualify its holder;
    - ✓ if he is of unsound mind and stands so declared by a competent court;
    - ✓ if he is an **undischarged insolvent;**
    - ✓ if he is not a citizen of India, or has voluntarily acquired the citizenship of a foreign State, or is under any acknowledgement of allegiance or adherence to a foreign State;
    - ✓ if he is so disqualified by or under any law made by Parliament Explanation For the purposes of this clause a person shall not be deemed to hold an office of profit under the Government of India or the Government of any State by reason only that he is a Minister either for the Union or for such State
  - A person shall be disqualified for being a member of either House of Parliament if he is so disqualified under the Tenth Schedule.
- **The Parliament has laid down the following additional disqualifications in the Representation of People Act (1951):**
  - He must not have been found guilty of certain election offences or corrupt practices in the elections.
  - He must not have been convicted for any offence resulting in imprisonment for two or more years. But, the detention of a person under a preventive detention law is not a disqualification.
  - He must not have failed to lodge an account of his election expenses within the time.
  - He must not have any interest in government contracts, works or services.

**Q 8.A**

- Sangam literature is an important source of the early history of South India. This literature is believed to have been composed between 300 BC and 300 AD in the assemblies of poets held at that time. Traditionally, three Sangams or assemblies of Tamil poets are believed to have been convened one after the other. All the three Sangams took place at different places under the patronage of the Pandya kings of Madurai.
- The Sangam literature can be roughly divided into two groups- narrative and didactic.
- The narrative texts are called Melkannakku or Eighteen Major Works consisting of eight anthologies and ten idylls (short poems) the narrative texts are considered the works of heroic poetry in which heroes are glorified and perpetual wars and cattle raids frequently mentioned. They show that early Tamil people were primarily pastoral. Traces of early megalithic life also appear in the texts.
- The narrative Sangam texts also give some idea of the State formation in which the army consisted of groups of warriors, and the taxation system and judiciary appeared in the rudimentary state.
- The **Didactic works are called Kilkannakku** or eighteen Minor Works. Didactic texts were works of the brahmana Prakrit-Sanskrit scholars. **These texts prescribe a code of conduct not only for the king and his court but also for various social groups and occupations. Hence option (a) is correct.**

**Q 9.D**

- Methanol is a low carbon, hydrogen carrier fuel. It can be produced from high ash coal, agricultural residue, CO2 from thermal power plants and natural gas.
- **Methanol, although slightly lower in energy content than petrol and diesel,** can replace both petrol and diesel in transport sector (road, rail and marine), energy sector (comprising of DG sets, boilers,

process heating modules, tractors and commercial vehicles) and retail cooking replacing LPG (partially), Kerosene and wood charcoal. **Hence statement 1 is correct.**

- Methanol burns efficiently in all internal combustion engines, produces negligible particulate matter and soot, almost nil SOX and NOX emissions (Near Zero Pollution). One of the reasons why Methanol has the potential to be an enduring solution to human energy needs is because the belched out **$C0^2$ (greenhouse gas emission) both from using Methanol and while producing Methanol can be tapped back to produce Methanol.** Thereby a seamless loop of $CO_2$ sequestration cycle is created to perpetually burn fuels without polluting the environment at all. C02 from steel plants, Thermal Power plants, Cement Plants etc. can be tapped in large quantities to produce Methanol. **Hence statement 2 is correct.**
- Government of India launched Ethanol Blended Petrol (EBP) Programme in January, 2003 for supply of 5% ethanol blended Petrol. **At present the ethanol blending percentage of petrol is around 6.3%. However the methanol blending of petrol in India is almost negligible** in India. **Hence statement 3 is not correct.**
- NITI Aayog has drawn out a comprehensive plan to replace 20% of crude imports from Methanol alone. Adopting Methanol in this scale would bring down pollution in the country by more than 40% and not to forget the benefits from import substitution.

**Q 10.D**

- **Fold mountains** are formed by large-scale earth movements when stresses are set up in the earth's crust. When such stresses are initiated, the rocks are subjected to compressive forces that produce wrinkling or folding along the line of weakness. The up-folded waves are called anticlines and the troughs or downfolds are synclines.
- When the crest of a fold is pushed too far, an overfold is formed. If it is pushed still further, it becomes a recumbent fold. In extreme cases, fractures may occur in the crust, so that the upper part of the recumbent fold slides forward over the lower part along a thrust plane, forming an overthrust fold. The over-riding portion of the thrust fold is termed as **nappe. Hence option (d) is the correct answer.**

**Q 11.B**

- **Standing Committee on Finance**
  - The Committee is constituted under Rule 331C of the Rules of Procedure and Conduct of Business in Lok Sabha.
  - It consists of 31 members; 21 members from Lok Sabha, nominated by the Speaker, Lok Sabha and 10 from Rajya Sabha nominated by the Chairman, Rajya Sabha.
  - **Statement 2 is correct:** The Chairman of the Committee is appointed by the Speaker from amongst the members of the Committee from Lok Sabha. The term of office of the members of the Committee does not exceed one year
- **Statement 1 is not correct: It examines matters concerned with the following Ministries/ Departments:**
  - Ministry of Finance:
    - ✓ Department of Economic Affairs,
    - ✓ Department of Financial Services
    - ✓ Department of Expenditure,
    - ✓ Department of Revenue, and
    - ✓ Department of Investment & Public Asset Management
  - Ministry of Corporate Affairs,
  - Ministry of Planning (NITI Aayog), and
  - Ministry of Statistics and Programme Implementation
- **Functions of the Committee**
  - The Committee has been entrusted with the following functions:
    - ✓ to consider the Demands for Grants of the concerned Ministries/Departments and make Reports on the same to the Houses
    - ✓ to examine such Bills pertaining to the concerned Ministries/Departments as are referred to the Committee by the Speaker, Lok Sabha or the Chairman, Rajya Sabha as the case may be, and make Reports thereon;
    - ✓ to consider Annual Reports of the concerned Ministries/Departments and make Reports thereon; and
    - ✓ to consider national basic long term policy documents presented to the houses, if referred to the Committee by the Speaker, Lok Sabha or the Chairman, Rajya Sabha as the case may be, and make Reports thereon.

**Q 12.D**

- The economic risks of epidemics are not trivial. Even when the health impact of an outbreak is relatively limited, its economic consequences can quickly become magnified. Concern over the spread of even a relatively contained outbreak can lead to decreased trade, tourism, and investments in the short term.
- The outbreak of coronavirus may hamper exports of groundnut seeds and cotton from India to China. Due to uncertainty over the new export orders, **prices of cotton in local markets have gone down significantly**.
- Hong Kong is a major business hub for the Indian diamond industry and especially the Surat diamond industry which polishes around 99 percent of all rough diamonds imported into the country. The diamond industry is likely to face a loss of around Rs 8,000 crore in the next two months as Hong Kong, which is a major export destination, has declared a state of emergency due to the coronavirus outbreak in China.
- The spread of coronavirus in China has an unlikely affect in India's commodity markets. China is the largest importer of soyabean. And low demand for soyabean in china led to a correction in prices of soyabean across the globe. **The price of soyabean in local markets fell sharply**.
- **The Corona outbreak led to a fall in oil prices as the demand for crude oil and jet fuel is impacted in China**. The country, which is the largest consumer for crude oil, will see fewer migrations because of Coronavirus. Traveling ahead of the Lunar New year holidays, the biggest human migration in the world is unlikely to take place with cities being on lockdown. This led to dent in demand for crude oil and jet fuel. **Hence, option (d) is not correct.**

**Q 13.C**

- **Dew** is the moisture that forms as a result of condensation. Condensation is the process a material undergoes as it changes from a gas to a liquid. Dew is the result of water changing from a vapor to a liquid.
- Dew forms as temperatures drop and objects cool down. If the object becomes cool enough, the air around the object will also cool. Colder air is less able to hold water vapor than warm air. This forces water vapor in the air around cooling objects to condense. When condensation happens, small water droplets form—dew.
- The temperature at which dew forms is called the dew point. The dew point varies widely, depending on location, weather, and time of day.
- The **ideal conditions** for its formation are the **clear sky, calm air, high relative humidity, and cold and long nights**. For the formation of dew, it is necessary that the dew point is above the freezing point.
- Strong winds, for instance, mix different layers of air, containing different amounts of water vapor. This reduces the atmosphere's ability to form dew.

**Q 14.C**

- The waters in subtropical high-pressure belts have high salinity due to **clear skies, high temperature and high evaporation**. The equatorial waters record lower salinity due to **high rainfall, cloudy skies leading to lower evaporation.**
- **Statement 1 is correct:** The North Sea, in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the **North Atlantic Drift**. North Atlantic Drift as a part of ocean circulation brings warm and saline water to polar locations.
- **Statement 2 is correct:** The Mediterranean sea records higher salinity due to high evaporation. Salinity is, however, very low in the Black Sea due to the enormous **freshwater influx by rivers.**

**Q 15.D**

- States that are part of the Ganga River Basin are:
  - Himachal Pradesh
  - Uttarakhand
  - Delhi
  - Haryana
  - Rajasthan
  - Madhya Pradesh
  - Chhattisgarh
  - Uttar Pradesh
  - Bihar
  - Jharkhand
  - West Bengal


**Q 16.A**

- **Article 87** provides for the special address by the President. **Hence statement 2 is not correct.**
- Clause (1) of that article provides that at the commencement of the first session after each general election to the House of the People and at the commencement of the first session of each year, the President shall address both Houses of Parliament assembled together and inform Parliament of the causes of its summons. Such an Address is called 'special address', and it is also an annual feature. **No other business is transacted till the President has addressed both Houses of Parliament assembled together. Hence statement 1 is correct.**
- **This Address has to be to both Houses of Parliament assembled together.** If at the time of commencement of the first session of the year, Lok Sabha is not in existence and has been dissolved, and Rajya Sabha has to meet, Rajya Sabha can have its session without the President's Address. This happened in 1977 when during the dissolution of Lok Sabha, Rajya Sabha had its session on 28 February 1977 without the President's Address. **Hence statement 3 is correct.**
- This address of the President corresponds to the 'speech from the Thorne in Britain', is discussed in both the Houses of Parliament on a motion callled the 'Motion of Thanks'. This motion is put to vote and must be passed in the House (Lok Sabha). Otherwise, it amounts to the defeat of the government.

**Q 17.C**

- Any damage to DNA can result in outcomes that can range from mild changes that cannot be perceived like a sudden appearance of a harmless mole to catastrophic diseases like cancer. The retention of DNA integrity is therefore essential for proper function and survival of all organisms.
- In human cells**, both normal metabolic activities and environmental factors such as radiation can cause DNA damage**, resulting in as many as 1 million individual molecular lesions per cell per day. The rate of DNA repair is dependent on many factors, including the cell type, the age of the cell, and the extracellular environment. A cell that has accumulated a large amount of DNA damage, or one that no longer effectively repairs damage incurred to its DNA, can enter one of three possible states:
  - an irreversible state of dormancy, known as senescence
  - cell suicide, also known as apoptosis or programmed cell death
  - unregulated cell division, which can lead to the formation of a tumor that is cancerous
- **Statement 1 is not correct:** It is important to **distinguish between DNA damage and mutation**, the two major types of error in DNA. DNA damage and mutation are fundamentally different.
  - **Damage results in physical abnormalities in the DNA, such as single- and double-strand breaks etc.** DNA damage can be recognized by enzymes, and thus can be correctly repaired if redundant information, such as the undamaged sequence in the complementary DNA strand or in a homologous chromosome, is available for copying. **Hence, statement 2 is correct.**
  - **Mutation**: In contrast to DNA damage, a mutation is a change in the base sequence of the DNA. A mutation cannot be recognized by enzymes once the base change is present in both DNA strands, and **thus a mutation cannot be repaired.** DNA damage often causes errors of DNA synthesis during replication or repair; these errors are a major source of mutation.
- **Statement 3 is correct**: CRISPR is often recognized as a tool that scientists can use to make changes to DNA—like swapping out a disease-causing gene for a healthy one. But what some may not realize is that the CRISPR tool only does part of the work. While CRISPR components cut the DNA at the desired location, the cell's repair mechanisms play an important role in enabling changes to the genetic

code. CRISPR works by targeting a precise location in the genome and then cutting both strands of DNA, generating a double-strand break (DSB) at that particular spot. As cells cannot survive for long with cut DNA, their alarm bells go off whenever a break occurs. Steps to repair the break are quickly set in motion.

- The Indian Institute of Technology - Hyderabad (IIT-H) researchers have unravelled the working of a protein that repairs damaged DNA. In humans, one such repair mechanism involves activation of a special class of proteins called "DNA repair proteins".

**Q 18.A**

- **Methane (CH4)** is the second most important **greenhouse gas. Methane is more potent than CO2** because the radiative forcing produced per molecule is greater. However, CH4 exists in far lower concentrations than CO2 in the atmosphere.
- Natural sources of methane include
  - Tropical and northern wetlands,
  - Methane oxidizing bacteria that feed on organic material consumed by termites, volcanoes,
  - Seepage vents of the seafloor in regions rich with organic sediment
  - Methane hydrates trapped along the continental shelves of the oceans.
  - **Paddy rice fields**
  - **Emission from livestock production systems (including intrinsic fermentation and animal waste)**
  - Biomass burning (including forest fires, charcoal combustion, and firewood burning)
  - The primary natural sink for methane is the atmosphere itself, as methane reacts readily with the hydroxyl radical ($OH^-$) within the troposphere to form CO2 and water vapour (H2O). When CH4 reaches the stratosphere, it is destroyed. **Another natural sink is soil, where methane is oxidized by methanotrophic bacteria. Hence soil with high concentration of Methanotrophic bacteria act as a sink of methane.**
- **Hence option a is the correct answer.**

**Q 19.C**

- Certiorari: In the literal sense, it means 'to be certified' or 'to be informed'. It is issued by a higher court to a lower court or tribunal either to transfer a case pending with the latter to itself or to quash the order of the latter in a case. It is issued on the grounds of the excess of jurisdiction or lack of jurisdiction or error of law. Thus, unlike prohibition, which is only preventive, certiorari is both preventive as well as curative. **Hence statement 1 is correct.**
- Previously, the writ of certiorari could be issued only against judicial and quasi-judicial authorities and not against administrative authorities. However, in 1991, the Supreme Court ruled that the certiorari can be issued even against administrative authorities affecting the rights of individuals. Like prohibition, certiorari is also not available against legislative bodies and private individuals or bodies. **Hence statement 2 is correct.**

**Q 20.A**

- **Statement 1 is correct:** Guru Tegh Bahadur was the ninth of ten Gurus of the Sikh religion. He was a contemporary of Mughal emperor Aurangzeb. In the late 17th century, Mughal emperor Aurangzeb imposed the Sharia law across his empire and an additional jizya tax on non-Muslims. It is also believed that he forcibly converted many people to Islam. According to Sikh tradition, some Kashmiri Pandits fled these forced conversions and sought refuge with Guru Tegh Bahadur. On the insistence of his son, the ninth guru traveled to Delhi to dissuade Aurangzeb from this religious imposition. Aurangzeb beheaded Guru Tegh Bahadur in 1675, in front of a massive crowd.
- **Statement 2 is not correct:** The Guru Granth Sahib comprises of 974 hymns by Guru Nanak, 62 hymns by Guru Angad Dev, 907 hymns by Guru Amar Das, 679 hymns by Guru Ram Das and 116 hymns by Guru Tegh Bahadur.
- **Statement 3 is not correct:** Guru Gobind Singh started the Khalsa tradition after his father Guru Tegh Bahadur was beheaded during the Islamic sharia rule of the Mughal Emperor Aurangzeb. Guru Gobind Singh created and initiated the Khalsa as a warrior with a duty to protect the innocent from any form of religious persecution.

**Q 21.A**

- The earliest treatise on dance available to us is **Bharat Muni's Natyashastra,** the source book of the art of drama, dance and music. It is generally accepted that the date of the work is between the 2nd century B.C.E- 2nd century C.E. The Natyashastra is also known as the fifth veda. As per the ancient treatises, dance is considered as having three aspects: ***natya, nritya and nritta***. **Natya** highlights the dramatic element and most dance forms do not give emphasis to this aspect today with the exception of dance-

drama forms like Kathakali. **Nrityais** essentially expressional, performed specifically to convey the meaning of a theme or idea. **Nritta** on the other hand, is pure dance where body movements do not express any mood (bhava), nor do they convey any meaning.

