



All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

Answer Key Explanation

Test 6 – GS Paper I

Maximum Questions: 100

Maximum Marks: 200

1. Ans. A

Exp: Rajya Sabha has limited powers with respect to money bill. It cannot reject or amend a money bill. It can make only recommendations. Also Rajya Sabha has to recommend changes with respect to money bill within 14 days.

Money bill can be introduced only in the Lok Sabha, only on the recommendation of the President. There is no provision for joint sitting of both the Houses in case of disagreement. Lok Sabha can either accept or reject the recommendations of the Rajya Sabha.

2. Ans. D

Exp: All statements are correct

Criteria for Identification of Wetlands of National Importance:

- Criteria for identification of wetlands of national importance under National Wetland Conservation Program (NWCP) are given below:
- Criteria based on species and ecological communities
- If it supports vulnerable, endangered, or critically endangered species; or threatened ecological communities.
- If it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
- If it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.
- Specific criteria based on water birds

- If it regularly supports 20,000 or more water birds.
- If it regularly supports 1% of the individuals in a population of one species or subspecies of water birds.

3. Ans. C

Exp: Nutrition and living organism:

Macronutrients are those elements generally present in tissues in large amounts (in excess of 10 mmole Kg⁻¹ of dry matter).

Micronutrients or trace elements, are needed in very small amounts (less than 10 mmole Kg⁻¹ of dry matter).

Minerals and their roles:

Macro minerals:

- Option (c) is correct: Calcium (Ca): Structure of bone and teeth. Also plays a role in the growth of nerve cells.
- Phosphorous (Ph): Structure of bone and teeth. Required for ATP, the energy carrier in animals.
- Magnesium (Mg): Important in bone structure. Deficiency results in tetany (muscle spasms) and can lead to a calcium deficiency.
- Sodium (Na): Major electrolyte of blood and extracellular fluid. Required for maintenance of pH and osmotic balance.
- Potassium (K): Major electrolyte of blood and intracellular fluid. Required for maintenance of pH and osmotic balance.

- Chlorine (Cl): Major electrolyte of blood and extracellular and intracellular fluid. Required for maintenance of pH and osmotic balance.
- Sulfur (S): Element of the essential amino acids methionine and cysteine. Contained in the vitamins thiamin and biotin. As part of glutathione it is required for detoxification. Poor growth due to reduced protein synthesis and lower glutathione levels potentially increasing oxidative or xenobiotic damage are consequences of low sulfur and methionine and /or cysteine intake.

Micro minerals:

- Iron (Fe): Contained in haemoglobin and myoglobin which are required for oxygen transport in the body. Anaemia is the primary consequence of iron deficiency. Excess iron levels can enlarge the liver, may provoke diabetes and cardiac failure. The genetic disease hemochromatosis results from excess iron absorption. Similar symptoms can be produced through excessive transfusions required for the treatment of other diseases.
- Copper (Cu): Contained in enzymes of the ferroxidase system which regulates iron transport and facilitates release from storage. A structural element in the enzymes tyrosinase, cytochrome c oxidase, ascorbic acid oxidase, amine oxidases, and the antioxidant enzyme copper zinc superoxide dismutase. A copper deficiency can result in anemia from reduced ferroxidase function. Excess copper levels cause liver malfunction and are associated with genetic disorder Wilson's Disease.
- Manganese (Mn): Major component of the mitochondrial antioxidant enzyme manganese superoxide dismutase. A manganese deficiency can lead to improper bone formation and reproductive disorders. An excess of manganese can lead to poor iron absorption.
- Iodine (I): Required for production of thyroxine which plays an important role in metabolic rate. Deficient or excessive iodine intake can cause goitre (an enlarged thyroid gland).
- Zinc (Zn): Important for reproductive function due to its use in FSH (follicle stimulating hormone) and LH (leutinizing hormone). Required for DNA binding of zinc finger proteins which regulate a variety of activities. A component of the enzymes alcohol dehydrogenase, lactic dehydrogenase carbonic anhydrase, ribonuclease, DNA Polymerase and the antioxidant copper zinc superoxide anaemia or reduced bone formation.
- Selenium (Se): Contained in the antioxidant enzyme glutathione peroxidase and heme oxidase. Deficiency results in oxidative membrane damage with different effects in different species. Human deficiency causes cardiomyopathy (heart damage) and is known as Keshan's disease.
- Fluorine (F): Fluorine is essential for the maintenance of solidity of our bones. Fluorine can also protect us from dental decay
- Cobalt (Co): Contained in vitamin B12. An excess may cause cardiac failure.
- Molybdenum (Mo): Contained in the enzyme xanthine oxidase. Required for the excretion of nitrogen in uric acid in birds. An excess can cause diarrhea and growth reduction.
- Chromium (Cr): A cofactor in the regulation of sugar levels. Chromium deficiency may cause hyperglycemia (elevated blood sugar) and glucosuria (glucose in the urine).

| MACRONUTRIENTS VERSUS MICRONUTRIENTS | |
|---|---|
| Macronutrients are the nutrients required in large amounts. | Micronutrients are the nutrients required in small amounts. |
| Protein, fat, fiber, water and carbohydrate are examples of macronutrients. | Phyto-chemicals and antioxidants, Vitamins and certain minerals are examples of micro-nutrients. |
| Cereals, legumes, meat, fish, yams, potatoes, nuts, oil seeds are rich in macronutrients. | Mainly vegetables, fruits, eggs, green leafy vegetables, fermented foods etc. are rich in micronutrients. |
| Macronutrients contribute to the bulk energy needed for the metabolic system. | Micronutrients help various functions of the body, growth, and disease prevention. |

4. Ans. B

Exp: Statement 1 is incorrect: Property taxes are not the only sources of direct tax revenue at the third tier of government. There are other sources too.

Taxation of local governments in India

- The property taxes collected at the second and third tiers of government are land tax assessed and collected at the state level; building tax, including property/house tax collected at the municipality (ULG) and gram panchayats (RLG) level.
- Property taxes are the principal sources of direct tax revenue at the third tier of government, apart from professional taxes.
- The collections from these potentially buoyant sources of revenue are generally stacked at very low levels because of archaic base values—far below market values— applied to properties, low rates of taxes levied,

and lack of powers to local bodies in some states like Odisha and Rajasthan.

5. Ans. A

Exp: Sutradhara- used to supervise the construction of a temple who looked after the construction with the help of manuals called Shilpa Shastras.

6. Ans. D

Exp: All statements are correct

Structure of the Atmosphere

- The atmosphere consists of different layers with varying density and temperature.
- Density is highest near the surface of the earth and decreases with increasing altitude.
- The column of the atmosphere is divided into five different layers depending upon the temperature condition.
- They are troposphere, stratosphere, mesosphere, ionosphere, and exosphere.

Troposphere

- The troposphere is the lowermost layer of the atmosphere.
- Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator. The thickness of the troposphere is greatest at the equator because heat is transported to great heights by strong convectional currents.
- This layer contains dust particles and water vapour.
- All changes in climate and weather take place in this layer. The temperature in this layer decreases at the rate of 1°C for every 165m of height.
- This is the most important layer for all biological activity.