- **Classical Dances** - Bharatnatyam Dance - Kathakali Dance - Kathak Dance - Manipuri Dance - Odissi Dance - Kuchipudi Dance - Sattriya Dance - Mohiniyattam Dance
- **Kuchipudi**: Kuchipudi is the name of a village in the Krishna district of Andhra Pradesh. It is about 35 km. from Vijayawada. Andhra has a very long tradition of dance-drama which was known **under the generic name of Yakshagaana (theatre i.e. dance-drama).** In 17th century Kuchipudi style of Yakshagaana was conceived by Siddhendra Yogi a talented Vaishnava poet and visionary who had the capacity to give concrete shape to some of his visions. He was steeped in the literary Yakshagaana tradition being guided by his guru Teerthanaaraayana Yogi who composed the Krishna-Leelatarangini. a kaavya in Sanskrit. A recital of Kuchipudi begins with an **invocatory number**, as is done in some other classical dance styles. Earlier the invocation was limited to Ganesha Vandana. Now other gods are also invoked. It is **followed by nritta,** that is, non-narrative and abstract dancing. One of the favorite **traditional shabdam** number is Dashaavataara. The Shabdam is followed by a **natya called Kalaapam.**
- **Bharatnatyam** : Bharatnatyam Dance is considered to be over 2000 years old. Several texts beginning with Bharata Muni's Natya Shastra (200 B.C.E. to 200 C.E.) provide information on this dance form. The Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance. **Bharatnatyam dance is known to be ekaharya,** where one dancer takes on many roles in a single performance.
- **Odissi:** Odissi is a dance of love and passion touching on the divine and the human, the sublime and the mundane. The Natya Shastra mentions many regional varieties, such as the south-eastern style knharis were the chief repositories of this dance. **The maharis**, who were originally temple dancers came to be employed in royal courts which resulted in the degeneration of the art form. Around this time, **a class of boyown as the Odhra Magadha which can be identified as the earliest precursor of present day Odissi.** Many of today's gurus of this style belong to the **gotipua tradition.** Textual evidence also shows many manuscripts describing the **tandava aspect of Shiva** and the manner in which it is should be executed. Many of the descriptions of the Tandavas (pertaining to Odissi) are reminiscent of the descriptions found in the South Indian agamas.

**Q 22.C**

- Ghadar movement was spearheaded by the revolutionary group of people, largely from Punjab, They emerged into the Ghadar party which was built around the weekly paper 'The Ghadar'. It was published the weekly paper the Ghadar in commemoration of the mutiny of 1857. **Hence statement 2 is correct.**
- Events such as the Komagata Maru incident and the outbreak of the First World War during 1914 encouraged the Ghadrites to launch a movement against the British Rule in India.
- The Komagata Maru incident and the outbreak of the First World War during 1914 were encouraged the Ghadrites to launch a movement against the British Rule in India.
- Ghadarites started their movement from Punjab. But later on, they shifted their base to San Francisco, United States.
- Indian revolutionaries in the United States of America and Canada had established the Ghadar Party in 1913. Along with Lala Hardyal and Ram Chandra, Mohammed Barkatullah, Bhagwan Singh and Sohan Singh Bakhna were some of the prominent leaders of the Ghadar Party.
- **A marked feature of Ghadar ideology was its democratic and egalitarian content. It was clearly stated by the Ghadarites that their objective was the establishment of the Independent Republic of India. Hence statement 1 is correct.**

**Q 23.B**

- The Finance Commission is constituted by the President under article 280 of the Constitution, mainly to give its recommendations on the distribution of tax revenues between the Union and the States and amongst the States themselves.
- The XV Finance Commission headed by N.K. Singh sought to balance the principles of fiscal needs, equity, and performance for determining the criteria for horizontal sharing.
- The criteria used by the commission for devolution of funds include:
  - Population (15%),
  - Area (15%),
  - Forest and Ecology (10%),
  - Income Distance (45%),

- Demographic performance (12.5%),
- Tax Effort (2.5%).

- The commission has recommended an aggregate share of 41 percent of the net proceeds of Union taxes (divisible pool) to be devolved to States in the year 2020-21.
- **Income distance is calculated as the difference between the per capita gross state domestic product (GSDP) of the state from that of the state with the highest per capita GSDP.**
- Income Distance criteria is used to make the devolution formula more equalizing and progressive and provides higher devolution to States with lower per capita income (and lower own tax capacity). Here, per capita gross state domestic product (GSDP) is used as a proxy for the distance between States in tax capacity. Poorer states with low per capita income also have higher expenditure needs to provide for comparable services. Hence, the income distance criterion helps in providing for two-sided equalization.

**Q 24.A**

- **I-STEM is Indian Science, Technology Engineering Facilities Map.** The portal will act as a **gateway for the researchers and users to locate facilities that are required for their research and development work.** This web-based access will foster efficient and optimal use of equipment and capabilities as well as enable co-operation and collaboration in the R&D community, both academic and industrial.
- Through I-STEM portal, one can make a reservation for using it. With this, the start-ups can leverage public and private investments and come up with successful services and products.

**Q 25.D**

- A tariff is any tax or fee collected by a government. An import tariff is a tax imposed on goods to be imported. Though tariff is used in a non-trade context, it is commonly applied to a tax on imported goods.
- **Statement 1 is not correct:** There are two broad ways in which tariffs are normally levied namely, specific tax and ad valorem tax. A specific tax is levied as a fixed charge per unit of imports. Where ad valorem is charged on the assessed value of the asset.
- **Statement 2 is not correct**-A progressive tax is a tax in which the tax rate increases as the taxable base amount increases. Ad valorem means - according to value. Thus, it is a tax that is flexible and depends on the value of the asset or the price of the good. In this regard, it is a progressive tax. Specific tax, the tax remains fixed and depends on the quantity, so it is not progressive as compared to ad-valorem.

**Q 26.A**

- **In 1899-1900, the Mundas in the region south of Ranchi rose under Birsa Munda. The rebellion which began as a religious movement gathered a political force to fight against the introduction of feudal, zamindari tenures, and exploitation by money-lenders and forest contractors.** Birsa was captured and imprisoned.
- When Birsa was released in 1897 he began touring the villages to gather support. He used traditional symbols and language to rouse people, urging them to destroy "Ravana" (dikus and the Europeans) and establish a kingdom under his leadership. The Mundas claimed Chhotanagpur as their area in 1879. **However, the movement was significant as it forced the colonial government to introduce laws so that the land of the tribals could not be easily taken over by dikus. Chotanagpur Tenancy (CNT) Act, 1908, was passed after the Birsa Munda uprising.**
- The continued oppression of the Santhals, an agricultural people, who had fled to settle in the plains of the Rajmahal hills (Bihar) led to the Santhal rebellion against the zamindars. The money-lenders who had the support of the police among others had joined the zamindars to subject the peasants to oppressive exactions and dispossession of lands. The rebellion turned into an anti-British movement.
- **Under Sidhu and Kanhu, two brothers, the Santhals proclaimed an end to Company rule. It was after the Santhal Revolt (1855-56) that the Santhal Pargana was created, carving out 5,500 square miles from the districts of Bhagalpur and Birbhum**. The colonial state hoped that by creating a new territory for the Santhals and imposing some special laws within it, the Santhals could be conciliated. **Hence, Santhal Pargana Tenancy (SPT) Act, 1876 enacted.**
- **Both the Chotanagpur Tenancy (CNT) Act, 1908, and the Santhal Pargana Tenancy (SPT) Act, 1876, granted special protection and land rights to the tribals and prohibited the transfer of tribal land to non-tribals. Hence option (a) is the correct answer.**
- **The Faraizis were the followers of a Muslim sect founded by Haji Shariat-Allah of Faridpur in Eastern Bengal. They advocated radical religious, social and political changes.** Shariat-Allah son of Dadu Mian (1819-60) organised his followers with an aim to expel the English intruders from Bengal. The sect also supported the cause of the tenants against the zamindars. The Faraizi disturbances continued from 1838 to 1857. Most of the Faraizis joined the Wahabi ranks.

**Q 27.D**

- **Kalam (Kalamezhuthu) is a unique form of this art found in Kerala.** It is essentially a ritualistic art practiced in temples and sacred groves of Kerala where the representation of deities like Kali and Lord Ayyappa, are made on the floor. Kalamezhuthu is practiced using natural pigments and powders, usually in five colours. The drawing is done with bare hands without the use of tools. The pictures are developed from the centre, growing outwards, patch by patch. Kalamezhuthu artists are generally members of communities like the Kurups, Theyyampadi Nambiars, Theeyadi Nambiars and Theeyadi Unnis. The 'Kalams' drawn by these people vary in certain characteristics. **Hence pair 1 is correctly matched.**
- **Sohrai and Khavar paintings are popular in Hazaribagh region of Jharkhand.** The folk art draws heavily from the forest life. Khovar refers to the decoration of the marriage chambers and Sohrai is the harvest painting on the mud houses, repairing it after the rains and offering a thanksgiving to the forces of nature. Brush or broken comb is used to paint. Natural ochre colours make up the palette — dhudhi mitti (white in colour), lal mitti or red oxide from the local mines, kaali mitti or manganese black and peeli mitti or yellow ochre. These colours are collected in the form of lumps and powdered. They are then mixed with water and glue and applied on the canvas or handmade paper. It is an art form practised by women at home, usually the mother-in-law and daughter-in-law combine. **Hence, pair 2 is correctly matched.**
- **Paitkar painting is a folk painting found in East India in the form of scrolls.** The **Paitkar painting occurs in the bordering areas of Jharkhand, West Bengal and Orissa and considered as the old age tribal painting of India.** The painting is prepared by the painters known as 'Chitrakar' in much a traditional way. Paitkar painting reflects many realities of day-to-day human life, legends and mythologies of their society. The tribal artists in Jharkhand who have fostered this art of scroll painting that has long been used in story telling performance and also in socio-religious custom. **Hence pair 3 is correctly matched.**

**Q 28.B**

- According to the Constitution, there are four areas in which the population is used as a factor
  - Manner of Election of President (Article 55)
  - **Composition of the House of the People** (Article 81)
  - **Composition of the Legislative Assemblies** (Article 170)
  - **Reservation of seats** for Scheduled Castes and Scheduled Tribes in the Legislative Assemblies of the States (Article 330).
- Articles 55 and 170 are especially important as they deal with the delimitation of constituencies for both Lok Sabha and Rajya Sabha.
- The population figure is also used for the devolution of taxes by the **Finance Commission.** However, the **population factor is not mandated by the constitution.** It is mentioned in the terms of the reference of the Finance Commission.
- **Hence only options 2, 3 and 4 are correct.**

**Q 29.D**

- **The Turks deliberately avoided the representation of Human and animal figures for the decoration of the walls because it was considered un-Islamic**. Rather they used geometric and floral designs along with Quran verses. It was called Arabesque. The Hindu motifs like a bell, lotus, swastik, etc were also frequently used. **Hence, statement 1 is not correct.**
- **In the buildings, The arch and dome method was used on a wide scale. However, it was not a Turkish invention. The Arabs borrowed them from Rome through the Byzantine empire**; developed them and used them as per their own requirements. The dome provided a pleasing skyline and with the passage of time, the domes got more loftier. Further, the use of fine quality light mortar became popular with the arrival of the Turks. **Hence statement 2 is not correct.**

**Q 30.B**

- **Statement 1 is not correct:** The Indian National Satellite (INSAT) system is one of the largest **domestic communication satellite systems in Asia-Pacific region with most of the operational communication satellites placed in Geo-stationary orbit/Geosynchronous Transfer Orbit.** Established in 1983 with commissioning of INSAT-1B, the latest satellite in this constellation was launched in January 2020 called the GSAT-30 in the Geosynchronous Transfer Orbit (GTO) from Kourou launch base, French Guiana by Ariane-5 VA-251.
- **Statement 2 is correct:** The INSAT system with more than 200 transponders in the C, Extended C and Ku-bands provides services to **telecommunications, television broadcasting, satellite newsgathering, societal applications, weather forecasting, disaster warning and Search and Rescue**

**operations.** GSAT-19 and GSAT-29 in the series were launched by GSLV-Mk III, which is three-stage vehicle with two solid motor strap-ons, a liquid propellant core stage and a cryogenic stage. It is capable of launching 4 ton class of satellite to Geosynchronous Transfer orbit (GTO).

- **Statement 3 is correct:** HAMSAT is a Micro-satellite for providing satellite based Amateur Radio services to the national as well as the international community of Amateur Radio Operators (HAM). METSAT (renamed as Kalpana - 1 on February 5, 2003 after the Indian born American Astronaut Dr. Kalpana Chawla, who died on February 1, 2003 in the US Space Shuttle Columbia disaster) is the first in the series of exclusive meteorological satellites built by ISRO. GSAT-3, known as EDUSAT is meant for distant class room education from school level to higher education. This was the first dedicated "Educational Satellite" that provide the country with satellite based two way communication to class room for delivering educational materials.
- Indian Space Research Organisation has launched a special programme for School Children called "Young Scientist Programme" "YUva VIgyani KAryakram" (युविका) from the year 2019.The Program is primarily aimed at imparting basic knowledge on Space Technology, Space Science and Space Applications to the younger ones with the intent of arousing their interest in the emerging areas of Space activities.

**Q 31.C**

- **The Fiscal Responsibility and Budget Management Act, 2003 (FRBMA)** is an Act of the Parliament of India to **institutionalize financial discipline, reduce India's fiscal deficit**, improve macroeconomic management and the overall management of the public funds by moving towards a **balanced budget and strengthen fiscal prudence.**
- **Section 3 of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003** requires the Government to place three Statements of Fiscal Policy viz., **the Medium-term Fiscal Policy Statement, the Fiscal Policy Strategy Statement and the Macroeconomic Framework Statement** in both the Houses of Parliament along with Annual Financial Statement and Demands for Grants. **This Section was amended** to require the Government to lay the **Fourth Statement** viz., the **Medium Term Expenditure Framework (MTEF**) Statement in both the Houses of Parliament, immediately following the session of the Parliament in which the Budget has been presented.
- **However, there was no requirement for the presentation of the Outcome Budget. It was introduced in 2005. Hence statement 1 is not correct.**
- The rules under the Act set targets for the phased reduction of the fiscal deficit to acceptable levels. It requires the government to limit the fiscal deficit to 3% of the GDP by 31 March 2021 and the debt of the central government to 40% of the GDP by 2024-25, among others. **The Act provides room for deviation from the annual fiscal deficit target under certain conditions. Hence statement 2 is correct.**
- According to the Act, the Central Government shall not borrow from the Reserve Bank. However, the Central Government may borrow from the Reserve Bank by way of advances to meet temporary excess of cash disbursement over cash receipts during any financial year in accordance with the agreements which may be entered into by that Government with the Reserve Bank: Provided that any advances made by the Reserve Bank to meet temporary excess cash disbursement over cash receipts in any financial year shall be repayable in accordance with the provisions contained in sub-section (5) of section 17 of the Reserve Bank of India Act, 1934 (2 of 1934). **Hence statement 3 is not correct.**

**Q 32.B**

- In the Upper and Middle Ganga plain, two different types of alluvial soils have developed, viz. Khadar and Bhangar.
- Khadar is the new alluvium and is deposited by floods annually, which enriches the soil by depositing fine silts. The new alluvium is deposited in the flood plains and deltas. Bhangar represents a system of older alluvium, deposited away from the flood plains. The old alluvium is found on the higher side of the river valleys, i.e. about 25 metres above the flood level. **Hence statements 1 and 2 are correct.**
- The Khadar soil is sandy and light in colour, while the Bhangar soil is clayey and dark. **Hence statement 3 is not correct.**
- Both the Khadar and Bhangar soils contain calcareous concretions (Kankars).
- These soils are more loamy and clayey in the lower and middle Ganga plain and the Brahmaputra valley. The sand content decreases from the west to the east.

**Q 33.C**

- **The Reserve Bank of India** gives temporary **loan facilities to the center and state governments** as a banker to the government. This temporary loan facility is called **Ways and Means Advances (WMA). Hence option c is the correct answer.**

- This facility is provided to help them tide over **temporary mismatches in the cash flow of their receipts and payments**. This is guided under Section 17(5) of the **RBI Act, 1934.**
- The WMA scheme for the Central Government was introduced on April 1, 1997. The WMA scheme was designed to meet temporary mismatches in the receipts and payments of the government. This facility can be availed by the government if it needs immediate cash from the RBI. The WMA is a loan facility form the RBI for 90 days which implies that the government has to vacate the facility after 90 days. The limits for WMA are mutually decided by the RBI and the Government of India.
- The RBI provides an overdraft facility when the WMA limit is breached. The overdraft is not allowed beyond 10 consecutive working days. The interest rate on overdrafts would be 2 percent more than the repo rate.
- There are two types of **WMA – normal and special.** While Normal WMA is clean advances, Special WMA is secured advances provided against the pledge of the government of India–dated securities.
- For the states, there are two types of WMA – normal and special. Special WMA has secured advances provided against the pledge of the government of India–dated securities. After the exhaustion of the special WMA limit, the State Government are provided with a normal WMA.

**Q 34.D**

- The World Design Organization (WDO), formerly known as the International Council of Societies of Industrial Design (ICSID), is an international non-governmental organization advocate for design for a better World. It aims to promote and share knowledge of industrial design-driven innovation that enhances the economic, social, cultural, and environmental quality of life. **Hence, statement 1 and statement 2 are correct.**
- World Design Capital is designated every two years by the World Design Organization. It recognizes cities for their effective use of design to drive economic, social, cultural, and environmental development. Recently, Bengaluru and Valencia (Spain) were shortlisted to become World Design Capital (WDC) 2022 in their pursuit to be recognised for the participatory value of design-led innovation in their cities. However, Valencia was eventually declared as the 2022 World Design Capital. **Hence, statement 3 is correct.**

**Q 35.C**

- The Indian ports and shipping industry plays a vital role in sustaining growth in the country's trade and commerce. India is the sixteenth largest maritime country in the world, with a coastline of about 7,517 km. The Indian Government plays an important role in supporting the ports sector. India has 12 major and 205 notified minor and intermediate ports. According to the Ministry of Shipping, around 95 percent of India's trading by volume and 70 percent by value is done through maritime transport. **Hence, statement 1 is correct.**
- During FY19, cargo traffic at major ports in the country was reported at 699.05 million tonnes (MT). According to Economic Survey 2019-20, the Cumulative Annual Growth Rate (CAGR) of minor ports is around 12% during FY2000 - FY2019 and major ports have a CAGR of around 5% during the same period.
- It has allowed Foreign Direct Investment (FDI) of up to 100 percent under the automatic route for port and harbor construction and maintenance projects. It has also facilitated a 10-year tax holiday to enterprises that develop, maintain and operate ports, inland waterways, and inland ports. **Hence, statement 2 is correct.**
- Way Ahead:
  - Under the Sagarmala Programme, the government has envisioned a total of 189 projects for modernization of ports involving an investment of Rs 1.42 trillion (US$ 22 billion) by the year 2035.
  - Ministry of Shipping has set a target capacity of over 3,130 MMT by 2020, which would be driven by participation from the private sector. Non-major ports are expected to generate over 50 percent of this capacity.
  - India's cargo traffic handled by ports is expected to reach 1,695 million metric tonnes by 2021-22, according to a report of the National Transport Development Policy Committee.

**Q 36.A**

- **Unani system originated in Greece**. It was introduced in India by the Arabs and Persians sometime around the eleventh century. The foundation of Unani system was laid by Hippocrates. The basic theory of Unani system is based upon the well- known four - humour theory of Hippocrates. This presupposes the presence, in the body, of four humours viz., blood, phlegm, yellow bile and black bile.
- The human body is considered to be made up of the following seven components:
  - Four elements i.e. Air, Earth, Fire, Water which make up the human body

- Temperament of the individual
- Humors - blood, phlegm, yellow bile, and black bile
- Organs of the human body
- Spirits (A gaseous substance)
- Faculties i.e. Natural power, Psychic power and Vital power
- Functions of organs.

- According to practitioners of Unani medicine, achieving a balance of the bodily fluids known as "**the four humors**" **(blood, phlegm, yellow bile, and black bile) is essential to health.** Another key principle of Unani medicine is that disease results from an imbalance in air, earth, water, and fire, four elements thought to comprise all that exists in nature, including the human body.
- In Unani medicine, conditions are often treated with **herbal formulas** containing a variety of natural substances. For example, a formula known as Khamira Abresham Hakim Arshad Wala contains such botanicals as saffron, cardamom, Indian bay leaf, and citron.
- Unani medicine practitioners maintain that certain diseases and disorders, are caused by emotional strain and maladjustment. Therefore, when dealing with such cases, the practitioner should try to take all these factors into account.
- There is a branch of Unani medicine known as "**psychological treatment**" that deals with the above-mentioned factors, and many diseases are treated by psychological methods. Sometimes this type of treatment is used alone, while at other times it is used in conjunction with various medicines.
- Unani medicine practitioners have also recognized the **effects of music, pleasant company and beautiful scenery.**
- **Hence option (a) is the correct answer.**

**Q 37.A**

- Senna spectabilis is a plant species of the legume family native to South and Central America**.** The trees **preferred to grow in moist deciduous forests.** Their habitats include rain forest, semi-deciduous and dry forest, montane forest, and dry valleys. The plant requires full sunlight and well-drained soil to grow.
- **The Mudumalai Tiger Reserve (MTR) is facing the threat of invasive species of Senna spectabilis which is making incursions into the reserve from neighbouring Kerala and Bandipur**. The trees are seen in both the core and buffer areas of MTR, with parts of Nilakottai, Kargudi, Singara and Masinagudi ranges being affected. The spread of invasive plants, especially Senna spectabilis, poses major threat to forest areas of the Nilgiri Biosphere Reserve. Kerala Forest Research Institute (KFRI), who conducted a study on invasive plants has developed some physical and chemical measures to tackle the threat of the plant.
- Spectabilis are often grown as an ornamental in front yards, parks, gardens, buildings, etc. due to their bright yellow flowers that bloom during the summer months. It also has a few medicinal properties. The plant can be used as a treatment for ringworm and skin diseases. After extracting a leaf on alcohol there was significant antifungal activity, which suggests it can be used against fungal infections caused by Candida albicans. The plant is effective against food borne pathogens
- Senna spectabilis also produces several substances that we deem necessary for metabolism, in which they are also used as a medicine or pharmaceutical drug.
- The International Union for Conservation of Nature (IUCN) classified Senna spectabilis as 'near threatened.

**Q 38.B**

- **A phreatophyte is a deep-rooted plant** that obtains a significant portion of the water that it needs from the phreatic zone (zone of saturation) or the capillary fringe **above the phreatic zone.** Phreatophytes are plants that are supplied with surface water and often have their roots constantly in touch with moisture. **A phreatophyte is one that absorbs its water from a constant source on the ground.** They can usually be found along streams where there is a steady flow of surface or groundwater in areas where the water table is near the surface. **Hence, option (b) is correct.**
- Phreatophytes live **in areas with standing or running water**, in arid areas and along the riverbeds and areas, apparently dry, where the water table is very shallow and near the surface. These plants have **very deep roots** that are able to reach the water table. Phreatophytes are not only characteristic of arid or desert zones, but also of wetlands, floodplains, depressions that hold water and estuaries.
- In the wetlands, ecological classification does not provide a special classification, since in this case, most of the plants in the regions of high rainfall can deepen their roots to the top of the capillary fringe

immediately above the water table, and function well as a phreatophyte. In this case, they receive the label of mesophytic. phreatophytic artificial extensions, manmade, are used as a method to purify greywater.

- Phreatophytes are **indicator**s of potable groundwater. Some phreatophytes have a low tolerance for salt, indicating freshwater. This can be a valuable guide to the location of drinking and agricultural water in arid and semiarid areas.
- **Epiphyte plant:** plant that grows harmlessly upon another plant (such as a tree) and derives its moisture and nutrients from the air, rain, and sometimes from debris accumulating around it. **Hence, option (c) is not correct.**
- **Halophyte Plants:** Salt-tolerant plants that grow in swamps and marshes**. Hence, option (a) is not correct.**
- **Insectivorous plants (Carnivorous plants):** are those plants that derive some or most of their nutrients from trapping and consuming animals or protozoans, typically insects and other arthropods. **Hence, option (d) is not correct.**

**Q 39.C**

- For effective treatment of disease, early diagnosis and understanding its pathophysiology is very important. Using conventional methods of diagnosis (serum and urine analysis, etc.) early detection is not possible. Recombinant DNA technology, Polymerase Chain Reaction (PCR) and **Enzyme-Linked Immuno-sorbent Assay (ELISA)** are some of the techniques that serve the purpose of early diagnosis.
- ELISA is based on the principle of **antigen-antibody interaction.** Infection by a pathogen can be detected by the presence of antigens (proteins, glycoproteins, etc.) or by detecting the antibodies synthesized against the pathogen. **Hence statement 1 is correct.**
- ELISA plates (having 96 wells) are available for each specific virus. Each well contains the virus-specific antibody bound to its sides. Sap or liquid extracted from tissue or cells is added to the well. If the virus is present in the test liquid, it will bind to its anti-body. Wells are rinsed to remove the liquid and its contents that did not bind and therefore not the targeted virus. More of the same antibody bound to the well is added and a similar process in followed again. After this second reaction, any unattached anti-body is rinsed away. And now, the pigment substrate is added. If the substrate attaches to the enzyme because it is present, it will develop or change color.
- ELISA has been used as a diagnostic tool in medicine, **plant pathology, and biotechnology, as well as a quality control, check** in various industries. It can also be used to detect viruses and other pathogens in plants. E.g.: Detection of potato viruses such as PVX, PVY etc. **Hence, statement 2 is not correct.**
- ELISA can be performed to evaluate either the presence of antigen or the presence of antibodies in a sample, it is a useful tool for detecting diseases like **HIV, West Nile Virus, Dengue, Malaria, etc. Hence statement 3 is correct.**

**Q 40.A**

- In monetary economics, the currency in circulation in a country is the value of currency or cash (banknotes and coins) that has ever been issued by the country's monetary authority less than the amount that has been removed. Money Multiplier is the ratio of the stock of money to the stock of high powered money. It is the relationship between the monetary base and the money supply of an economy.
- A country’s money multiplier depends on two factors - how much individuals (and businesses) hold in cash and how much banks hold as reserves. The more individuals hold cash in hand, the less the banking system will be able to create money and hence a lower value for the multiplier. In other words, cash in hand acts as a leakage for the banking system. **Hence, statement 1 is correct.**
- Higher the reserve lesser would be the amount available to lend ahead. Higher CRR will force banks to keep excess funds in the central bank and which will lead it to low funds to lend or vice versa. **Hence, statement 2 is not correct.**

**Q 41.B**

- The Act of 1935 was quite a lengthy and detailed document. It consisted of 321 sections and 10 schedules. It partly came into operation in1936 when the general elections in the country were held on the lines prescribed by it. It was fully enforced in April 1937. **The Act was largely disappointing because it did not hold out assurance about granting Dominion Status ( not even made mention of dominion status)**, not did it consider sympathetically the feelings and urges of politically conscious Indians. It marked a second milestone on the road to full responsible government, the first being the Act of 1919. **Hence statement 1 is not correct.**
- **The Act of 1935 was a rigid one. No Indian legislature whether Federal or provisional was authorized to modify or amend it.** The British Government alone was given the authority to make

changes in it. The Indian legislature could at the most pray for a constitutional change by submitting a resolution to Majesty's government. **Hence statement 3 is not correct.**

- The Act of 1935 not only retained the communal electorate but also enlarged its scope. It granted this whole concession to the Depressed Classes also. The Muslims got 33 1/3 percent of the seats in the Federal Legislature although their number was much less than one-third of the total population of British India. Even the workers and women and Harijans got separate representation although they had not asked for it. Nearly 10 percent of the total population got the right to vote. **Hence statement 2 is correct.**
- The Act also provided for the establishment of Federal Court to settle disputes arising among the units themselves and also between a unit and the Federal Government. One of the functions was to interpret the controversial clauses of the Act. It was, however, not the final court of appeal. In certain circumstances, the appeal could be made to the Privy Council.
- The new Act abolished India Council and provided for the appointment by the Secretary of State and his team of Advisers whose number was not to be less than 3 and nor more than 6.

**Q 42.A**

- Judicial review is the power of the judiciary to examine the constitutionality of legislative enactments and executive orders of both the Central and State governments. On examination, if they are found to be violative of the Constitution (ultra vires), they can be declared as illegal, unconstitutional and invalid (null and void) by the judiciary
- The constitutional validity of a legislative enactment or an executive order can be challenged in the Supreme Court or in the High Courts on the following three grounds. (a) it infringes the Fundamental Rights (Part III), (b) it is outside the competence of the authority which has framed it, and (c) it is repugnant to the constitutional provisions
- the Supreme Court has declared the power of **judicial review as a basic feature of the Constitution** or an element of the basic structure of the Constitution. Hence, the power of judicial review cannot be curtailed or excluded even by a constitutional amendment
- **Statement 1 is correct:** The Supreme Court in 2018 justified the passage of the Aadhaar Bill as a money bill in Parliament, but noted that the **decision of the Speaker to classify a bill as money bill is amenable to judicial review**, thus opening the gates for scrutiny of the Speaker's decision.
- **Statement 2 is correct:** Decision of the Presiding Officer to disqualify a member under the 10th schedule of the constitution (**Anti-defection law) is subject to judicial review**. The law initially stated that the decision of the Presiding Officer is not subject to judicial review. This condition was struck down by the Supreme Court in 1992, thereby allowing appeals against the Presiding Officer's decision in the High Court and Supreme Court. However, it held that there may not be any judicial intervention until the Presiding Officer gives his order.
- **Statement 3 is correct**: The Supreme Court in 2006 had held that the powers of the **President or the Governor under Articles 72 and 161 respectively** (relating to the pardoning powers), are subject to judicial review. The convicts can challenge the President's decision on the ground that (a) it was passed without application of mind; (b) it is mala fide; (c) it was passed on extraneous or wholly irrelevant considerations; (d) relevant materials were kept out of consideration; (e) it suffers from arbitrariness.
- **Statement 4 is correct:** Article 31B saves the acts and regulations included in the Ninth Schedule from being challenged and invalidated on the ground of contravention of any of the Fundamental Rights. Article 31B along with the Ninth Schedule was added by the 1st Constitutional Amendment Act of 1951.However, in a significant judgement delivered in **I.R. Coelho case (2007)**, the Supreme Court ruled that **there could not be any blanket immunity from judicial review of laws included in the Ninth Schedule.** The court held that judicial review is a 'basic feature' of the constitution and it could not be taken away by putting a law under the Ninth Schedule. It said that the laws placed under the Ninth Schedule after April 24, 1973, are open to challenge in court if they violated Fundamental Rights guaranteed under the Articles 14, 15, 19 and 21 or the 'basic structure' of the Constitution

**Q 43.A**

- Regional Rural Banks (RRBs) are financial institutions that ensure adequate credit for agriculture and other rural sectors. Regional Rural Banks were set up on the basis of the recommendations of the Narasimham Working Group (1975).
- The RRBs combines the characteristics of a cooperative in terms of the familiarity of the rural problems and a commercial bank in terms of its professionalism and ability to mobilize financial resources. Each RRB operates within the local limits as notified by Government.
- The main objectives of RRB's are to provide credit and other facilities, especially to the small and marginal farmers, agricultural laborers artisans and small entrepreneurs in rural areas with the objective of

bridging the credit gap in rural areas, checking the outflow of rural deposits to urban areas and **reduce regional imbalances and increase rural employment generation. Hence, statement 1 is correct.**

- The equity of a regional rural bank is held by the Central Government, concerned State Government and the Sponsor Bank in the proportion of 50:15:35. **Hence statement 3 is not correct.**
- RRBs will have a target of 75 percent of their outstanding advances for priority sector lending. The revised guidelines on priority sector lending by Regional Rural Banks were made operational with effect from January 1, 2016.
- Every Scheduled Commercial Bank (including RRBs), Local Area Bank, Small Finance Bank, Payments Bank, Primary (urban) co-operative bank and State and central co-operative banks shall continue to maintain SLR. **Hence, statement 2 is not correct.**