7. Ans. D

Exp: All statements are correct

Non-governmental organisations (NGOs)

- A non-governmental organization (NGO) is a non-profit group that functions independently of any government. NGOs, sometimes called civil societies, are organized on community, national and international levels to serve a social or political goal such as humanitarian causes or the environment.
- NGOs are non-profit by definition, but may run budgets of millions or up to billions of dollars each year.
- As such, NGOs rely on a variety of funding sources from private donations and membership dues to government contribution.

Legislations regulating the finances of NGOs

- Foreign Contribution (Regulation) Act (FCRA), 2010
- Foreign funding of voluntary organizations in India is regulated under FCRA act and is implemented by Ministry of Home Affairs.
- The acts ensure that the recipients of foreign contributions adhere to the stated purpose for which such contribution has been obtained.
- Under the act organisations require to register themselves every five years.
- Foreign Exchange Management Act, 1999
- Foreign Exchange Management Act (1999) aims to consolidate and amend the law relating to foreign exchange with objective of facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange market in India.
- A transaction under FEMA is called a fee or a salary while the same under FCRA is called a grant or a contribution.
- Constitutional Provisions for NGOs in India
- Article 19(1)(c) on the right to form associations;

- Article 43 which highlights the State's having an endeavour to promote cooperatives in rural areas;
- Concurrent List in Entry 28 mentions about – Charities and charitable institutions, charitable and religious endowments and religious institutions”.

8. Ans. B

Exp:Statement 2 is incorrect: CPGRAMS facilitates forwarding of public grievances received online from the citizens to both the Central Government Ministries/ Departments/Organizations as well as the State Governments concerned.

Centralized Public Grievance Redress and Monitoring System' (CPGRAMS)

- Centralised Public Grievance Redress and Monitoring System (CPGRAMS) is one of the leading measures formulated by the Indian Government to address the public issues.
- The main objective of this system is to receive complaints from the public, filter them according to seriousness and urgency, sending them to the concerned government departments or agencies and coordinating with the immediate process of redressal.
- CPGRAMS facilitates forwarding of public grievances received online from the citizens to both the Central Government Ministries/Departments/Organizations as well as the State Governments concerned.
- The inflow of these Centre and State related grievances are in two forms (i) online registered grievances through CPGRAMS and (ii) offline grievances received through post. The grievances received through post are digitized, uploaded on CPGRAMS and forwarded online through the System to the Central Ministries/Departments/Organizations concerned.
- CPGRAMS is a standardized web based solution and an integrated application

to register and to redress the grievances received online, by post and by hand.

- The CPGRAMS interlinks 86 Central Ministries/Departments/ Organizations and 37 States /UTs. There are more than 51,000 sub-ordinate users listed on it which includes subordinate and field officers also.

Citizens can also use a Mobile App for lodging of public grievances and the action Status can also be viewed on the mobile itself. This mobile app is integrated with Unified Mobile Application for New-age Governance (UMANG).

9. Ans. B

Exp: Statement 2 is incorrect: It is bounded by Bhareli or Kameng River in the west and north, and by Pakke River in the east.

Pakke Tiger Reserve:

- Pakke Tiger Reserve (declared in 1999 - 2000) lies in the foothills of the eastern Himalaya in the East Kameng district of Arunachal Pradesh. It is also known as Pakhui Tiger Reserve.
- It falls within the Eastern Himalaya Biodiversity Hotspot.
- It is known for its sightings of four resident hornbill species.
- This Tiger Reserve has won India Biodiversity Award 2016 in the category of 'Conservation of threatened species' for its Hornbill Nest Adoption Programme.
- Neighbours: Papum Reserve Forest in Arunachal Pradesh, Assam's Nameri National Park, Doimara Reserve Forest and Eaglenest Wildlife Sanctuary.
- The main perennial streams in the area are the Nameri, Khari and Upper Dikorai. West of Kameng River is Sessa Orchid Sanctuary.
- The Arunachal Pradesh government decided to "keep in abeyance" the survey work for a road through the Pakke Tiger Reserve (PTR). The project had attracted criticism from wildlife activists, film personalities and political

leaders. A 40km stretch of the 'East-West Industrial Corridor' road proposed to connect Seijosa in Pakke Kessang district and Bhalukpong in West Kameng district of the State passes through PTR, a biodiversity hotspot of the eastern Himalayas.

10. Ans. B

Exp: Statement 2 is incorrect: Red and yellow soil develop reddish colour due to a wide diffusion of iron in crystalline and metamorphic rocks.

Statement 3 is incorrect: This soil is poor in nitrogen, phosphorous, and humus. Red and Yellow soil

- Red soil develops on crystalline igneous rocks in areas of low rainfall in the eastern and southern part of the Deccan Plateau.
- Along the piedmont zone of the Western Ghat, the long stretch of area is occupied by red loamy soil.
- Yellow and red soils are also found in parts of Odisha and Chhattisgarh and in the southern parts of the middle Ganga plain. The soil develops a reddish colour due to a wide diffusion of iron in crystalline and metamorphic rocks.
- It looks yellow when it occurs in a hydrated form. The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility. They are generally poor in nitrogen, phosphorous and humus.

11. Ans. C

Exp: Both statements are correct

Draft Environment Impact Assessment Notification 2020

- As per the draft notification, all projects and activities have been divided into three categories -- 'A', 'B1', and 'B2' based on "the potential social and environmental impacts and spatial extent of these impacts."

- In a new section “Dealing with violation cases”, the draft notification states that cognizance of environmental violations will be taken in four ways -- suo – moto application of the project proponent; or reporting by any government authority; found during the appraisal by Appraisal Committee; or any violation found during the processing of application, if any, by the regulatory authority.
- As per the draft, the cases of violation will be appraised by Appraisal Committee with a view to assessing whether a “project can be run sustainably under compliance of environmental norms with adequate environmental safeguards”.
- If the assessment is negative, the project will be directed to shut down. If not, it will be appraised for ecological damage etc. Such projects will have to pay a late fee depending on the size of the project. The company will also have to submit a bank guarantee valid for five years, equivalent to the amount of remediation plan with the state pollution control board.
- The draft EIA 2020 also proposes new committees and procedures, taking into consideration all previous amendments made to the 2006 notification. It seeks to fast forward clearances by digitizing the process and standardizing the approvals needed.
- The initiative was launched during the 13th Conference of Central Council of Health and Family Welfare.
- The initiative aims at assuring dignified, respectful and quality health care at no cost and zero tolerance for denial of services for every woman and new born visiting the public health facility in order to end all preventable maternal and new born deaths. It also provides a positive birth experience to both mother and infant.
- The government will also provide free transport from home to health institutions.
- Under the scheme, the pregnant women will have a zero expense delivery and C-section facility in case of complications at public health facilities.
- The Union Ministry of Health and Family Welfare has launched “LaQshya” (Labour room Quality Improvement Initiative) to improve the quality of care in the labour room and maternity operation theatres in public health facilities.
- The LaQshya program will be implemented by all Medical College Hospitals, District Hospitals and First Referral Unit (FRU), and Community Health Centres (CHCs) and will benefit every pregnant woman and new-born delivering in public health institutions.
- The Pradhan Mantri Surakshit Matritva Abhiyan has been launched by the Ministry of Health & Family Welfare (MoHFW), Government of India. The program aims to provide assured, comprehensive and quality antenatal care, free of cost, universally to all pregnant women on the 9th of every month.