**Q 44.D**

- Globally production of plastic has ramped up in recent decades and its non-degradable nature is making it the global hazard. Even after it has been broken down by wind and wave action **(mechanic degradation)** as well as rays of light **(photodegradation**), the plastic remains in small fragments. The plastic debris has been found in many samples and at various places including high seas, depths of mariana trench etc., Now, a recent study demonstrates that **plastic is forming crusts (so-called "plasticrusts")** on the rocky shores of **Madeira, a Portuguese archipelago in the Atlantic Ocean.**
- It was first noticed " i**n 2016** and it was found that the crusts, **consisting of blue and white polyethylene materials, persisted and grew through January 2019**. While the origin of the plastic is unclear, it is likely that nearby fishing and tourism activities could have contributed to the formation of the crusts. Additionally, polyethylene is commonly found in packaging materials, which may have also contributed to the crusts.
- It was also noticed several sea snails perched atop these rocky plastic formations and found a similar abundance of these snails in rocky areas without the **"plasticrusts"** - the snails were seemingly ambivalent to the foreign material. Because these snails graze on tiny pieces of algae that settle onto rocks, there is a chance that they may be consuming the "plasticrusts", allowing it to pass through marine food webs around Madeira.
- While this is the first known case of plastic formation on rocky shorelines, "**plastiglomerates**" - a mixture of beach sediments, lava particles, and molten plastic - were first documented on **Kamilo Beach, Hawaii in 2014.**

**Q 45.D**

- The Ministry for Environment, Forests and Climate Change has released the India State of Forest Report (ISFR), 2019.
- ISFR is a **biennial (once in two year)** publication of **Forest Survey of India (FSI),** an organization under the Ministry of Environment Forest & Climate Change. The ISFR assesses the forest and tree cover, bamboo resources, carbon stock and forest fires. The 2019 report for the **first time has assessed the qualitative nature of the forest cove**r, including listing its **biodiversity and the type of plants and trees found.** It also created a **national forest inventory** for the first time on produce from forests.
- **Forest Cover** (Area-wise):
  - Madhya Pradesh> Arunachal Pradesh> Chhattisgarh> Odisha> Maharashtra. Forest Cover (Percentage): Mizoram (85.4%)> Arunachal Pradesh (79.63%)> Meghalaya (76.33%)
- **Increase in Forest Cover:**
  - The country's forest cover includes all patches of land with a tree canopy density of more than 10% and more than 1 hectare in area, irrespective of land use, ownership and species of trees. The total forest cover of the country is 7,12,249 sq km which is 21.67% of the geographical area of the country.
  - The top five states to have shown an increase in forest cover include Karnataka (1,025 sq km) > Andhra Pradesh (990 sq km) > Kerala (823 sq km) > J&K (371 sq km) > Himachal Pradesh (334 sq km).
- **Decline of Forest Cover in North Eastern Region:**
  - Total forest cover in the North-Eastern region is 65.05% of its geographical area. There has been a **decrease of forest cover** to the extent of 765 sq km (0.45%) in the region. **Except for Assam and Tripura**, all the States in the region show a decrease in forest cover.
- **Mangrove cover:**
  - Mangrove cover in the country has **increased** by 54 sq km (1.10%) as compared to the previous assessment.
- **Bamboo bearing area**:
  - The total bamboo bearing area of the country has recorded an increase of 3,229 sq km as compared to 2017.

- **Soil Organic Carbon (SOC)**
  - SOC represents the largest pool of carbon stock in forests, which has been estimated at 4,004 million tonnes. The SOC contributes 56% to the total forest carbon stock of the country.
- **Wetlands**
  - The total number of **wetlands** located within the RFA/GW is 8.13%. Amongst the States, **Gujarat** has the largest area of wetlands within RFA in the country followed by West Bengal**. Hence, statement 2 is not correct.**
- **Dependence of fuelwood** on forests is highest in the State of Maharashtra, whereas, for fodder, small timber and bamboo, dependence is highest in Madhya Pradesh.
- The information on the **area affected by five major invasive species** in States/UTs based on analysis of NFI data has been given in the present ISFR.
- **Fire prone forest areas** of different severity classes have been mapped in the grids of 5km x 5km based on the frequency of forest fires. The analysis reveals that 21.40% of the forest cover of the country is highly to extremely fire-prone.
  - The study says that forests in central India and north-eastern India are most vulnerable to forest fires.
  - Of the all the fire alerts received, one-third were from **north-eastern states.** The major reason for the increased number of alerts in the north eastern region is slash and burn (jhum) cultivation.
  - Out of these alerts, **Mizoram** recorded the highest. **Hence, statement 1 is not correct.**
- FSI, in a first ever attempt has carried out a **rapid assessment of biodiversity for all the States and UTs except two** and for all the sixteen Forest Type Groups as per **Champion & Seth Classification (1968).** Apart from the number of tree, shrub and herb species as observed in the survey, **Shanon Wienner Index** which gives **species richness** along with the relative abundance, has also been calculated for each forest type groups in each State & UT. **Hence, statement 3 is not correct.**

**Q 46.C**

- Compressed Biogas (CBG) has potential as a Source of Green Energy in India. Biogas can be produced using any biodegradable biomass. India has a huge potential for these biodegradable materials for the production of CBG. Currently, 32 million tonnes of CBG potential is estimated in the country; though, of the total estimated potential, only 0.06% CBG is being produced currently on an annual basis.
- **Statement 1 is correct:** The government is promoting the use of Compressed Bio Gas (CBG) as an alternative green transport fuel, which is purified and compressed biogas, produced through a process of anaerobic decomposition from various waste/ biomass sources including Municipal solid waste.
- **Statement 2 is correct:** Compressed Biogas (CBG) is an enriched form of biogas containing more than 90% methane (v/v), carbon dioxide up to 4% (v/v) and other traces of gases such as hydrogen sulfide, moisture, oxygen, and nitrogen.
- It is produced through a series of processes like the compression of raw biogas, removal of impurities (CO2, H2S), and storage of purified gas in a high-pressure vessel at around 200–250 bars for the vehicular application.
- CBG has calorific value and other properties similar to CNG and hence can be utilized as a green renewable automotive fuel. Thus it can replace CNG in automotive, industrial and commercial areas, given the abundance of biomass availability within the country.

**Q 47.C**

- **The United Nations Convention against Corruption is the only legally binding universal anti-corruption instrument.** The Convention's far-reaching approach and the mandatory character of many of its provisions make it a unique tool for developing a comprehensive response to a global problem. The vast majority of United Nations Member States are parties to the Convention. **Hence, statement 1 is correct.**
- The Convention covers five main areas: preventive measures, criminalization and law enforcement, international cooperation, asset recovery, and technical assistance and information exchange.
- The Convention covers many different forms of corruption, such as bribery, trading in influence, abuse of functions, and various acts of corruption in the private sector. **A highlight of the Convention is the inclusion of a specific chapter on asset recovery, aimed at returning assets to their rightful owners, including countries from which they had been taken illicitly. Hence, statement 2 is correct.**
- The Corruption Perceptions Index (CPI) is an index that scores countries on how corrupt their governments are believed to be. **The CPI is published by Transparency International,** an organization that seeks to stop bribery and other forms of public corruption. A country's score can range from zero to 100, with zero indicating high levels of corruption and 100 indicating low levels

**Q 48.D**

- **Statement 1 is correct:** The Act of 1870 proposed that one-fifth of the recruits to the covenanted service should be Indians even without a competitive examination. Lytton proposed the straightforward course of closing covenanted civil services to Indians and instead to create 'a close native service' to meet the provisions of the Act of 1870. As this idea did not find favor, Lytton then proposed the plan for Statutory Civil Services and introduced the Services 1878-79.
- The civil services were divided into two categories:
  - Covenanted: The covenanted civil service consisted of only white British civil servants occupying the higher posts in the government.
  - Uncovenanted: The uncovenanted civil service was solely introduced to facilitate the entry of Indians at the lower rung of the administration
- **Statement 2 is not correct:** The Statutory Civil Services was not to have the same status and salary as Covenanted Service.
- **Statement 3 is not correct:** According to the Rules of 1879, the Government of India could employ some Indians of good family and social standing to the Statutory Civil Services on the recommendation of the provincial governments and subject to the confirmation of the Secretary of State. Also, the number of such appointments did not exceed one-sixth of the total appointments made to the Covenanted Service in a year. These officers were called "statutory civil servants". The Statutory Civil Services, however, did not prove popular with the Indian public and had to be abolished eight years later.

**Q 49.B**

- **Statement 2 is not correct:** Salmonella is a gram negative rods genus belonging to the Enterobacteriaceae family. Salmonella is a ubiquitous and hardy bacteria that can survive several weeks in a dry environment and several months in water.
- Gram negative bacteria: They have a wavy and double-layered cell-wall and are more resistant to antibiotics.
- **Statement 1 is correct**: Salmonella bacteria are commonly found in the intestines of humans and animals. They are prevalent in food animals such as poultry, pigs, and cattle; and in pets, including cats, dogs, birds, and reptiles such as turtles. Salmonella can pass through the entire food chain from animal feed, primary production, and all the way to households or food-service establishments and institutions.
  Salmonellosis is a disease caused by the bacteria Salmonella. It is usually characterized by acute onset of fever, abdominal pain, diarrhoea, nausea and sometimes vomiting.
- The onset of disease symptoms occurs 6–72 hours (usually 12–36 hours) after ingestion of Salmonella, and illness lasts 2–7 days. Symptoms of salmonellosis are relatively mild and patients will make a recovery without specific treatment in most cases. However, in some cases, particularly in children and elderly patients, the associated dehydration can become severe and life-threatening. Although large Salmonella outbreaks usually attract media attention, 60–80% of all salmonellosis cases are not recognized as part of a known outbreak and are classified as sporadic cases, or are not diagnosed as such at all. Treatment in severe cases is electrolyte replacement (to provide electrolytes, such as sodium, potassium and chloride ions, lost through vomiting and diarrhoea) and rehydration.
- Salmonellosis in humans is generally contracted through the consumption of contaminated food of animal origin (mainly eggs, meat, poultry, and milk), although other foods, including green vegetables contaminated by manure, have been implicated in its transmission.
- **Statement 3 is correct:** Person-to-person transmission can also occur through the faecal-oral route. Human cases also occur where individuals have contact with infected animals, including pets. These infected animals often do not show signs of disease.

**Q 50.A**

- **The powers of Legislative Council is on a par with Legislative Assembly in the following matters:**
  - Introduction and passage of ordinary bills.
  - **Approval of ordinances issued by the Governor.**
  - Selection of ministers including the Chief Minister as they can be from any of the Houses.
  - Consideration of report of State Finance Commission, State Public Service Commission, Comptroller and Auditor General of India.
  - **Enlargement of the jurisdiction of the State Public Service Commission.**
- In matters other than the above-mentioned matters, the position of the council is not equal to the legislative assembly. **Hence option (a) is correct.**
- There are certain bills that require amendments in the provisions of the Constitution related to the federal structure of the Indian polity. To pass the Constitutional Amendments, half of the state must agree to the

amendment. These types of bills are passed only by the State Legislative Assemblies as their approval. **State Legislative Councils have no role in passing these bills.**

- **Hence only statements 1 and 2 are correct.**

**Q 51.A**

- **The visible universe**—including Earth, the sun, other stars, and galaxies—is made of protons, neutrons, and electrons bundled together into atoms. They **make up only 5% of the universe.**
- Galaxies in our universe seem to be achieving an impossible feat. They are rotating with such speed that the gravity generated by their observable matter could not possibly hold them together; they should have torn themselves apart long ago. Scientists theorise that something we have yet to detect directly is giving these galaxies extra mass, generating the extra gravity they need to stay intact.
- This strange and unknown matter was called "dark matter" since it is not visible. **Dark matter** outweighs visible matter roughly six to one, **making up about 27% of the universe. Hence statement 1 is not correct.**
- **Dark energy makes up the remaining 68% of the universe** and appears to be associated with the vacuum in space. It is distributed evenly throughout the universe, not only in space but also in time – in other words, its effect is not diluted as the universe expands. **Hence statement 3 is correct.**
- **A neutron star is the collapsed core of a giant star.** Neutron stars have a radius on the order of 10 kilometers and a mass of about 1.4 solar masses. Hence it has an enormous density. **They result from the supernova explosion of massive stars.**
- When the supernova results in a neutron star core, the electrons, and protons in the core are merged to become neutrons, so the newly born 20-km-diameter neutron star containing between 1.4 and 3 solar masses is like a giant atomic nucleus containing only neutrons.
- If the neutron star's mass is then increased, neutrons become degenerate, breaking up into their constituent quarks, thus the star becomes a quark star; **a further increase in mass results in a black hole.** Hence black holes result from massive neutron stars. Neutron stars' split does not result in black holes. **Hence statement 2 is not correct.**

**Q 52.D**

- Sundarbans is the largest contiguous mangrove area in the world and one of the **World Heritage Sites of India** designated by the World Heritage Convention.
- This biosphere reserve is located in the vast Delta of the Ganges, south of Calcutta. It is the **largest and only mangrove reserve in the world inhabited by tigers (Panthera tigris tigris).** This reserve includes the **Royal Bengal Tiger Reserve, Sundarban National Park and three wildlife sanctuaries, viz Sajnekhali wildlife sanctuary, Lothian Island wildlife sanctuary and Holiday Island wildlife sanctuary.**
- The site supports exceptional biodiversity in its terrestrial, aquatic and marine habitats; ranging from micro to macro flora and fauna. The Sundarbans is of universal importance for globally endangered species **including the Royal Bengal Tiger, Ganges and Irawadi dolphins, estuarine crocodiles and the critically endangered endemic river terrapin (Batagur baska).**
- The forest tracts of **Neyyar, Peppara, Shendumey wildlife Sancturias** are located in **Agasthyamalai Biosphere Reserve. Hence option d is not the correct statement.**

**Q 53.A**

- The history of the Cholas falls naturally into four periods: the early Cholas of the Sangam literature, the interregnum between the fall of the Sangam Cholas and the rise of the medieval Cholas under Vijayalaya (c. 848), the dynasty of Vijayalaya, and finally the Chalukya Chola dynasty of Kulothunga Chola I from the third quarter of the eleventh century.
- The earliest Chola kings of whom there is tangible evidence are mentioned in the Sangam literature. The history of Chola begins roughly in the third century B.C. with their famous king Karikala. Karikala Chola, the greatest among the early Chola kings of the Sangam age in South India, had been the son of Ilamcetcenni and ruled around 120 C.E. He had been known by the epithets *Karikala Peruvallattan* and *Thirumavalavan*. Karikala led the Chola empire successfully in campaigns to unify the three Dravidian kingdoms.
- His name meant "the man with the charred leg," an injury he received during a fight to escape capture from a scheming competitor for his throne. He had earned praise for the beauty of his war chariots. In the Battle of Venni, Karikala crushed the Pandya and Chera forces, leading to the unifying of the three kingdoms into one under Karikala's rule.

- **He founded Puhar and constructed 160 km embankment along the Kaveri river. This was built with the labor of 12000 slaves who were brought as captives from Sri Lanka. Puhar is identical to Kaveripattanam, which was the Chola capital.** It was a great center of trade and commerce and excavations show that it had a large dock. One of the main sources of wealth of the Cholas was a trade in cotton cloth. They maintained an efficient navy. Under Karikala's successors, the Chola power rapidly declined.

**Q 54.B**

- The Vithala Temple dates back to the 16th century that built during the time of Vijayanagar rulers. The principal deity was Vitthala, a form of Vishnu generally worshipped in Maharashtra. Temple is located in Hampi (located on the southern bank of river Tungabhadra) which was the seat of power of Vijayanagar kingdom. Temple has several halls and a unique shrine designed as a chariot. The Vithala temple has 56 stone pillars that produce musical notes when tapped.
- A characteristic feature of the temple complexes is the chariot streets that extended from the temple gopuram in a straight line. These streets were paved with stone slabs and lined with pillared pavilions in which merchants set up their shops. The famous stone chariot, which has become an iconic symbol of the architecture of Hampi. **Hence, option b is correct.**
- Virupaksha temple dedicated to lord Siva, the patron-deity and family God of the Kings of Vijayanagar. The Virupaksha temple was built over centuries. While inscriptions suggest that the earliest shrine dated to the ninth-tenth centuries, it was substantially enlarged with the establishment of the Vijayanagara Empire. The hall in front of the main shrine was built by Krishnadeva Raya to mark his accession. This was decorated with delicately carved pillars.
- The Hoysaleshwara temple at Halebidu is the most exemplary architectural ensemble of the Hoysalas extant today. Built in 1121CE during the reign of the Hoysala King, Vishnuvardhana Hoysaleshwara. The temple, dedicated to Shiva, was sponsored and built by wealthy citizens and merchants of Dorasamudra. he architecture of the Hoysalas is a hybrid of the nagara style of temple architecture of north India and the dravidian style from the South. The temples were built on platforms and had a star shaped plan.
- The Brihadeeshwar temple at Thanjavur in Tamil Nadu, has been declared as a UNESCO World Heritage Site. This temple is a tribute and a reflection of the power of its patron Rajaraja Chola I. It is an important example of Tamil architecture achieved during the Chola dynasty. Built by emperor Raja Raja Chola I and completed in 1010 AD. The temple is most famous due to its unique architecture. The temple is said to be made up of about 1,30,000 tons of granite. Granite is not found in the surrounding areas. It is not known where this massive granite was brought from. Other significant feature is that the shadow of the gopuram (pyramidal tower usually over the gateway of a temple) never falls on the ground. It is a Hindu temple, which is dedicated towards Lord Shiva.

**Q 55.C**

- The judiciary (Supreme Court of India) ruled that the expression 'Personal Liberty' in Article 21 is of the widest amplitude and it covers a variety of rights that go to constitute the personal liberties of a man. The Supreme Court has reaffirmed its judgement in the Menaka case and in the subsequent cases. It has declared many rights as part of Article 21, Some prominent rights are as follows:
  - Right to live with human dignity.
  - Right to the decent environment including pollution-free water and air and protection against hazardous industries.
  - **Right to livelihood.**
  - Right to privacy.
  - Right to shelter.
  - Right to health.
  - Right to free education up to 14 years of age.
  - Right to free legal aid.
  - Right against solitary confinement.
  - Right to a speedy trial.



**Q 56.A**

- **Article 41 says that** the state shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of ***unemployment, old age, sickness and disablement***, and in other cases of undeserved want.

- **The National Social Assistance Programme (NSAP)** represents a significant step towards the **fulfillment of the Directive Principles in Article 41** and 42 of the Constitution recognizing the concurrent responsibility of the Central and the state governments in the matter.
- National Social Assistance Programme is a social security and welfare program to provide support to aged persons, widows, disabled persons and bereaved families on the death of a primary breadwinner, belonging to below poverty line households.
- **Integrated Child Development Services (ICDS)** is a government program in India which provides food, preschool education, primary healthcare, immunization, health check-up, and referral services to children under 6 years of age and their mothers. This is in realisation of **Article 39(f)** The State shall, in particular, direct its policy towards securing that ***children are given opportunities and facilities to develop in a healthy manner*** and in conditions of freedom and dignity and that childhood and youth are protected against exploitation and against moral and material abandonment
- **The Maternity Benefit Act, 1961** protects the employment of women during the time of her maternity and entitles her of a 'maternity benefit' – i.e. full paid absence from work – to take care of her child. The act is applicable to all establishments employing 10 or more employees. The Maternity Benefit Amendment Act, 2017 has increased the duration of paid maternity leave available for women employees from the existing 12 weeks to 26 weeks. Under the Maternity Benefit Amendment Act, this benefit could be availed by women for a period extending up to a maximum of 8 weeks before the expected delivery date and the remaining time can be availed post-childbirth. For women who are expecting after having 2 children, the duration of paid maternity leave shall be 12 weeks (i.e., 6 weeks pre and 6 weeks post expected date of delivery). This is in realisation of **Article 42:** ***Provision for just and humane conditions of work and maternity relief The State shall make provision for securing just and humane conditions of work and for maternity relief***
- **Mission Indradhanush** is a health mission of the government of India. It was launched in 2014. The scheme seeks to drive towards 90% full immunization coverage of India and sustain the same by the year 2020. Vaccination is being provided against eight vaccine-preventable diseases nationally, i.e. Diphtheria, Whooping Cough, Tetanus, Polio, Measles, a severe form of Childhood Tuberculosis and Hepatitis B and meningitis & pneumonia caused by Haemophilus influenza type B; and against Rotavirus Diarrhea and Japanese Encephalitis in selected states and districts respectively. This could be seen as realization of **Article 39(f)** as well as **Article 47** ***Which states Duty of the State to raise the level of nutrition and the standard of living and to improve public health The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties***

**Q 57.D**

- **Statement 1 is not correct:** Cash Reserve Ratio (CRR) is the share of a bank's total deposit that is mandated by the Reserve Bank of India (RBI) to be maintained with the latter in the form of liquid cash. There is no interest charged or given on CRR. Current CRR stands at around 4%.
- **Statement 2 is not correct:** If not maintained by the banks, it carries a penalty of (bank-rate)+ (3 to 5%) . It is purely cash component.
- **Statement 3 is not correct:** Securities are allowed in SLR and not CRR.

**Q 58.D**

- An elementary particle is a particle that is not made up of any smaller particles. Elementary particles are the building blocks of the universe. There are two main categories of elementary particles: fermions and bosons.
- **Fermions are the matter particles**. All matter is made up of fermions. Fermions are divided into two types of particles: quarks and leptons. Quarks are the basic building blocks for protons and neutrons. Electrons and Neutrinos are included in the category of leptons. **Bosons are force-carrying particles.** This means that they are made up of tiny bundles of energy. **Photons, Gluons, Higgs Boson are examples of bosons. Hence statements 1 and 2 are not correct.**
- The name boson was coined to commemorate the contribution of Satyendra Nath Bose, and Albert Einstein in formulating Bose-Einstein statistics which theorizes the characteristics of elementary particles.
- Bosons follow **Bose-Einstein statistics.** Bosons have, by definition, integer spin. For instance, the spin of a photon is either +1 or -1 and the spin of a 4He atom is always zero. Many bosons can occupy a single quantum state. This allows them to behave collectively and is responsible for the behavior of lasers and superfluid helium. Only one fermion can exist in a given quantum state. This is known as the **Pauli exclusion principle.**

- In particle physics, a massless particle is an elementary particle whose invariant mass (total mass of an object independent of the motion of the system) is zero. The two known **massless particles are - the photon (carrier of electromagnetism) and the gluon (carrier of the strong force).** While Higgs Boson has a very tiny weight of around 220x10−27 kg. **Hence statement 3 is not correct.**

**Q 59.B**

- The office of Whip is mentioned neither in the Constitution of India nor in the Rules of the House nor in a Parliamentary Statute. It is based on the conventions of the parliamentary government. **Hence statement 1 is not correct.**
- Every major political party, whether ruling or Opposition has its own whip in the Parliament. He is appointed by the political party to serve as an assistant floor leader (not floor leader). The floor leader is the leader of the political party. **Hence statement 2 is correct and 3 is not correct.**
- The whip is charged with the responsibility of ensuring the attendance of his party members in large numbers and securing their support in favour of or against a particular issue. He regulates and monitors their behaviour in Parliament. The members are supposed to follow the directives given by the whip. Otherwise, disciplinary action can be taken.

**Q 60.C**

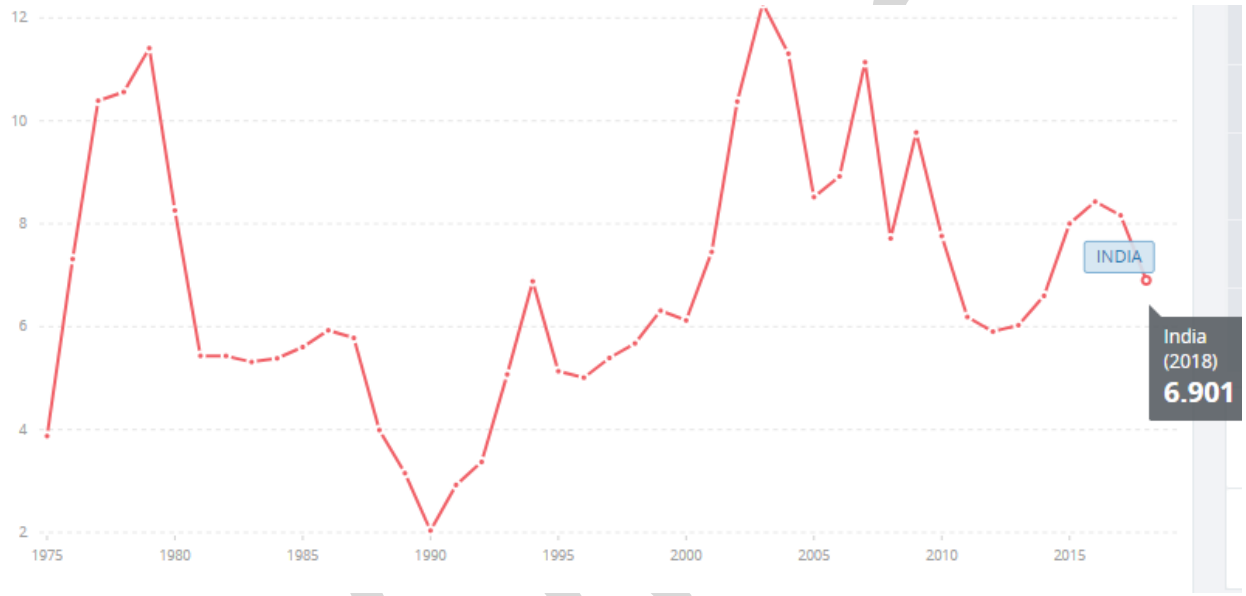
- The purpose of the Cripps Mission in 1942 was to explain to the Indian leaders the British Government's proposals for India's attainment of full self-government after the war and to express in person the Government's desire that Indian leaders should effectively participate in the defense of India and the prosecution of the world war effort as a whole.
- According to the proposals, therefore, **India would, after the war, become a Dominion with the full right to secede from the British Commonwealth**, and with the right to enter into a treaty with any other nation in the world. **Hence statement 1 is not correct.**
- **The new Constitution of India would be framed by a Constituent Assembly composed of representatives of the Provinces and the Indian States**. The representatives of the Provinces were to be elected by the Lower Houses of Provincial Legislatures elected after the cessation of hostilities. The representatives of the States would be nominees of their Rulers. **Hence statement 2 is correct.**
- The constitution-making body would have as its object the framing of a single constitution for the whole of India. The Provinces were to come together to frame a common Constitution, and if they found that they could not overcome their differences and **some Provinces were still not satisfied with the Constitution, then such Provinces could remain out with complete self-government**. **Hence statement 3 is correct**.

**Q 61.A**

- Recently, the Ministry of Consumer Affairs, Food & Public Distribution has launched "Integrated Management of Public Distribution System (IM-PDS) a central sector scheme, to sustain the reforms brought in by the ongoing scheme of 'End to End Computerization of Targeted Public Distribution System (TPDS) Operations.
- **Statement 1 is correct:** The key objectives of the scheme are:
  - to create a central repository of all National Food Security Act, 2013 (NFSA) ration cards/beneficiaries by integrating the existing PDS systems/portals of States/UTs with the Central systems/portals.
  - introduction of National Portability of ration card holders under NFSA.
  - National level de-duplication of all ration cards/beneficiaries' data. The creation of a Central Repository of all ration cards/beneficiary data of all States/UTs shall ensure that no duplicate ration card/beneficiary exists in any State/UT under NFSA.
- Other key focus areas of the IM-PDS scheme:
  - Use of advanced data analytics techniques to bring about continuous improvements in PDS operations.
  - Development of advanced web and mobile-based applications.
  - Facilitation of cross-learning and sharing of best practices between States/UTs, etc.
- **Statement 2 is correct:** The scheme will facilitate the beneficiaries to lift their entitlement foodgrains from any Fair Price Shop of their choice in the country without the need of obtaining a new ration card.
- **Statement 3 is not correct:** The scheme is implemented by the Department of Food & Public Distribution under the Ministry of Consumer Affairs, Food & Public Distribution.

**Q 62.A**

- The import cover of reserves refers to the number of months of imports that the reserves can finance. It can be improved by reducing imports and/or by accumulating foreign assets by way of exports, FDIs, etc. **Hence, statement 1 is correct.**
- At the current levels of imports, and the country's foreign currency assets at $419 billion as of November end, the import cover is adequate to finance more than 11 months' imports. One common rule of thumb is that reserves that can cover three months' worth of imports are adequate. By this criterion, China and Russia, whose reserves cover more than two years' worth, have excessively large hoards. Other emerging countries, like India, Brazil, Thailand and Argentina, also have reserves that are several times the amount needed to cover a quarter's imports.
- India's import cover varied from 7.7 months in 2010 to 5.9 months in 2012 to 11 months in 2019.
- It witnessed the highest import cover in 2003. It was more than 12 Months. **Hence, statement 2 is not correct.**
- **Total reserves in months of imports - India**




**Q 63.A**

- The Speaker is elected by the Lok Sabha from amongst its members (as soon as may be, after its first sitting). Whenever the office of the Speaker falls vacant, the Lok Sabha elects another member to fill the vacancy. The date of election of the Speaker is fixed by the President. **Hence statement 1 is correct.**
- In Britain, the Speaker is strictly a non-party man. There is a convention that the Speaker has to resign from his party and remain politically neutral. This healthy convention is not fully established in India where the Speaker does not resign from the membership of his party on his election to the exalted office. **Hence statement 2 is not correct.**
- Whenever the Lok Sabha is dissolved, the Speaker does not vacate his office and continues till the newly-elected Lok Sabha meets. The Constitution provides that the Speaker of the last Lok Sabha vacates his office immediately before the first meeting of the newly-elected Lok Sabha. **Hence statement 3 is not correct.**

**Q 64.C**

- India released its first National Essential Diagnostics List (NEDL). WHO released the first edition of the essential diagnostics list (EDL) in May 2018. WHO's EDL acts as a reference point for the development of national EDL, India's diagnostics list has been customized and prepared as per the landscape of India's health care priorities.
- The Indian Council of Medical Research (ICMR) has developed the National Essential Diagnostics List (NEDL). NEDL builds upon the Free Diagnostics Service Initiative and other diagnostics initiatives of the Health Ministry to provide an expanded basket of tests at different levels of the public health system.
- The list has been developed for all levels of health care - village level, Sub-center/Health and Wellness Centres (HWs), Primary Health Centres (PHCs), Community Health Centre (CHC), Sub-District Hospital (SDH) and District Hospital (DH).
- NEDL consists of general; laboratory tests required for routine patient care and for diagnosis of a wide array of both communicable and non-communicable diseases.

- EDL will also **enable standardization of technology/diagnostic services and will aid in the promotion of R&D for new appropriate and effective diagnostics which in turn will lead to a reduction in costs.**
- Implementation of NEDL will **help in addressing antimicrobial resistance crisis.** It enables improved health care delivery through evidence-based care, improved patient outcomes, and reduction in out-of-pocket expenditure; effective utilization of public health facilities; effective assessment of disease burden, disease trends, surveillance, and outbreak identification.
- NEDL aims to bridge the current regulatory system's gap that does not cover all the medical devices and in-vitro diagnostic devices (IVD).
- **Hence both the statements are correct.**

**Q 65.B**

- The black drongo is a small Asian passerine bird of the drongo family Dicruridae. **It is a common resident breeder in much of tropical southern Asia from southwest Iran through India and Sri Lanka east to southern China and Indonesia and accidental visitors of Japan.** It eats termites, bees, butterflies, dragonflies, and ants, making it primarily an insectivore, but they have been known to explore the possibility of preying on smaller birds, reptiles and even bats, making it quite the opportunist.
- The habit of being pugnacious in defense of its nest and territory by attacking all predaceous enemies is quite similar to that of crows. It is a common sight to see these birds chase after crows in the air, swooping at them with agility in flight only attained by falcons. Their aggressive behavior often sees them land on larger birds of prey, like falcons and eagles, and peck at them repeatedly to drive them away.
- In areas outside Delhi-NCR where foxes and jackals exist, they'll attack them too, with the same courage, earning themselves the name Kotwal (a police officer in Hindi). **All this aggressive behavior towards birds of prey and general marauders encourages gentle species like doves, orioles, and bulbuls to nest in the vicinity. These birds find protection in the territory of drongos and thus prefer nesting in drongo territory.** They also try and mimic other bigger birds like the Indian Grey Hornbill, in order to ensure their safety.
- The breeding season extends from April to August. Their nest is a broad, shallow cup of twigs and grass, lined neatly with cobwebs or fine grass, suspended in a horizontal fork of a tree, at a considerable height from the ground.