12. Ans. C

Exp: Statement 2 is incorrect: “LaQshya” (Labour room Quality Improvement Initiative) will benefit every pregnant woman and new born delivering only in public health institutions.

Health Initiatives Taken For Women

- The Union Government has launched Surakshit Matritva Aashwasan (SUMAN) to provide quality healthcare at zero cost to pregnant women, new mothers and new borns.

13. Ans. C

Exp: Statement 1 is incorrect: The IHDI indicates percentage loss in HDI due to inequality.

Inequality-Adjusted Human Development Index (IHDI)

- India's position worsened by one position to 130 (as compared to the HDI Index 2019- 129) with a score of 0.477. Although, the IHDI score has improved from 0.468 in 2018.
- The IHDI takes into account not only the average achievements of a country in health, education, and income, but also how those achievements are distributed among its population by "discounting" each dimension's average value according to its level of inequality.
- It is computed as the geometric mean of dimension indices adjusted for inequality. The inequality in each dimension is estimated by the Atkinson inequality measure, which is based on the assumption that a society has a certain level of aversion to inequality.
- The IHDI captures the inequality in distribution of the HDI dimensions. However, it is not association sensitive, meaning that it does not account for overlapping inequalities—whether the same people are at the lower end of each distribution. Also, individual values of education and income can be zero or even negative (for income), so they have been adjusted to non-negative non-zero values uniformly across countries.
- The IHDI refers to 2018. It uses the HDI indicators that refer to 2018 and measures of inequality that are based on the most recent household surveys available from 2007 to 2018 and life tables that refer to the 2015-2020 period. The logic is to use the year to which the HDI indicators refer.

14. Ans. C

Exp: All statements are correct

Harappan script

- The Harappan script has 400 to 500 signs and it is generally agreed that it is

not an alphabetic form of writing but pictographic.

- Some scholars opine that Harappan inscriptions present 3 logosyllabic writing system, where a sequence of two or more signs would represent either a complete word, a syllable or a sound and sometimes even a sentence of several words and grammatical indicators.
- The script was written from right to left. When the inscription was of more than one line it could be first line from right to left and second from left to right.
- There are nearly 400 specimens of Harappan signs on seals and other materials such as copper tablets, axes, and pottery.
- Most of the inscriptions on seals are small, a group of few letters.
- The language of Harappans is at present still unknown and will remain so until the Harappan script is read/understood.
- While some scholars connect it to Dravidian languages and others to Indo-Aryan and Sanskrit yet there is no consensus till now

15. Ans. B

Exp: Statement 3 is incorrect: These forests are found in semi-arid areas of southwest Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh, and Uttar Pradesh.

Tropical Thorn Forests:

- Tropical thorn forests occur in the areas which receive rainfall less than 50 cm.
- These consist of a variety of grasses and shrubs.
- It includes semi-arid areas of southwest Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh, and Uttar Pradesh.
- In these forests, plants remain leafless for the most part of the year and give an expression of scrub vegetation.
- Important species found are babool, ber, and wild date palm, khair, neem, khejri, palas, etc.

- Tussocky grass grows upto a height of 2 m as the undergrowth.

16. Ans. D

Exp: All statements are correct

Repo Rate

- When banks need money they can borrow from the RBI against their surplus government securities at a fixed interest rate. This rate is known as the repo rate.
- Basically, this is an abbreviated form of the 'rate of repurchase' and in western economies, it is known as the 'rate of discount'.
- The higher the repo rate, the higher the cost of short-term money to the banks and vice versa. Generally, whenever the repo rate is raised, banks pass the burden on to customers.
- If the repo rate is lowered, then banks can potentially charge lower interest rates on the loans taken by borrowers and vice versa.
- Thus, it will benefit the borrowers as EMIs (equated monthly installments) will decrease
- It will inject liquidity over a period. It has several purposes to serve— a stronger money market, stability, and better costing and signalling of the loan products. Injecting liquidity may lead to inflation in the country.
- Recently, the Reserve Bank of India (RBI) has decided to lower the interest rate for the fourth consecutive policy review as it reduced the repo rate by 35 bps to 5.40%.

17. Ans. C

Exp: In 1976 during Congress party rule , through 42nd amendment fundamental duties were made part of the constitution (inspired by constitution of erstwhile USSR).

It was enacted based on the recommendations of Sardar Swaran Singh committee. This new amendment added

Part IV A and Article 51 A. The fundamental duties are non-justiciable (they are not legally enforceable by the courts for their violation).

18. Ans. A

Exp: Statement 2 is incorrect: The largest expansion of the empire took place under the rule of Chandragupta Maurya.

Mauryan Empire

- The Mauryan empire had an efficient administrative system which helped in its political integration. The region included within the empire was just too diverse so the administration seems to recognized local and regional variations which were accommodated and not wiped out.
- Chandragupta Maurya was an autocrat who concentrated all power in his hands.
- The largest expansion of the empire took place under the Chandragupta Maurya.
- Chandragupta Maurya was the founder of the Maurya Empire in ancient India. He is credited with bringing together the small fragmented kingdoms of the country and combining them into a single large empire. During his reign, the Maurya Empire stretched from Bengal and Assam in the East to Afghanistan and Balochistan in the West, to Kashmir and Nepal in the North and to the Deccan Plateau in the South. Chandragupta Maurya, along with his mentor Chanakya, was responsible for bringing an end to the Nanda Empire.
- Bindusara and Asoka have contributed more to the consolidation of the empire whose expansion credits should go to Chandragupta.

19. Ans. B

Exp: Statement 1 is incorrect: States do not need to take permission from the central government for the market borrowing to fulfill their plan expenditure

Fiscal Responsibility Management Act (FRBMA), 2003

- It empowers the state governments to go for market borrowings to fulfill their plan expenditure without prior permission from the Central Government (provided they have enacted their respective Fiscal Responsibility Acts).
- This has boosted the participatory planning in the country by guaranteeing greater autonomous plan participation from the states.

Highlights of the FRBMA, 2003

- Government of India (GoI) to take measures to reduce fiscal and revenue deficit so as to eliminate revenue deficit by 31 March, 2008 (which was revised by the UPA Government to March 31, 2009) and thereafter build up adequate revenue surplus.
- Rules to be made under the Act to specify annual targets for the reduction of fiscal deficit (FD) and revenue deficit (RD) contingent liabilities and total liabilities (RD to be cut by 0.5 percent per annum and FD by 0.3 percent per annum).
- FD and RD may exceed the targets only on the grounds such as national security, calamity or exceptional grounds.
- GoI not to borrow from RBI except by Ways and Means Advances (WMAs).
- RBI not to subscribe to the primary issue of the GoI securities from 2006–07 (it means that these government bonds/papers will become market—based instruments to raise long-term funds by the government).
- Steps to be taken to ensure greater transparency in fiscal operations.
- Along with the Budget and Demands for Grants, the GoI to lay the following three statements before the Parliament in each financial year:
 - Fiscal Policy Strategy Statement (FPSS)

- Medium Term Fiscal Policy Statement (MTFPS)
- Macroeconomic Framework Statement (MFS)
- The Finance Minister to make a quarterly review of trends in receipts and expenditure in relation to the Budget and place the review before the Parliament.