**Q 66.C**

- NCAP. **"Overall objective of the NCAP is comprehensive mitigation actions for prevention, control and abatement of air pollution** besides augmenting the air quality monitoring network across the country and strengthening the awareness and capacity building activities. Tentative national level target of 20%–30% reduction of PM2.5 and PM10 concentration by 2024 is proposed under the NCAP taking 2017 as the base year for the comparison of concentration.
- **Statement 1 is not correct.** The **NCAP will be a mid-term, five-year action plan with 2019 as the first year**. However, the international experiences and national studies indicate that significant outcome in terms of air pollution initiatives are visible only in the long-term, and hence the programme may be further extended to a longer time horizon after a mid-term review of the outcomes City specific action plans are being formulated for **122 non-attainment cities identified for implementing mitigation actions under NCAP. Hence, Statement 2 is not correct.**
- **Statement 3 is correct**. **Collaborative and participatory approach** involving relevant Central Ministries, State Governments, local bodies and other Stakeholders with focus on all sources of pollution forms the crux of the Programme.
- **Statement 4 is correct:** One important feature of NCAP include, an increasing number of monitoring stations in the country including rural monitoring stations, technology support, emphasis on awareness and capacity building initiatives, setting up of certification agencies for monitoring equipment, source apportionment studies, emphasis on enforcement, specific sectoral interventions

**Q 67.A**

- **<u>Pardoning Power of the President</u>**
  - Article 72 empowers the President to grant pardons and to suspend, remit or commute sentences in certain cases.
  - The President shall have the power to grant pardons, reprieves, respites or remissions of punishment or to suspend, remit or commute the sentence of any person convicted of any offence:
    - ✓ In all cases where the punishment or sentence is by a Court Martial;

- ✓ In all cases where the punishment or sentence is for an offence against any law relating to a matter to which the executive power of the Union extends;
- ✓ In all cases where the sentence is a sentence of death.

- **Pardoning Power of the Governor**
  - Article 161 of the Indian Constitution empowers the governor of a state to grant pardons and to suspend, remit, commute sentences. The scope of the pardoning power of the President under Article 72 is wider than the pardoning power of the Governor under Article 161.
  - The Governor of a State shall have the power to grant pardons, reprieves, respites or remissions of punishment or to suspend, remit or commute the sentence of any person convicted of any offence against any law relating to a matter to which the executive power of the State extends.
- **Difference between the Pardoning Powers of the President and the Governor**
  - The power of the President to grant pardon extends in cases where the punishment or sentence is by a Court Martial but Article 161 does not provide any such power to the Governor. **Hence option 2 is not correct.**
  - The President can grant pardon in the case of a death sentence, but the pardoning power of the Governor does not extend to death sentence cases. **Hence option 1 is correct.**

**Q 68.C**

- **Black carbon**-the soot emitted during incomplete combustion of fossil fuels in coal-fired power plants, cars and other equipment. **Hence, pair 1 is correctly matched.**
- **Brown carbon** -which originates primarily during the combustion of organic biomass and is a close cousin of black carbon. **Hence, pair 2 is not correctly matched.**
- Black and brown forms of carbon are both very important for climate change since their respective light and heat absorptive properties impact the greenhouse balance of the planet. They also adversely impact human health due to their contribution to smog.
- On the contrary**, Blue carbon i**s the carbon captured by the oceans and coastal ecosystems**. Hence, pair 3 is correctly matched.**
- Coastal vegetated landscapes, such as mangrove forests, salt marshes, and seagrass beds, are highly productive at sequestering carbon, storing it in above- and below-surface biomass such as stems, leaves, root material and sediments. Although these habitats cover less than 0.5% of the oceans' seabed and shore areas, they are responsible for 50%-70% of all carbon absorbed by ocean sediments. **Not only do ocean and coastal ecosystems store a lot of carbon, but they also do it quickly.** Salt marshes, for example, have a carbon sequestration rate that is over 50 times faster than tropical rainforests. Blue carbon potential is thus a relevant means for controlling atmospheric greenhouse gas concentrations
- **Green carbon** is carbon stored by plants and soils

**Q 69.A**

- **Extirpation (also known as 'local extinction')** describes the situation in which a **species or population no longer exists within a certain geographical location.** Unlike extinction, whereby a species no longer exists anywhere, extirpation means that at least one other population of the species still persists in other areas.
- Most species of plants and animals have a number of different breeding populations, which exist either globally or within a defined region or habitat. **This means that when a population ceases to exist in a certain area, the other populations remain to keep the species extant (still in existence).**
- Since the entire species is not extinct, it is possible for populations to recolonize after extirpation. Examples of stocks and populations assessed by the IUCN for the threat of local extinction are **Marsh deer, Blue whale - North Pacific stock and North Atlantic stock, Bowhead whale etc.**
- **Hence option a is the correct answer.**

**Q 70.B**

- **Article 304**. **Restrictions on trade, commerce and intercourse among States** Notwithstanding anything in Article 301 or Article 303, the Legislature of a State may by law (a) impose on goods imported from other States or the Union territories any tax to which similar goods manufactured or produced in that State are subject, so, however, as not to discriminate between goods so imported and goods so manufactured or produced; and (b) impose such reasonable restrictions on the freedom of trade, commerce or intercourse with or within that State as may be required in the public interest: Provided that **no Bill or amendment for the purposes of clause shall be introduced or moved in the Legislature of a State without the previous sanction of the President**

- **Article 3**: Formation of new States and alteration of areas, boundaries or names of existing States: Parliament may by law(a) form a new State by separation of territory from any State or by uniting two or more States or parts of States or by uniting any territory to a part of any State; (b) increase the area of any State; (c) diminish the area of any State; (d) alter the boundaries of any State; (e) alter the name of any State; Provided that **no Bill for the purpose shall be introduced in either House of Parliament except on the recommendation of the President**
- **A Money Bill under Article 110** may only be introduced in Lok Sabha, **on the recommendation of the President**. It must be passed in Lok Sabha by a simple majority of all members present and voting. Following this, it may be sent to the Rajya Sabha for its recommendations, which Lok Sabha may reject if it chooses to. If such recommendations are not given within 14 days, it will be deemed to be passed by Parliament.
- **Constitutional amendment bills under Article 368: Does NOT require a prior recommendation of the president** and it must be passed by both Houses of Parliament. It would require a simple majority of the total membership of that House, and a two-thirds majority of all members present and voting. Further, if the Bill relates to matters like the election of the President and Governor, executive and legislative powers of the centre and states, the judiciary, etc., it must be ratified by at least half of the state legislatures.

**Q 71.A**

- In 1935 the Communist Party was reorganized under the leadership of P.C. Joshi. Faced with the threat of fascism the Seventh Congress of the Communist International, meeting at Moscow in August 1935, radically changed its earlier position and advocated the formation of a united front with socialists and other anti-fascists in the capitalist countries and with bourgeois-led nationalist movements in colonial countries.
- The Indian Communists were to once again participate in the activities of the mainstream of the national movement led by the National Congress. The theoretical and **political basis for the change in communist politics in India was laid in early 1936 by a document popularly known as the Dutt-Bradley Thesis.**
- **According to this thesis, the National Congress could play 'a great part and a foremost part in the work of realizing the anti-imperialist people's front.**
- **Hence option (a) is the correct answer.**

**Q 72.A**

- **All the above pairs except pair 4 are not correctly matched**
- **Bugyals** are the summer grassland in the higher reaches of the Himalayan regions. The bhotia tribe inhabits the area, who migrate to these grasslands during the summer season.
- **Barchans** are the crescent-shaped sand dunes found in the western margin of the peninsular plateau ( Rajasthan)
- **Kayals**: The Malabar coast has got certain distinguishing features in the form of backwaters( kayals) which are used for fishing inland navigation and also due to its special attraction for tourists. Every year the Nehru Trophy Vallamkali (boat race) is held in Punnamada Kayal in **Kerala**.
- **Karewas** are the thick deposits of glacial clay and other materials embedded with moraines.

**Q 73.D**

- One of the latest fads from the future is smart shoes – the type integrated with high-tech features. Many start-ups and companies are engaged in building 'Smart Shoes'. Nike HyperAdapt is gearing up to introduce the second generation of its self-lacing shoes which uses Nike E.A.R.L. (Electric Adaptable Reaction Lacing) technology that allows the footwear to adjust to the contours of your foot. The smart shoes, called FootLogger, make use of the biometric data **such as weight,** gathered from its user to send suggestions on how to improve gait (walking pattern), diagnose potential diseases, and improve athletic performance. It has eight sensors paired with one accelerometer to aid in recording the wearer's exercise habits.
- Using the built-in sensors, smart shoes are also capable of detecting "abnormal" movements, such as a fall or slip, and trigger a pre-programmed alarm.

**Q 74.A**

- India recently pitched for its membership of Nuclear Suppliers Group (NSG) in New York.
- NSG was established in 1975 is a group of 48 member countries ("NSG Participating Governments") that seeks to contribute to the non-proliferation of nuclear weapons through the implementation of two sets of guidelines for their nuclear exports and nuclear-related exports.
- **Statement 1 is correct:** The NSG aims to prevent nuclear exports (nuclear technology and nuclear materials) for commercial and peaceful purposes from being used to make nuclear weapons.
- The NSG Guidelines are implemented by each Participating Government (PG) in accordance with its national laws and practices.
- Decisions on export applications are taken at the national level in accordance with national export licensing requirements.
- **Statement 2 is not correct:** All current Nuclear Suppliers Group (NSG) members are signatories to the Non-Proliferation Treaty (NPT).
- **India is one of the only five countries that either did not sign the NPT or signed but withdrew, thus becoming part of a list that includes Pakistan, Israel, North Korea, and South Sudan.**

**Q 75.D**

- **Committee on Private Members' Bills and Resolutions:** This committee classifies bills and allocates time for the discussion on bills and resolutions introduced by private members. **This is a special committee of the Lok Sabha** and consists of 15 members including the Deputy Speaker as its chairman. **The Rajya Sabha does not have any such committee**. The same function in the Rajya Sabha is performed by the Business Advisory Committee of that House.
- **Committee on Public Undertakings:** This committee was created in 1964 on the recommendation of the Krishna Menon Committee. Originally, it had 15 members (10 from the Lok Sabha and 5 from the Rajya Sabha). However, in 1974, its membership was raised to 22 (**15 from the Lok Sabha and 7 from the Rajya Sabha**).
- **Estimates Committee:** The origin of this committee can be traced to the standing financial committee set up in 1921. The first Estimates Committee in the post independence era was constituted in 1950 on the recommendation of John Mathai, the then finance minister. Originally, it had 25 members but in 1956 its membership was raised to 30. **All the thirty members are from Lok Sabha only. The Rajya Sabha has no representation in this committee.**
- **Committee on Absence of Members:** This committee considers all applications from members for leave of absence from the sittings of the House, and examines the cases of members who have been absent for a period of 60 days or more without permission. **It is a special committee of the Lok Sabha and consists of 15 members. There is no such committee in the Rajya Sabha** and all such matters are dealt by the House itself.

**Q 76.B**

- Asian Waterbird Census, the largest such census in Asia, is organized by Wetlands International, is an international programme that focuses on monitoring the status of waterbirds and wetlands. It also aims to increase public awareness on issues related to wetland and waterbird conservation. **Hence, statement 1 is correct.**
- The AWC was started in 1987, and many birders were initiated into bird counting and monitoring through this project. To take part one simply has to visit a wetland and count the birds he/she see there. The census is carried out **each January as a voluntary activity at the national and local levels.** The AWC is **coordinated by Wetlands International** as part of the global programme, the "International Waterbird Census".
- In India, the AWC is **annually coordinated by the Bombay Natural history Society (BNHS) and Wetlands International.** BNHS is a non-government Organisation (NGO) founded in the year 1883. It engages itself in the conservation of nature and natural resources and also in the research and conservation of endangered species. **Hence, statement 2 is correct and statement 3 is not correct.**

**Q 77.A**

- **Perform Achieve and Trade (PAT) scheme is a flagship progarmme of Bureau of Energy Efficiency under the National Mission for Enhanced Energy Efficiency (NMEEE).** NMEEE is one of the eight national missions under the National Action Plan on Climate Change (NAPCC) launched by the Government of India in the year 2008. **BEE functions under the administrative control of the Ministry of Power. Hence statement 1 is correct.**

- **Energy Conservation Act, 2001 empowers BEE** to put in place the policies, rules and regulations to improve energy efficiency in energy-intensive industries. **The genesis of the PAT mechanism flows out of the provision of the Energy Conservation Act, 2001.** Provisions for energy efficiency improvement targets in energy efficiency are set under section 14, in a manner that reflects fuel usage and the economic effort involved. **Hence statement 2 is correct.**
- PAT scheme is a regulatory instrument to reduce specific energy consumption in energy-intensive industries, with an associated market-based mechanism to enhance the cost-effectiveness through certification of excess energy saving which can be traded.
- Under this scheme, reductions in specific energy-saving targets are assigned to Designated Consumers (DCs) for a three-year cycle. **Ministry of Power issues energy saving certificates (ESCerts)** in lieu of energy-saving beyond their targets and entitlement to purchase of ESCerts for compliance to meet their shortfall towards their targets.
- **The ESCerts could be traded at two energy exchanges that is Indian Energy Exchange (IEX) and Power Exchange India Limited (PXIL)** or bought by other units under PAT who can use them to meet their compliance requirements. Units that are unable to meet the targets either through their own actions or through the purchase of EScerts are liable to the financial penalty under the Energy Conservation Act. **Hence statement 3 is not correct.**

**Q 78.A**

- **The Department of Administrative Reforms and Public Grievances (DARPG)** is the nodal agency of the Government of India for administrative reforms as well as redressal of public grievances relating to the states in general and those pertaining to Central Government agencies in particular.
- It endeavors to document and disseminate successful good governance practices by way of audio-visual media and publications. It also undertakes activities in the field of international exchange and cooperation to promote public service reforms. Following items fall under the purview of this department -:
  - Administrative Reforms, including e-governance and dissemination of best practices.
  - Organisation and methods.
  - Policy, coordination and monitoring of issues relating to
    - ✓ Redress of public grievances in general; and
    - ✓ Grievances pertaining to Central Government agencies.
  - Research in public management;
  - Liaison with State Governments, professional institutions etc. in public management matters.
  - **Administration of Central Secretariat Manual of Office Procedure**
  - **Implementation of the Plan Scheme of Modernization of Government offices.**
- **National Centre for Good Governance**
  - The National Centre for Good Governance (NCGG) is an autonomous institute under the **aegis of Department of Administrative Reforms and Public Grievances,** Government of India. It has been set up to assist in bringing about governance reforms through studies, training, knowledge sharing and promotion of good ideas. It seeks to carry out policy-relevant research and prepare case studies; curate training courses for civil servants from India and other developing countries; provide a platform for sharing of existing knowledge and pro-actively seek out and develop ideas for their implementation in the government, both at the States and the Central level. **Hence statement 3 is correct.**
- The Department of Consumer Affairs is one of the two Departments under the Ministry of Consumer Affairs, Food & Public Distribution. It has been entrusted with the implementation of the Consumer Protection Act, 1986. **Hence statement 2 is not correct.**
- Sevottam model, a quality management framework applicable to public service delivery organisations, in all its departments. Service Delivery Excellence Model provides a framework for organisations to assess and improve the quality of service delivery to citizens. DARPG created the Sevottam model to improve the quality of service delivery to citizens. **Hence statement 1 is correct.**

**Q 79.B**

- Monetary policy decisions by central banks can have far-reaching implications for the economy, investors, savers and borrowers. Between1980 to 1998, RBI adopted operating method of monetary policy 'monetary targeting with feedbacks'. This method has been later altered pursuant to liberalization of financial markets and opening up of the economy and short-term deviation in the relationship between money, output and prices.
- From 1998-99 till February 2015, RBI was following Multiple Indicator Approach (MIA), in which a number of macroeconomic and financial variables are considered while deciding the monetary policy.

Under MIA, Central Bank's rate decisions were taken based on variables like interest rates, rate of return in different markets, foreign trade, Capital flows, inflation, exchange rate etc. After this, flexible inflation targeting (FIT) regime was introduced in India.