20. Ans. D

Exp: Option (d) is correct

Land Reform Measures

- To realize the objectives of land reforms, the government took three main steps which had many internal sub-steps:

Abolition of Intermediaries

- Under this step, the age-old exploitative land tenure systems of the Zamindari, Mahalwari and Ryotwari were fully abolished.

Tenancy Reforms

- Under this broader step, three interrelated reforms protecting the land, tenants were effected:
 - Regulation of rent so that a fixed and rational rate of rent could be paid by the share-croppers to the land owners;
 - Security of tenure so that a share-cropper could feel secure about his future income and his economic security;
 - Ownership rights to tenants so that the landless masses (i.e., the tenants, the share-croppers) could get the final rights for the land they plough—“land to the tillers”.

Reorganization of Agriculture

- Redistribution of land among the landless poor masses after promulgating timely ceiling laws—the move failed badly with few exceptions, such as West Bengal, Kerala and partially in Andhra Pradesh.

- Consolidation of land could only succeed in the regions of the Green Revolution (i.e., Haryana, Punjab and western Uttar Pradesh) and remained marred with many loopholes and corruption.
- Cooperative farming, which has a high socio-economic moral base, was only used by the big farmers to save their lands from the draconian ceiling laws.

21. Ans. B

Exp: Statement 1 is incorrect: Himalayas are tectonically active.

The Himalayas

- In our country, debris avalanche and landslides occur very frequently in the Himalayas. There are many reasons for this:
- The Himalayas are tectonically active.
- They are mostly made up of sedimentary rocks and unconsolidated and semi-consolidated deposits.
- The slopes are very steep.
- Compared to the Himalayas, the Nilgiris bordering Tamil Nadu, Karnataka, Kerala and the Western Ghats along the west coast are relatively tectonically stable and are mostly made up of very hard rocks; but, still, debris avalanches and landslides occur though not as frequently as in the Himalayas, in these hills.
- Many slopes are steeper with almost vertical cliffs and escarpments in the Western Ghats and Nilgiris.
- Mechanical weathering due to temperature changes and ranges is pronounced.
- They receive heavy amounts of rainfall over short periods. So, there is almost direct rock fall quite frequently in these places along with landslides and debris avalanches.

22. Ans. A

Exp: Option (a) is correct: The forest described in the passage is Tropical Evergreen Forest.

Tropical Evergreen Forest

- These forests are found in the western slope of the Western Ghats, hills of the north-eastern region and the Andaman and Nicobar Islands.
- They are found in warm and humid areas with annual precipitation of over 200 cm and mean annual temperature above 22°C.
- Tropical evergreen forests are well stratified, with layers closer to the ground and are covered with shrubs and creepers, with short structured trees followed by a tall variety of trees.
- In these forests, trees reach great heights up to 60 m or above. There is no definite time for trees to shed their leaves, flowering, and fruition. As such these forests appear green all the year-round. Species found in these forests include rosewood, mahogany, ebony, etc.

23. Ans. A

Exp: Statement 1 is incorrect: Exfoliated domes are developed from expansion due to unloading and pressure release while exfoliated tors are developed due to differential heating and resulting expansion and contraction of the surface.

Unloading and Expansion

- Removal of overlying rock load because of continued erosion causes vertical pressure release with the result that the upper layers of the rock expand producing disintegration of rock masses. Fractures will develop roughly parallel to the ground surface. In areas of the curved ground surface, arched fractures tend to produce massive sheets or exfoliation slabs of rock.
- Exfoliation sheets resulting from expansion due to unloading and pressure release may measure hundreds or even thousands of meters in horizontal extent. Large, smooth

rounded domes called exfoliation domes result due to this process.

Temperature Changes and Expansion

- With a rise in temperature, every mineral expands and pushes against its neighbour and as temperature falls, a corresponding contraction takes place.
- Because of diurnal changes in the temperatures, this internal movement among the mineral grains of the superficial layers of rocks takes place regularly.
- This process is most effective in dry climates and high elevations where diurnal temperature changes are drastic. These movements are very small still they make the rocks weak due to continued fatigue.
- The surface layers of the rocks tend to expand more than the rock at depth and this leads to the formation of stress within the rock resulting in heaving and fracturing parallel to the surface.
- Due to differential heating and resulting expansion and contraction of surface layers and their subsequent exfoliation from the surface results in smooth rounded surfaces in rocks. In rocks like granites, smooth-surfaced and rounded small to big boulders called tors form due to such exfoliation.

24. Ans. C

Exp: Originally, the right to property was a fundamental right. But, according to the Constitution the property could be taken away by the government for public welfare. Since 1950, the government enacted many laws to limit the right to property.

This right was at the centre of controversy between fundamental rights and directive principles. Later in 1973, the Supreme Court gave a decision that the right to property was not part of the basic structure of the Constitution.

Therefore Parliament has the power to abridge this right by an amendment. In 1978, through 44th amendment to the Constitution, the right to property was removed from the list of fundamental rights. By the Constitution (Forty-fourth Amendment) Act, 1978 the right to property was made a legal right under article 300 A.

25. Ans. A

Exp: Vitamin Deficiencies

- Vitamin deficiencies remain common globally. Unless severe, they are often clinically unrecognized, yet even mild deficiency may have significant adverse consequences.
- Vitamin deficiencies affect all ages and frequently co-exist with mineral (zinc, iron, iodine) deficiencies. The groups most susceptible to vitamin deficiencies are pregnant and lactating women, and young children, because of their relatively high needs for these compounds and susceptibilities to their absence

| Vitamin/Mineral | Deficiency disease / disorder | Symptoms |
|-----------------|-------------------------------|--|
| Vitamin A | Loss of vision | Poor vision, loss of vision in darkness (Night Blindness), sometimes complete loss of vision |
| Vitamin B1 | Beriberi | Weak muscles and very little energy to work |
| Vitamin C | Scurvy | Bleeding gums, wounds take longer time to heal |
| Vitamin D | Rickets | Bones become soft and bent |
| Calcium | Bone and tooth Decay | Weak bones, tooth decay |
| Iodine | Goiter | Glands in the neck appear swollen, mental disability in children |
| Iron | Anaemia | Weakness |

26. Ans. B

Exp: Statement 3 is incorrect: Prohibited activities are Commercial Mining, Setting of Saw Mill, Setting of industries causing pollution, establishment of major hydroelectric projects etc.

Eco-Sensitive zone

- Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India around Protected Areas, National Parks and Wildlife Sanctuaries.
- The purpose of declaring ESZs is to create some kind of “shock absorbers” to the protected areas such as National Parks and Wildlife sanctuaries by regulating and managing the activities around such areas. They also act as a transition zone from areas of high protection to areas involving lesser protection. Thus prohibition of all kinds of human activities, in those zones except agriculture is not the prime objective of eco sensitive zones.
- ESZ is notified under Section 3 of the Environment (Protection) Act, 1986 by the Union Ministry of Environment and Forest.
- ESZ Guidelines classify activities under three categories:
- **Prohibited:** Commercial Mining, Setting of Saw Mill, Setting of industries causing pollution, establishment of major hydroelectric projects etc
- **Regulated:** Felling of Trees, Establishment of hotels and resorts, erection of electrical cables, drastic change of agricultural systems etc
- **Permitted:** Ongoing agriculture and horticulture practices by local communities, rain water harvesting, organic farming etc.
- Sanjay Gandhi National Park in Mumbai has been notified as Eco-sensitive zone.
- Stakeholders’ valuation: It is important to take on board perceptions of the civil society and local bodies, especially the

zilla, taluk and gram panchayats, to decide on areas that they consider to be ecologically and environmentally sensitive. Of course, these perceptions will depend on the proposed management regime.

27. Ans. C

Exp: Statement 3 is incorrect: Animals and birds usually have **long legs** to keep the body away from the hot ground.

Adaptation

- The animals are physiologically and behaviorally adapted to desert conditions in the following ways:
- They are fast runners.
- They are nocturnal in habit to avoid the sun’s heat during day time.
- They conserve water by excreting concentrated urine.
- Animals and birds usually have long legs to keep the body away from the hot ground.
- Lizards are mostly insectivorous and can live without drinking water for several days.
- Herbivorous animals get sufficient water from the seeds which they eat.
- Camel is known as the ship of the desert as it can travel long distances without drinking water for several days.
- Mammals as a group are poorly adapted to deserts but some species have become secondarily adapted. A few species of nocturnal rodents can live in the desert without drinking water.

28. Ans. A

Exp: Statement 2 is incorrect: There were also oligarchical mahajanapadas where power was exercised by a group of people.

Statement 3 is incorrect: The **term Jana** and not Janapada, is known from the days of the Vedic literature.

The age of Mahajanapadas

- The sixth-century B.C was a period of intense and new political development besides socio-political and religious upheavals that brought two religions to the fore-Buddhism and Jainism. In the later Vedic age, agriculture and iron tools helped people to settle down at one particular place.
- The permanent settlement led to the foundation of the Janapadas or small territorial states under the control of a king. The main area of political activity gradually shifted from Western UP to eastern UP and Bihar. This region was not only fertile due to the rainfall and river systems but also closer to iron production centers. The use of better iron tools and weapons along with sound economic growth resulted in the transformation of some territorial states into Bigger and more powerful states, which came to be known as Mahajanapdas.
- There were 16 Mahajanapadas in ancient India.
- The formation of the state polity was not uniformly seen in the subcontinent and it was not present in peninsular India nor in the Ganga delta and in the northeastern part of the subcontinent.
- The majority of these states were monarchical but some were also republics, known as ganasangha. Ganasangha had an oligarchic system for governance where the administration was headed by an elected king who had a large council for his aid.
- The term janapada literally denotes an area where a group of people or a tribe/clan (jana) first set its foot/feet (pada). The word Janapada, therefore, clearly implies a well-defined and populated territory. The term jana is known from the days of the Vedic literature but the word janapada in the sense of territorial entity seems to have

gained currency only from the post-Vedic times.

29. Ans. A

Exp: Option (a) is correct

Tantric Worship

- Tantric practices were open to women and men, and practitioners often ignored differences of caste and class within the ritual context.
- Many of these ideas influenced Shaivism as well as Buddhism, especially in the eastern, northern and southern parts of the subcontinent.
- Those engaged in tantric practices frequently ignored the authority of Vedas.
- The devotees of Tantricism often projected their chosen deity, either Vishnu or Shiva as supreme.
- Relations with other traditions, such as Buddhism or Jainism, were also often fraught with tension if not open conflict.

30. Ans.B

Exp: Statement 1 is incorrect: It not only promotes manufacturing sector but other sectors too.

Make in India

- The Government has launched the 'Make in India' Programme to promote manufacturing in the country;
- The "Make in India" initiative is based on four pillars, which have been identified to give boost to entrepreneurship in India, not only in manufacturing but also other sectors.

The four pillars are:

- New Processes: 'Make in India' recognizes 'ease of doing business' as the single most important factor to promote entrepreneurship. A number of initiatives have already been undertaken to ease business environment.

- **New Infrastructure:** Government intends to develop industrial corridors and smart cities, create world class infrastructure with state-of-the-art technology and high-speed communication. Innovation and research activities are supported through a fast paced registration system and improved infrastructure for IPR registration. The requirement of skills for industry are to be identified and accordingly development of workforce to be taken up.
- **New Sectors:** FDI has been opened up in Defense Production, Insurance, Medical Devices, Construction and Railway infrastructure in a big way. Similarly FDI has been allowed in Insurance and Medical Devices.
- **New Mindset:** In order to partner with industry in economic development of the country Government shall act as a facilitator and not a regulator.

31. Ans. A

Exp: Statement 1 is incorrect: According to the Law of Demand, there is an inverse or indirect relationship between the quantity demanded of a commodity and its price.

Law of Demand

- It states that other things being equal, there is a negative relation between demand for a commodity and its price. In other words, when price of the commodity increases, demand for it falls and when price of the commodity decreases, demand for it rises, other factors remaining the same.
- The downward sloping demand curve shows that at lower prices, the individual is willing to buy more of commodity x; at higher prices, he/she is willing to buy less of commodity x.
- An explanation for a downward sloping demand curve rests on the notion of diminishing marginal utility. The law of diminishing marginal utility states that

each successive unit of a commodity provides lower marginal utility.

- Therefore the individual will not be willing to pay as much for each additional unit and this results in a downward sloping demand curve. At a price of Rs. 40 per unit x, the individual's demand for x was 5 units. The 6th unit of commodity x will be worth less than the 5th unit. The individual will be willing to buy the 6th unit only when the price drops below Rs. 40 per unit.
- Hence, the law of diminishing marginal utility explains why demand curves have a negative slope.

32. Ans. D

Exp: Both statements are correct

Monetary Policy Tools:

Liquidity Adjustment Facility (LAF)

- The LAF is the key element in the monetary policy operating framework of the RBI (introduced in June 2000). On a daily basis, the RBI stands ready to lend to or borrow money from the banking system, as per the need of the time, at fixed interest rates (repo and reverse repo rates).
- Together with moderating the fund mismatches of the banks, LAF operations help the RBI to effectively transmit interest rate signals to the market.

Open Market Operations (OMOs)

- OMOs are conducted by the RBI via the sale/purchase of government securities (G-Sec) to/from the market with the primary aim of modulating rupee liquidity conditions in the market.
- OMOs are an effective quantitative policy tool in the armory of the RBI but are constrained by the stock of government securities available with it at a point in time.