- **The expert committee headed by Dr. Urjit Patel** recommended revising the monetary policy framework which submitted its report in 2014. It suggested that RBI **abandon the 'multiple indicator approach' and make inflation targeting the primary objective of its monetary policy.** The Reserve Bank of India (RBI) officially adopted inflation targeting (IT) as a monetary policy strategy in February 2015. Inflation targeting has steadily gained popularity with increasing number countries adopting the frame work.
- Flexible Inflation targeting (FIT) regime is a monetary policy strategy used by Central Banks for maintaining price level at a certain level or within a range. It indicates the primacy of price stability as the key objective of monetary policy. The argument for price stability stems from the fact that rising prices create uncertainties in decision making, adversely affecting savings and encouraging speculative investments.
- The FIT regime in India is operationalised by the Monetary Policy Committee (MPC) which consists of Governor of the Reserve Bank of India, Deputy Governor of the Reserve Bank of India, One officer of the Reserve Bank of India to be nominated by the Central Board and three representatives of the Central government. The MPC is responsible for determining the policy interest rate (repo rate). The Cash Reserve Ratio is determined by the Reserve Bank of India, not MPC.

**Q 80.C**

- **Statement 1 is correct:** Hague Convention on the Civil Aspects of International Child Abduction is a multilateral treaty that came into existence on 1st December 1983. The convention seeks to protect children from the harmful effects of abduction and retention across international boundaries by providing a procedure to bring about their prompt return. The convention is intended to enhance the international recognition of rights of custody and access arising in place of habitual residence and to ensure the prompt return of the child who is wrongfully removed or retained from the place of habitual residence. It seeks to return children abducted or retained overseas by a parent to their country of habitual residence for the courts of that country to decide on matters of residence and contact.
- **Statement 2 is not correct:** The convention shall apply to any child, up to the age of 16 years who is a habitual resident of any of the contracting states.
- **Statement 3 is not correct:** Over 90 countries are party to the Convention. Despite pressure from the US and European countries, India (a UN member) is yet to ratify it.

**Q 81.A**

- Maritime States Development Council (MSDC) is an **apex advisory body for the development of the Maritime sector and aims to ensure integrated development of Major and non-Major Ports. Hence statement 1 is correct.**
- The MSDC was constituted in **May 1997 (during Prime ministership of IK Gujral)** to assess in consultation with State Governments, the future development of existing and new Minor Ports by the respective Maritime States either directly or through captive users and private participation.
- Further, MSDC also monitors the development of minor ports, captive ports and private ports in the Maritime States with a view to ensure their integrated development with Major Ports and to assess the requirements of other infrastructure requirements like roads/rail/IWT and make suitable recommendations to the concerned Ministers.
- **Maritime States Development Council,** the apex advisory body for the development of the sector, **has representatives from maritime states (not Chief Ministers)** and shipping ministry. **It is chaired by the Minister of Shipping. Hence statement 2 is not correct.**

**Q 82.D**

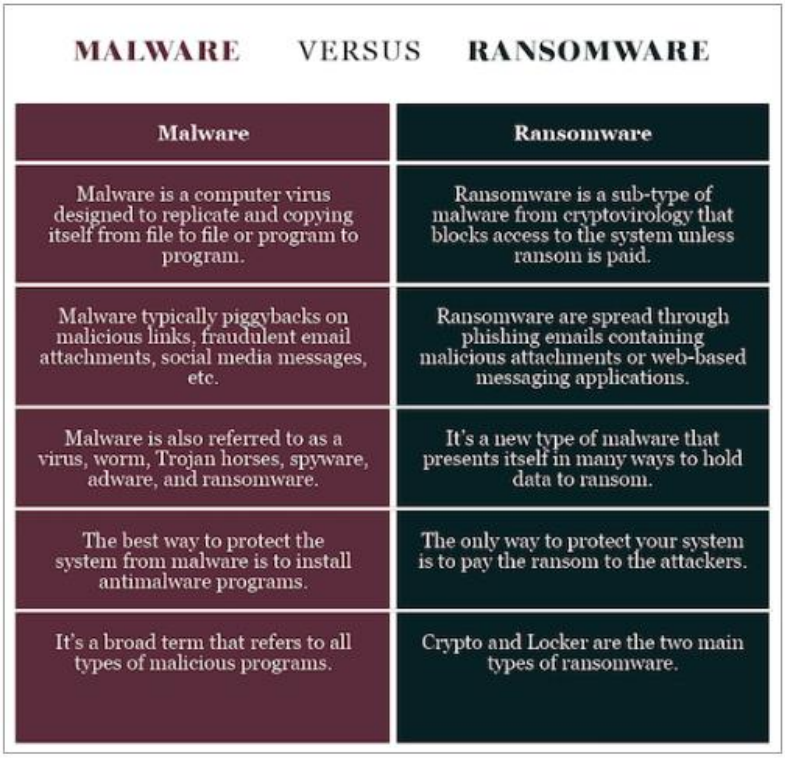
- **Sterling balances were India's earnings in foreign currency on its exports for the war, deposited in the Bank of England in the form of sterling to the credit of the Reserve Bank of India (RBI) account in England.** The balance had grown with import controls limiting forex outflows. The corresponding increase in rupee circulation stoked war inflation in India. **Hence, option (d) is the correct answer.**
- After the war ended, the transfer of the sterling balances was negotiated between India and Britain. (After Partition, Pakistan joined the talks.) Under this interim agreement, India could spend from the balances in dollars, as Britain had agreed to make the pound convertible under the terms of a loan from the U.S. But Britain soon repudiated the convertibility clause, in turn altering the character of the agreement entered into with India. Pound convertibility was ruled out by the sorry state of British production after the war

years. Pent-up demand for consumer goods could only be met with imports from the U.S. Pound convertibility would have exhausted British forex reserves.

- A delegation was sent back to London to renegotiate the convertible portion of the sterling balances. It returned empty-handed. The negotiations were concluded in the summer of 1949, after the completion of the bitter separation of Indian and Pakistani finances. The Indian side, led by Finance Minister John Mathai, agreed to two types of deductions from the sterling balances. First, towards the pensions of former British members of the ICS. Second, the value of military equipment, regardless of the condition and worth, the British forces had left behind. The subtractions added to £100 million. Limits were placed on how much could be drawn in a given period from the balances.

**Q 83.A**

- **Malware is any malicious code or program that gives an attacker explicit control over your system. It's a broad terms that may refer to all types of malicious programs including viruses, bugs, worms, bots, rootkits, spyware, adware, Trojans, and even ransomware**. It acts like an inside agent that installs malicious codes on your computer or trick you into loading a malicious program either through malicious email attachments or web-based messaging applications. As a result, the attacker gets hold of your system and the system won't respond to your commands anymore.
- Ransomware is a sub-set of malware which is designed to target **individuals or organizations.** It's a type of malware that allows the attackers to gain full control of the system and restricts access to the personal and confidential files unless a ransom is paid. **It is a malicious program that locks up the system files and encrypts them, and demands a ransom from the user to unlock the system**. There are three main modes of distribution for the major ransomware families. One of the ways ransomware spreads is by replicating itself rapidly to other computers for maximum impact. Ransomware that spread by replicating itself is called a 'cryptoworm'. The WannaCry attack that caused damage worldwide in 2017 is an example of this. This malware also spread as ransomware-as-a-service (RaaS). The third most common way of their spread is as automated active adversary attack, where attackers manually deploy the ransomware following an automated scan of networks for systems with weak protection.
- **Statement 2 is not correct: M**alware and ransomware can affect computer, phone, or tablet to larger systems, such as servers and databases. Some of the recent ransomware include WannaCry, Ryuk, Bad Rabbit, Cerber, GandCrab, Jigsaw, Katyusha, LockerGoga, PewCrypt, SamSam etc.




**Q 84.D**

- **NASA proposed the concept of Great Observatories, a series of four space-borne observatories designed to conduct astronomical studies over many different wavelengths (visible, gamma rays, X-rays, and infrared)** between 1990 and 2003. The first element of the program is the **Hubble Space Telescope (HST). Hubble views the universe in both ultraviolet visual, and near-infrared wavelengths.**

- The **Compton Gamma Ray Observatory (CGRO)** was the second of NASA's Great Observatories. Launched on April 5, 1991, Compton observed objects that emitted **Gamma Rays** as opposed to any of the other light types, such as Gamma-Ray Bursts (GRBs). Compton was safely deorbited and re-entered the Earth's atmosphere on June 4, 2000.
- The third member of the Great Observatory family, the **Chandra X-Ray Observatory (CXO)**, was deployed from a Space Shuttle and boosted into a high-Earth orbit in July 1999. This observatory is observing such objects as black holes, quasars, and high-temperature gases throughout the **x-ray portion of the EM spectrum.**
- Launched in 2003, the **Spitzer Space Telescope** represented the fourth and final element in NASA's Great Observatory program. It was a space telescope that used **infrared light** as its primary means of observing distant objects. By detecting infrared light, with wavelengths ranging from about 700 nanometres -- too small to see with the naked eye -- to about a millimetre, Spitzer could help astronomers unveil the presence of cosmic entities which are too cold to emit much visible light, including planets outside our solar system. Spitzer also found a previously undetected ring around Saturn, composed of sparse dust particles that visible-light observatories cannot see. **Recently NASA has decommissioned the Spitzer mission in anticipation of the launch of the James Webb Space Telescope (JWST) in 2021.**

**Q 85.D**

- The term single-cell protein (SCP) is used to describe protein derived from cells or protein extracted from various microorganisms such as **yeast, fungi, algae, and bacteria,** which are grown for mass production from various inexpensive carbon sources such as agricultural wastes for the synthesis of food for humans or animals.
- The dried cells of microorganisms or the whole organism is harvested and consumed. This is a **rich protein source** that can be used as a human food supplement and in animal feeds.
- SCP production may have great potential for feeding the ever-increasing world population. Massive quantities of SCP can be produced in a single day. As a source of protein, it is very promising, with **potential to satisfy the world shortage of food** as the population increases.
- SCP may be enriched with a high content of proteins, fats and carbohydrates, nucleic acids, and vitamins. **Microbes like Spirulina** can be grown easily on materials like waste water from potato processing plants (containing starch), straw, molasses, animal manure and even sewage, to produce large quantities and can serve as food rich in protein, minerals, fats, carbohydrate and vitamins.
- Incidentally such utilisation also reduces environmental pollution. However, the disadvantage of SCP as a human food source is the **high content of nucleic acids,** which may cause serious problem in the human digestive track due to the limited capacity for the complete digestion of nucleic acids.

**Q 86.C**

- **River capture** is a natural process which is more active in the youthful stage of the valley development because the streams are actively engaged in headward erosion and valley lengthening. The stronger and more powerful streams capture the upper courses of weak and sluggish streams. **Sections of valley abandoned after such captures are known as wind gaps. Hence statement 1 is correct.**
- Windgaps contrast with the water gaps that still contain transverse streams. The stream capture usually occurs in hilly areas where the river's erosion power is maximum. **So they are majorly formed in mountainous regions.**
- Water gaps and wind gaps often provide routes which, due to their gently inclined profile, are suitable for **trails, roads, and railroads through mountainous terrain. Hence statement 2 is correct.**

**Q 87.B**

- The contrasting nature of the land and water surfaces in relation to incoming shortwave solar radiation largely affects the spatial and temporal distribution of temperature.
- It may be pointed out that land becomes warm and cold more quickly than the water body. This is why even after receiving an equal amount of insolation the temperature of land becomes more than the temperature of the water body.

**The following reasons explains the differential rate of heating and cooling of land and water:**

- Compared to air or land, **water is a slow conductor of heat.** That means it needs to gain more energy than a comparable amount of air or land to increase its temperature
- The sun's rays penetrate to a depth of only 3 feet in land because it is opaque but they penetrate to a greater depth of several meters in water because it is transparent to solar radiation.

- The thin layer of soils and rocks of land, thus, gets heated quickly because of the greater concentration of insolation in a much smaller mass of material of the ground surface. Similarly, the thin layer of ground emits heat quickly and becomes colder.
- On the other hand, the same amount of insolation falling on the water surface has to heat larger volume of water because of the penetration of solar rays to greater depth and thus the temperature of ground surface becomes higher than that of the water surface through the amount of insolation received by both the surfaces may be equal.
- The heat is concentrated at the place where insolation is received and **there is a very slow process of redistribution of heat by conduction because the land surface is static. Hence statement 2 is correct.**
- It may be noted that the downward distribution of temperature in the land surface within a day is effective upto depth of only 10 cm. Thus, the land surface becomes warm during the day and cold during the night very rapidly.
- On the other hand, water is mobile, the upper surface of the water becomes lighter when heated by insolation and thus moves away horizontally to other places and the solar rays have to heat fresh layer of cold water.
- Secondly, heat is redistributed in water bodies by sea waves, ocean currents and tidal waves. All these extend the period of warming the surface of water.

**More evaporation from the sea.**

- There is more evaporation from the seas and the oceans and hence more heat is spent in this process with the results oceans get less insolation than the land surface. On the other hand, there is less evaporation from the land surface because of very limited amount of water.

**Specific heat**

- **The specific heat capacity (the amount of heat needed to raise the temperature of one gram of the substance by 1 degree) of wate**r is **much greater than the land** because the relative density of water is much lower than that of the land surface. It means more heat is required to raise the temperature of one gram of water by 1 degree than one gram of land. **Hence statement 1 is not correct.**
- Oceanic areas are generally clouded and hence they absorb less insolation than land surface. But clouds absorb outgoing terrestrial radiation and counter- radiate heat back to the earth's surface.
- This process retards the loss of heat from the oceanic surfaces and hence slows down the mechanism of cooling of the air lying over the oceans. On the other hand, land surfaces receive more insolation at a faster rate because of less cloudiness and simultaneously lose more heat through outgoing terrestrial radiation very quickly.

**Q 88.A**

- **A blockchain is a decentralized and distributed digital ledger** that is used to record transactions across many computers so that the record cannot be altered retroactively without the alteration of all subsequent blocks. This allows the participants to verify and audit transactions inexpensively.
- A blockchain **is an immutable ledger of information**. Any change purported to be made in one block will also lead to change in the preceding blocks and therefore, destroy the integrity of the data. **Hence statement 1 is correct.**
- **Bitcoin is a cryptocurrency.** It is a decentralized digital currency without a central bank or single administrator that can be sent from user to user on the **peer-to-peer bitcoin network** without the need for intermediaries. Transactions are verified by network nodes through cryptography and recorded in a blockchain. **Bitcoin was invented in 2008** by a group of people using the name **Satoshi Nakamoto.**
- While the government of India has **eliminated the possibility of considering cryptocurrencies as legal tender,** it has endorsed the idea of exploring the use of blockchain technology for ushering in India's digital economy. Also, RBI in 2018 RBI directed all banks and other financial entities to stop relations with any cryptocurrency company. **Hence statement 2 is not correct.**

**Q 89.D**

- Krishnadeva Raya's rule was characterised by expansion and consolidation. This was the time when the land between the Tungabhadra and Krishna rivers (the Raichur doab) was acquired (1512), the rulers of Orissa were subdued (1514) and severe defeats were inflicted on the Sultan of Bijapur (1520).
- Although the kingdom remained in a constant state of military preparedness, it flourished under conditions of unparalleled peace and prosperity. Krishnadeva Raya is credited with building some fine temples and adding impressive gopurams to many important south Indian temples.