33. Ans. D

Exp: The Parliament is empowered to form a new state by separation of territory from any state or by uniting two or more states. It can also alter the boundary of any state or even its name. The Constitution provides for some safeguards by way of securing the view of the concerned state legislature.

34. Ans. B

Exp: Article 15 provides that State shall not discriminate against any citizen on grounds of religion, race, caste, sex or place of birth.

35. Ans. C

Exp: Statement 1 is incorrect: The Matterhorn is a mountain of the Alps.

- It separates the main watershed and border between Switzerland and Italy.
- It is a large, near-symmetric pyramidal peak in the extended Monte Rosa area of the Pennine Alps, whose summit is 4,478 meters.
- Statement 3 is incorrect: It is one of the highest summits in the Alps and Europe (Mont Blanc being highest)
- The four steep faces, rising above the surrounding glaciers, face the four compass points and are split by the Hörnli, Furggen, Leone/Lion, and Zmutt ridges.
- The Matterhorn is mainly composed of gneisses (originally fragments of the African Plate before the Alpine orogeny) from the Dent Blanche nappe, lying over ophiolites and sedimentary rocks of the Penninic nappes.
- The mountain's current shape is the result of cirque erosion due to multiple glaciers diverging from the peak, such as the Matterhorn Glacier at the base of the north face.

36. Ans. D

Exp: Option d is correct: An Indian Air Force transport delivered 6.2 tonne of essential medicines and hospital

consumables to the Maldives under Operation Sanjeevani.

- These medicines and consumables were procured from eight suppliers in India but couldn't be transported through any other means due to the 21-day lockdown imposed to contain the spread of COVID-19.
- India had dispatched a 14-member Army medical team to Maldives to set up a viral testing lab there. India had gifted 5.5 tonne of essential medicines to Male in March, 2020.
- The medicines included lopinavir and ritonavir, influenza vaccines. Apart from medicines, the IAF also delivered nebulisers, catheters, urine bags and feeding tubes.
- The treatment of Lopinavir and ritonavir has been suggested by WHO along with other 3 treatments.

37. Ans. A

Exp: Option (a) is correct

Sarajevo Haggadah

- Originating in Northern Spain in the second half of the 14th century, the "Sarajevo Haggadah" is a valuable manuscript written on parchment, with superb illuminations.
- Its origin and journey to Sarajevo, where it has been housed by the National Museum of Bosnia and Herzegovina since the end of the 19th century, are still shrouded in mystery.
- The Sarajevo Haggadah consists of 142 leaves of extraordinarily thin, bleached calfskin vellum.
- The Sarajevo Haggadah is divided into three parts:
- The first part consists of 34 pages with a total of 69 illuminated miniatures depicting Biblical events from the Creation to slavery in Egypt to the succession of Joshua after the death of Moses.
- The second part consists of 50 pages with the text that is read out loud

during Passover, written in medieval Sephardic script.

- The third part contains poetry by the most prominent Jewish poets of the Middle Ages.
- The Sarajevo Haggadah was made in Barcelona around the year 1350.
- It left Spain in 1492 after the Expulsion of the Jews, and surfaced again in Italy in the 17th century.
- The pigments on the pages are made from lapis lazuli, azurite, and malachite.
- The illuminations are decorated using gold, silver, and copper leaf.
- The names of the artist and the scribe are unknown.
- The illuminations in the Sarajevo Haggadah show both Christian and Islamic influences.

38. Ans. A

Exp: Statement 2 is incorrect: Last year, an all-woman Indian Navy team on Indian Naval Sailing Vessel (INSV) Tarini had successfully crossed Passage.

Drake Passage

- In a first, six rowers from four countries crossed the Drake Passage, in just under two weeks setting up a new Guinness World Records (GWR).
- Last year, an all-woman Indian Navy team on Indian Naval Sailing Vessel (INSV) Tarini had also successfully crossed Passage.
- The Passage is located between Cape Horn at the tip of South America and the Antarctic Peninsula.
- It is named after Sir Francis Drake, who was the first Englishman to circumnavigate the globe.
- It has an average depth of about 11,000 feet, with deeper regions going up to over 15,600 feet near the northern and southern boundaries.
- The Drake Passage is considered one of the roughest waterways in the world because here, layers of cold seawater from the south and warm seawater

from the north collide to form powerful eddies.

- These eddies when combined with strong winds and storms can be treacherous for those attempting to navigate it.
- It is also the narrowest stretch in the Southern Ocean and spans approximately 800 km between the southern tip of South America and the northern tip of the West Antarctic Peninsula.
- The waters of the passage are highly turbulent, unpredictable, and frequented by icebergs and sea ice.

39. Ans. C

Exp: Statement 1 is incorrect: Alvars were devotees of Vishnu while Nayanars were devotees of Shiva.

Statement 3 is incorrect: Women devotees were present among both Alvars and Nayanars.

Alvars and Nayanars

- Some of the earliest bhakti movements (c. sixth century) were led by the Alvars (literally, those who are "immersed" in devotion to Vishnu) and Nayanars (literally, leaders who were devotees of Shiva).
- They travelled from place to place singing hymns in Tamil in praise of their gods.
- During their travels the Alvars and Nayanars identified certain shrines as abodes of their chosen deities. Very often large temples were later built at these sacred places. These developed as centres of pilgrimage. Singing compositions of these poet-saints became part of temple rituals in these shrines, as did worship of the saints' images.
- Alvars and Nayanars initiated a movement of protest against the caste system and the dominance of Brahmanas or at least attempted to reform the system. This is corroborated by the fact that bhaktas hailed from diverse social backgrounds ranging from Brahmanas to

artisans and cultivators and even from castes considered “untouchable”.

- Alvars and Nayanars claimed that their compositions were as important as the Vedas. For instance, one of the major anthologies of compositions by the Alvars, the Nalayira Divyaprabandham, was frequently described as the Tamil Veda.
- Most striking feature of the Alvar and Nayanar traditions was the presence of women. For instance, the compositions of Andal, a woman Alvar, were widely sung and Karaikkal Ammaiyar, a woman Nayanar, adopted the path of extreme asceticism in order to attain her goal.
- One of the major themes in Tamil bhakti hymns is the poets’ opposition to Buddhism and Jainism. This is particularly marked in the compositions of the Nayanars. Historians explain this hostility as a result of competition between members of other religious traditions for royal patronage.

40. Ans. C

Exp: Both statements are correct

Chola Kingdom

- Cholas were mostly devotees of Shiva, though a few worshipped Vishnu and Buddhism. Jainism witnessed a decline. A peculiarity of the Chola religion was that greater stress was laid on dana(gift) than on yajna (sacrifice)
- Settlements of peasants, known as ur, gradually became prosperous with the spread of irrigation agriculture. Groups of such villages formed larger units called Nadu.
- The village council and the Nadu had several administrative functions including dispensing justice and collecting taxes. Rich peasants of the upper caste exercised considerable control over the affairs of the Nadu under the supervision of the central Chola government.

- Chola kings gave some rich landowners titles like muvendavelan (a velan or peasant serving three kings), araiyar (chief), etc. as markers of respect, and entrusted them with important offices of the state at the center.

41. Ans. C

Exp: Statement 4 is incorrect: Muhammad bin Tughlaq (ruled, 1324-51) was the first Sultan to visit the dargah of Khwaja Muinuddin.

Chisti Order in the Subcontinent

- Among the many groups of Sufis who migrated to India in the late twelfth century, the Chishtis were the most influential. This was because they adapted successfully to the local environment and adopted several features of Indian devotional traditions.

Major teachers of Chisti Silsila were:

| Sufi Teachers | Year of Death | Location of Dargah |
|-----------------------------------|---------------|---------------------|
| Shaikh Muinuddin Sijzi | 1235 | Ajmer |
| Khwaja Qutubuddin Bakhtiyar Kaki | 1235 | Delhi |
| Shaikh Fariduddin Ganj-i-Shakar | 1265 | Ajodhan (Rajasthan) |
| Shaikh Nizamuddin Auliya | 1325 | Delhi |
| Shaikh Nasiruddin Chiragh-i-Delhi | 1356 | Delhi |

- From morning till late night people from all walks of life – soldiers, slaves, singers, merchants, poets, travelers, rich and poor, Hindu jogis (yogi) and qalandars – came seeking discipleship, amulets for healing, and the intercession of the Shaikh in various matters.
- Other visitors included poets such as Amir Hasan Sijzi and Amir Khusrau and the court historian Ziyauddin Barani, all of whom wrote about the Shaikh.
- Pilgrimage, called ziyarat, to tombs of Sufi saints is prevalent all over the Muslim world. This practice is an

occasion for seeking the Sufi's spiritual grace (barakat).

- The most revered shrine is that of Khwaja Muinuddin, popularly known as "Gharib Nawaz" (comforter of the poor). It was evidently popular because of the austerity and piety of its Shaikh, the greatness of his spiritual successors, and the patronage of royal visitors. Muhammad bin Tughlaq (ruled, 1324-51) was the first Sultan to visit the shrine.
- Also part of ziyarat is the use of music and dance including mystical chants performed by specially trained musicians or qawwals to evoke divine ecstasy. The Sufis remember God either by reciting the zikr (the Divine Names) or evoking His Presence through Sama (literally, "audition") or performance of mystical music.
- Sama was integral to the Chishtis, and exemplified interaction with indigenous devotional traditions.

42. Ans. D

Exp: Option (d) is correct.

Khangchendzonga Biosphere Reserve:

- The Khangchendzonga Biosphere Reserve has become the 11th Biosphere Reserve from India that has been included in the UNESCO designated World Network of Biosphere Reserves (WNBR).
- The decision to include Khangchendzonga Biosphere Reserve in WNBR was taken at the 30th Session of International Coordinating Council (ICC) of Man and Biosphere (MAB) Programme of UNESCO held at Palembang, Indonesia, from July 23-27, 2018.
- India has 18 Biosphere Reserves and with the inclusion of Khangchendzonga, the number of internationally designated WNBR has become 11, with 7 Biosphere Reserves being domestic Biosphere Reserves.

- Khangchendzonga Biosphere Reserve in Sikkim is one of the highest ecosystems in the world, reaching elevations of 1, 220 metres above sealevel. It includes a range of ecolines, varying from sub-tropic to Arctic, as well as natural forests in different biomes, that support an immensely rich diversity of forest types and habitats.
- The core area of the Biosphere Reserve is a major transboundary Wildlife Protected Area.
- The southern and central landscape, which makes up 86% of the core area, is situated in the Greater Himalayas. The northern part of the area accounts for 14% is characterized by trans-Himalayan features. Buffer zones are being developed to promote eco-tourism activities. Plantation and soil conservation work is also being carried out.
- The core zone – Khangchendzonga National Park was designated a World Heritage Site in 2016 under the 'mixed' category. Many of the mountains, peaks, lakes, caves, rocks, Stupas (shrines) and hot springs function as pilgrimage sites. Over 118 species of the large number of medicinal plants found in Dzongu Valley in north Sikkim are of ethno-medical utility. The transition zone is targeted for eco-development activities, afforestation, plantation of medicinal herbs and soil conservation measures.

43. Ans. A

Exp: Statement 2 is incorrect: Allopatric speciation occurs when a population of organisms becomes isolated from their main group due to geographical barriers.

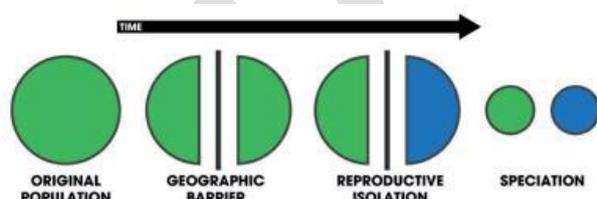
Statement 3 is incorrect: The main mechanisms resulting in sympatric speciation involve changes in the chromosomes of the organism.

Speciation

- Speciation is a process within evolution that leads to the formation of new, distinct species that are reproductively isolated from one another.
- It involves the splitting of a single evolutionary lineage into two or more genetically independent lineages.
- New species form by two major mechanisms namely, sympatric speciation and allopatric speciation.

Allopatric Speciation

- The physical isolation of the biology population due to the extrinsic barrier is called allopatric speciation.
- Allopatric speciation occurs when a population of organisms becomes separated or isolated from their main group due to geographical barriers.
- Over time, the new groups consisting of homogenous individuals become subjective to changes via natural selection due to pressure from differences in predators, climate, competitors and resources. Populations can become isolated for a variety of reasons.



Sympatric Speciation

- The evolution of new species from one ancestral species by living in the same habitat is called sympatric speciation.
- This type of speciation happens in a population without geographic isolation.
- The main mechanisms resulting in sympatric speciation involve changes in the chromosomes of the organism.
- One way this happens is when there is a serious error that occurs during cell division resulting in more than one copy of a chromosome(s), or the loss of a chromosome(s), in one of the daughter

cells. This condition is known as aneuploidy.

44. Ans. D

Exp: Option (d) is the correct answer. Statement 1 is incorrect. Originally, the Constitution of India did not make any provision with respect to the Special Officer for Linguistic Minorities. Later, the States Reorganisation Commission (1953-55) made a recommendation in this regard.

The Seventh Constitutional Amendment Act of 1956 inserted a new Article 350-B in Part XVII of the Constitution.

This article contains the following provisions:

- 1) There should be a Special Officer for Linguistic Minorities. He is to be appointed by the President of India.
- 2) It would be the duty of the Special Officer to investigate all matters relating to the safeguards provided for linguistic minorities under the Constitution. He would report to the President upon those matters at such intervals as the President may direct. The President should place all such reports before each House of Parliament and send to the governments of the states concerned.

Statement 2 is incorrect. The Constitution does not specify the qualifications, tenure, salaries and allowances, service conditions and procedure for removal of the Special Officer for Linguistic Minorities.

Source: Indian Polity, M Laxmikanth, Fifth Edition Part VII, Constitutional Bodies Chapter 48 Special Officer for Linguistic Minorities, Page 48.1

45. Ans. B

Exp: Option (b) is the correct answer. All the provisions given above have to be amended by a special majority of the Parliament and Consent of States (at least half).