- **He also founded a suburban township near Vijayanagara called Nagalapuram after his mother, Nagala Devi.** This town is home to Vedanarayana Temple, where the presiding deity Vishnu is in the form of Matsya, the first incarnation of Dasavatara. **Hence, option (d) is the correct answer.**

**Q 90.B**

- The intellectual property Appellate Board (IPAB) was established under section 83 of the Trade Marks Act. It was constituted in 2003 to hear appeals against the decisions of the Registrar under the Trade Marks Act, 1999 and the Geographical Indications of Goods (Registration and Protection) Act, 1999. **Hence, statement 1 is correct.**
- The IPAB comprises a chairman (a retired judge of high court) and vice-chairman. In addition, there are three technical members: one for patent and one for trademark; the third member hears the case based on the nature of the dispute. **Hence, statement 2 is not correct.**
- The Intellectual Property Appellate Board has its headquarters at Chennai.
- As per the sections of the Finance Act 2017, the Intellectual property Appellate Board shall exercise the jurisdiction, powers and authority conferred on it by or under this Copy Right Act, 1957. In view of the same, all the cases pending before the Copy Right Board were transferred to Intellectual Property Appellate Board.
- The applicants of all Intellectual Property Rights (IPRs) can directly file a Special Leave Petition (SLP) before the Hon'ble Supreme Court against any order of Intellectual Property Appellate Board (IPAB). They can also prefer a writ petition before the High Court against orders of IPAB and IP offices by invoking Article 226 of the Constitution of India and then file SLP before the Supreme Court. **Hence, statement 3 is not correct.**

**Q 91.A**

- Key Biodiversity Areas (KBAs) is an umbrella term commonly used to include areas that contribute to the global persistence of biodiversity, including vital habitat for threatened plant and animal species in terrestrial, freshwater and marine ecosystems.
- Sites qualify as global KBAs if they meet one or more of 11 criteria, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. The KBA criteria can be applied to species and ecosystems in terrestrial, inland water and marine environments. **Hence, statement 1 is correct.**
- The criteria for designating a site as KBA have been described in the document "The Global Standard for the Identification of Key Biodiversity Areas (2016)" by International Union for Conservation of Nature (IUCN). IUCN identifies 531 KBA sites in India but these have no legal basis. **Hence, statement 2 is not correct.**

**Q 92.A**

- **<u>Harmful effects of acid rain:</u>**
- **Effects on humans:** Bad smells, reduced visibility; irritation of the skin, eyes and the respiratory tract. Some direct effects include chronic bronchitis, pulmonary emphysema, cancer and **increased neurological diseases in humans**. **Hence, statement 1 is correct.**
- **Effects on soil: The exchange between hydrogen ions and the nutrient cations like potassium and magnesium in the soil cause leaching of the nutrients, making the soil infertile.** An increase in ammonia in the soil due to a decrease in other nutrients decrease the rate of decomposition. The nitrate level of the soil is also found to decrease. However the impact of acid rain on soil is less in India; because Indian soils are mostly alkaline, with good buffering ability. **Hence, statement 2 is correct.**
- **Effects on microorganisms:** pH determines the proliferation of any microbial species. The optimum pH of most bacteria and protozoa is near neutrality. Most fungi prefer an acidic environment. Most blue-green bacteria prefer an alkaline environment. **So, microbial species in the soil and water shift from bacteria-bound to fungi-bound.** This causes a delay in the decomposition of soil organic material.
- **Effects on aquatic life** : Eggs or sperms of fish, frogs and other aquatic organisms are sensitive to pH changes. Acid rain kills their gametes affecting the life cycles and productivity (ecosystem imbalances). Acidic lake waters may kill microbes and turn them unproductive. Acid rain can make metals bound on soils to be released into the aquatic environment.
- **Effect on terrestrial life:** Acid rain damage cuticle of plant leaves and reduces photosynthesis. Acidic medium promotes leaching of heavy metals like aluminium, lead and mercury. Such metals when percolate into ground water affect soil micro flora/fauna. Other indirect effects of acid rain on wildlife are loss or alteration of food and habitat resources. **Hence, statement 3 is not correct.**

- **Effect on buildings, monuments and materials:** Many old, historical, ancient buildings and works of art/textile etc. are adversely affected by acid rain. Limestone and marble are destroyed by acid rain. Smoke and soot cover such objects. They slowly dissolve/flake away from the surfaces because of acid fumes in the air. Many buildings/monuments such as Taj Mahal in Agra have suffered from acid rain (Marble Cancer).

**Q 93.B**

- **Pair 1 is correctly matched:** Recently Government of India has constituted a high-level Committee on Corporate Social Responsibility under the Chairmanship of Shri. Injeti Srinivas, Secretary, Ministry of Corporate Affairs (MCA) to review the existing framework and guide and formulate the roadmap for a coherent policy on Corporate Social Responsibility (CSR). It has recently submitted its report. Some of the recommendations are:
  - Expenses towards CSR should be eligible for deduction
  - Provision to carry forward unspent CSR balance for three to five years
  - Violation of CSR compliance may be made a civil offense
- **Pair 2 is not correctly matched:** The Government had constituted an Inter-Ministerial Committee (IMC) under the Chairmanship of finance secretary Subhash Chandra Garg to study the issues related to virtual currencies (cryptocurrency) and propose specific action to be taken in this matter.
- Recently, the committee placed in the public domain a draft bill calling for a complete ban on private cryptocurrencies in India. The panel recommended a fine of up to ₹25 crores and a jail term of up to 10 years for anyone found to be owning or handling private cryptocurrencies.
- As an alternative to private cryptocurrencies, the panel recommended the introduction of a single cryptocurrency for the whole country that is backed by the Reserve Bank of India.
- **Pair 3 is not correctly matched:** Recently, the committee on Direct taxes headed by CBDT member Akhilesh Ranjan has submitted its report on replacing the Income Tax Act with a new Direct Tax Code.

**Q 94.A**

- Varicella, also commonly referred to as "chickenpox", is an acute and highly contagious disease. It is caused by primary infection with the **varicella-zoster virus (VZV). Hence statement 1 is correct.**
- VZV is highly transmissible via respiratory droplets or direct contact with characteristic skin lesions of the infected person. The first symptoms of clinical varicella generally appear after a 10-21 day incubation period and include fever, malaise and the characteristic itchy rash.
- **Following infection, the virus remains latent in nerve cells** and may be reactivated causing a secondary infection - herpes zoster, commonly referred to as "shingles". Chickenpox generally resolves within a week or two without treatment. There is no cure, but a vaccine can prevent it. **Hence statement 2 is correct.**
- Varicella can be prevented by immunization and multiple vaccine formulations of the live attenuated vaccine, based on the Oka VZV strain, have been available since 1974.
- Ministry of Health and Family Welfare, Government of India provides several vaccines to infants, children and pregnant women through the Universal Immunisation Programme.
- Under **UIP**, immunization is providing free of cost against 12 vaccine-preventable diseases: Nationally against 9 diseases - **Diphtheria, Pertussis, Tetanus, Polio, Measles, Rubella, severe form of Childhood Tuberculosis, Hepatitis B and Meningitis & Pneumonia caused by Hemophilus Influenza type B.**
- Sub-nationally against 3 diseases - Rotavirus diarrhoea, Pneumococcal Pneumonia and Japanese Encephalitis; of which Rotavirus vaccine and Pneumococcal Conjugate vaccine are in process of expansion while JE vaccine is provided only in endemic districts.
- **Chickenpox vaccination is not included in UIP. Hence statement 3 is not correct.**

**Q 95.B**

- **Open ballot voting applies in the election to the Council of States (Rajya Sabha) only**. Every political party which has its member(s) as MLAs can appoint an authorized agent to verify as to whom its members have voted. The authorized agent will be seated inside the polling station in seats provided by the R.O. In the case of MLAs who are members of political parties, after they mark the vote and before inserting the ballot box, they are required to show the marked ballot paper to the authorized agent of their party. **Hence option 3 is not correct.**
- **Vice- President's election**, like that of the **President's election**, is held in accordance with the system of proportional representation by means of the single transferable vote and the voting is by secret ballot. **Hence options 1 and 2 are correct.**

- The **members of the Lok Sabha** are elected by secret ballot system, based on first past the post system applied to each individual territorial constituencies. **Hence option 4 is correct.**

**Q 96.D**

- **Eutrophication is the gradual increase in the concentration of phosphorus, nitrogen, and other plant nutrients in an aging aquatic ecosystem such as a lake.** The **productivity or fertility of such an ecosystem naturally increases** as the amount of organic material that can be broken down into nutrients increases. This material enters the ecosystem primarily by runoff from land that carries debris and products of the reproduction and death of terrestrial organisms.
- **Water blooms**, or great concentrations of algae and microscopic organisms, often develop on the surface, preventing the light penetration and oxygen absorption necessary for underwater life. Eutrophic waters are often murky and may support fewer large animals, such as fish and birds, than non-eutrophic waters.
- **Point Sources:**
  - Wastewater effluent (municipal and industrial)
  - Runoff and leachate from waste disposal systems
  - Runoff and infiltration from animal feedlots
  - Runoff from mines, oil fields, unsewered industrial sites
  - Overflows of combined storm and sanitary sewers
  - **Untreated sewage**
- **Nonpoint sources:**
  - **Runoff from agriculture due to fertilizers and pesticides /irrigation**
  - Runoff from pasture and range
  - Urban runoff from unsewered areas
  - **Septic tank leachate**
  - Runoff from abandoned mines
- **Acid rain and Eutrophication:** A**cid deposition of nitrogen derived from NOx** emissions creates additional environmental problems. For example, many lake, estuarine, and coastal marine systems receive too much nitrogen from atmospheric deposition and terrestrial runoff. **This eutrophication (or over-enrichment) causes the overgrowth of plants and algae.** When these organisms die and decompose, they deplete the dissolved oxygen supply necessary for most aquatic life in water bodies.
- **Hence option d is the correct answer.**

**Q 97.C**

- **The Rotterdam Convention (formally, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade)** is a multilateral treaty to promote shared responsibilities in relation to importation of hazardous chemicals.
- The convention promotes **open exchange of information** and calls on exporters of hazardous chemicals to **use proper labeling, include directions on safe handling,** and inform purchasers of any known restrictions or bans.
- Signatory nations can decide whether to allow or ban the importation of chemicals listed in the treaty, and exporting countries are obliged to make sure that producers within their jurisdiction comply.
- It entered into force in February 2004. **India acceded to the convention in May 2005 and it became operative in August 2005.**
- There are 47 chemicals listed in Annex III to this Convention, which include 33 pesticides and 14 industrial chemicals that have been banned or severely restricted for health or environmental reasons by two or more Parties and which the **Conference of the Parties (COPs) has decided to subject to the Prior Informed consent (PIC) procedure.**
- **Stockholm Convention on Persistent Organic:** Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants.
- **Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent the transfer of hazardous waste from developed to less developed countries. It does not, however, address the movement of radioactive waste.
- **Minimata Convention** on Mercury is an international treaty designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.

**Q 98.C**

- **Kamlang Wildlife Sanctuary** is situated in the South-Eastern part of **Lohit District of Arunachal Pradesh.** The name comes from the **River Kamlang**, which flows through the Sanctuary and joins Brahmaputra. The Kamlang Wildlife Sanctuary lies in between Lang River on the North side and famous **Namdapha National Park on its south.** This Wildlife Sanctuary contains **all four big cats (Tiger, Leopard, Clouded Leopard and Snow Leopard).** It also has the population of endangered spp. like **Hollock gibbon, Slow lories, Leopard cat, Himalayan palm civets etc.**
- **Trishna Wildlife Sanctuary** is a Wildlife Sanctuary in **Tripura**. This sanctuary has a number of perennial water rivulets, water bodies, and grass land. In this sanctuary, there are patches of virgin forests which are rich in rare vegetation. **Indian Gaur (Bison)** is an attraction of this sanctuary. Apart from it, there are varieties of Birds, Deers, **Hollock Gibbon, Golden Langur, Capped Langur, Pheasant** and many other animals and reptiles.
- **Bor Tiger Reserve** is a wildlife sanctuary which was declared as a tiger reserve in 2014. It is located in **Wardha District in the Indian state of Maharashtra.** Bor Tiger Reserve is centrally located among several other Bengal tiger habitats including: **Pench Tiger Reserve, Maharashtra to the northeast; Nagzira Navegaon Tiger Reserve to the east and northeast; Umred Karhandla Wildlife Sanctuary to the east and southeast; Tadoba - Andhari Tiger Reserve to the southeast; Melghat Tiger Reserve to the west and northwest and Satpura National Park to the northwest.** Mammal species such as the Bengal tiger, Indian leopard, Indian bison, blue bull, chital live here.
- **Coringa Wildlife Sanctuary is located in Andhra Pradesh,** nestling on the deltaic branches **Godavari and Gouthami rivers.** It is home to **critically endangered white backed vulture and long billed vulture.** It has extensive mangrove and dry deciduous tropical forests.
- **Hence the correct order is 1-2-3-4.**

**Q 99.D**

- **Partition of Bengal was announced by Lord Curzon in July 1905. Hence option (c) is not correct.** Partition came into effect on 16th October 1905. The partition proposals had come onto the public domain as early as 1903. Therefore, since 1903, there was prepared the ground for the launch of the Swadeshi Movement.
- The **formal proclamation of the Swadeshi Movement was made on August 7, 1905, in a massive meeting in the Calcutta Townhall.** The movement involved the revival of domestic products and production processes. Apart from this **at the meeting Boycott Resolution was also passed**. With this formal proclamation of the Swadeshi Movement was made on this day. **Hence option (d) is correct.**
- With an idea to bring the Universities under control, which he felt had become hotbeds of revolutionary activities. Lord Curzon appointed Raleigh Commission under Sir Thomas Raleigh. This commission submitted its report in 1902 and this followed the introduction of a Bill called Raleigh Bill. **The Raleigh Bill when became an act, it was called the Indian Universities Act 1904. Hence option (a) is not correct.**
    - The Act increased the Government's control over the universities.
    - It could veto the regulations passed by the Senate of the University.
    - It allowed the Government to appoint a majority of the fellows in a university.
    - The Governor-General was now empowered to decide a University's territorial limits.
    - Also, it increased University control over private colleges by laying down stricter conditions for affiliation and periodical inspection. Here also, the government approval was necessary for grant of affiliation and disaffiliation of colleges.
- The Extremists wanted the 1907 session to be held in Nagpur (Central Provinces) with Tilak or Lajpat Rai as the president and reiteration of the swadeshi, boycott, and national education resolutions. The Moderates wanted the session at Surat in order to exclude Tilak from the presidency since a leader from the host province could not be session president (Surat being in Tilak's home province of Bombay). Instead, they wanted Rashbehari Ghosh as the president and sought to drop the resolutions on the swadeshi, boycott and national education. Both sides adopted rigid positions, leaving no room for compromise. **The split became inevitable in 1907, and the Congress was now dominated by the Moderates who lost no time in reiterating Congress' commitment to the goal of self- government within the British Empire and to constitutional methods only to achieve this goal. Hence option (b) is not correct.**

**Q 100.C**

- **Statement 1 is correct: Naujawan Bharat Sabha was founded by Bhagat Singh** in March 1926 with the support of his comrades Sukhdev, Bhagwati Charan Vohra, Yashpal and others in Lahore.as the open wing of the revolutionaries. It was formulated on the socialist principles which were the call of the times. The Sabha was to carry out open political work among the youth, peasants, and workers. It was to open branches in the villages.
- The Sabha had two-fold objectives social and political. The social objectives comprised the popularization of swadeshi goods, simple living, physical fitness, the inculcation of the sense of brotherhood and the stimulation of interest in Indian languages and civilization.
- The political program of the Naujawan Bharat Sabha included the following:
  - To establish a completely independent republic of the laborers and peasants of the whole of India;
  - To infuse a spirit of patriotism into the hearts of the youth of the country in order to establish a united Indian nation;
  - To express sympathy with and to assist the economic, industrial and social movements which, while being free from communal sentiment are intended to take us nearer to our ideal;
  - To organize the laborers and peasants.
- Under its auspices, Bhagat Singh used to deliver political lectures with the help of magic lantern slides.
- **Statement 2 is correct:** Bhagat Singh, Sukhdev, and Rajguru were tried in **Lahore Conspiracy Case** and sentenced to death. The case of the murder of British police officer John P Saunders and head constable Chanan Singh was known as the Lahore Conspiracy case.
- **Statement 3 is correct:** Initially, Bhagat Singh himself was involved in some individual heroic actions but he was not a firm believer in individual heroic action to overthrow the British government. As before his arrest in 1929 Bhagat Singh had moved away from belief in terrorism and individual heroic action to Marxism and the **belief that a popular broad-based movement alone could lead to a successful revolution.**
  - According to Bhagat Singh 'Revolution' should no longer be equated with mere militancy or violence. Its first objective was national liberation — the overthrow of imperialism. But it must go beyond and work for a new socialist social order, it must bend exploitation of man by man.'
  - To him, "Revolution," does not necessarily involve sanguinary strife, nor is there any place in it for individual vendetta. It is not the cult of the bomb and the pistol. By "Revolution" he meant that the present order of things, which is based on manifest injustice, must change.
  - Bhagat Singh was fully and consciously secular, he understood, more clearly than many of his contemporaries, the danger that communalism posed to the nation and the national movement. He often told his audience that communalism was as big an enemy as colonialism. Bhagat Singh revered Lajpat Rai as a leader. But he would not spare even Lajpat Rai, when, during the last years of his life, Lajpat Rai turned to communal politics. He then launched a political-ideological campaign against him.