Option 1 and 3 are incorrect. Election to State Legislature and Fifth and Sixth Schedule can be amended by a simple majority of both houses of Parliament.

The provisions of the Constitution which are related to the federal structure of the polity can be amended by a special majority of the Parliament and also with the consent of half of the state legislatures by a simple majority. Option 2, 4 and 5 are correct.

The following provisions can be amended:

- 1) Election of President
- 2) Executive powers of Union and states.
- 3) Supreme Court and High Court
- 4) Distribution of legislative powers between union and states.
- 5) Any of the lists in the seventh schedule.
- 6) Representation of states in Parliament.
- 7) Power of Parliament to amend the constitution including Article 368.

Source: Indian Polity - M Laxmikanth - Fifth Edition, Page - 10.2

46. Ans. C

Exp: Option (c) is the correct answer.

Charter Act of 1853 was the last charter act passed for East India Company. It was passed on expiry of charter act of 1833. The charter was renewed but no substantial changes were made.

However, this was for the first time, that this charter act, unlike other charter acts, did not fix any limit for the continuance of the administration of the company in India. The act provided that the Indian territories will remain under the Governance of the company, until the parliament otherwise directed.

Statement 1 is correct: The Act for the first time separated the legislative and executive functions of the Governor-General's Council. It provided for the addition of six new members called legislative councillors to the council. Thus, a new council named Indian (Central) Legislative Council was established.

It for the first-time treated legislation as a special function of the British Government. Statement 2 is incorrect: Charter Act of 1833 provided that the Governor-General of India was given exclusive legislation rights for entire British India.

Statement 3 is correct: It, for the first time, introduced local representation in Indian (Central) Legislative Council. Of the six new legislative members of Governor-general's council, four were appointed by the local (provincial) governments of Madras, Bombay, Bengal and Agra.

Provisions of the Charter Act 1853:

Governor-General's office:

- 1) The Law member (fourth member) became a full member with the right to vote.
 - 2) The Legislative Council which had six members now had 12 members.
 - 3) The 12 members were: 1 Governor-General, 1 Commander-in-Chief, 4 members of the Governor-General's Council, 1 Chief Justice of the Supreme Court at Calcutta, 1 regular judge of the Supreme Court at Calcutta, and 4 representative members drawn from among the company's servants with at least 10 years tenure, appointed by the local governments of Bengal, Bombay, Madras and North Western Provinces.
 - 4) The Governor-General could nominate a vice president to the council.
 - 5) The Governor-General's assent was required for all legislative proposals.
- The Court of Directors could create a new presidency or province. This was because of the difficulties that were faced in administering the increasingly large Indian territories of Britain.
 - a. Since 1833 and 1853, two new provinces of Sind and Punjab were added.
 - b. It could also appoint a Lieutenant Governor for these provinces. In 1859, a Lt. Governor was appointed for Punjab.

- c. This Act also led to the creation of Assam, Burma and the Central Provinces.
- The Act provided for the appointment of a separate governor for the Bengal Presidency. It maintained that the governor of Bengal should be different from the Governor-General who was to head administration of the whole of India.
 - The number of Board of Directors was reduced from 24 to 18 out of which 6 people were to be nominated by the British Crown.

Indian Civil Services

- 1) Macaulay Committee of 1854 gave India her first civil services.
- 2) This act removed the right of patronage to appointments in the civil service held by the Court of Directors.
- 3) Appointment was to be done only by open competition based on merit and was open to all.
- 4) The report recommended that only the 'fittest' be selected to the ICS.

Source: Indian Polity - M Laxmikanth - Fifth Edition, Page - 1.4

47. Ans. B

Exp: Statement 2 is incorrect: During earth's revolution around the sun, position on 4th July of the earth is called aphelion.

Statement 3 is incorrect: During earth's revolution around the sun, a position on 3rd January of the earth is called perihelion.

Solar Radiation

- The earth's surface receives most of its energy in short wavelengths. The energy received by the earth is known as incoming solar radiation which in short is termed as insolation.
- As the earth is a geoid resembling a sphere, the sun's rays fall obliquely at the top of the atmosphere and the earth intercepts a very small portion of the sun's energy. On average the earth

receives 1.94 calories per sq. cm per minute at the top of its atmosphere.

- The solar output received at the top of the atmosphere varies slightly in a year due to the variations in the distance between the earth and the sun.
- During its revolution around the sun, the earth is farthest from the sun (152 million km) on 4th July. This position of the earth is called aphelion.
- On 3rd January, the earth is the nearest to the sun (147 million km). This position is called perihelion.

48. Ans. D

Exp: Statement 1 is incorrect: It is maximum at the poles and is zero at the equator because it is directly proportional to the angle of latitude.

Statement 2 is incorrect: The Coriolis force acts perpendicular to the pressure gradient force.

Forces Affecting the speed and Direction of Wind

- The movement of air in the horizontal direction is called wind.
- The wind is under influence of the pressure gradient force (PGF), the frictional force and the Coriolis force.

Pressure Gradient Force (PGF)

- It is the rate of change of pressure with respect to distance
- It is perpendicular to the isobars (parallel lines connecting same atmospheric level). Hence, PGF is strong where the isobars are apart.
- If PGF is high, wind speed will be more.
- Frictional Force
- It is due to friction between the features (natural and man-made both) of the Earth and wind.
- It affects the speed of the wind.
- It is greatest at the surface and its influence generally extends
- Over the sea surface, the friction is minimal.

Coriolis Force

- The rotation of the earth about its axis affects the direction of the wind.
- This force is called the Coriolis force (a pseudo force exerted on a moving object i.e. wind by the rotating non-inertial frame observer).
- It has a role only in the direction of the wind. In doing so, it deflects the wind in the right direction in the northern hemisphere and to the left in the southern hemisphere.

49. Ans. D

Exp: All statements are correct

Igneous Rocks

- As igneous rocks form out of magma and lava from the interior of the earth, they are known as primary rocks. The igneous rocks (Ignis – in Latin means 'Fire') are formed when magma cools in its upward movement and turns into a solid form.
- The process of cooling and solidification can happen in the earth's crust or on the surface of the earth. Igneous rocks are classified based on texture. The texture depends upon the size and arrangement of grains or other physical conditions of the materials.
- If molten material is cooled slowly at great depths, mineral grains may be very large. Sudden cooling (at the surface) results in small and smooth grains.
- Intermediate conditions of cooling would result in intermediate sizes of grains making up igneous rocks. Granite, gabbro, pegmatite, basalt, volcanic breccia, and tuff are some of the examples of igneous rocks.

50. Ans. B

Exp: Statement 2 is incorrect: Cumulus clouds look like cotton wool and they have a flat base.

Clouds

- Cloud is a mass of minute water droplets or tiny crystals of ice formed by the condensation of the water vapour in free air at considerable elevations. As the clouds are formed at some height over the surface of the earth, they take various shapes.

According to their height, expanse, density and transparency or opaqueness clouds are grouped under four types:

1. Cirrus
2. Cumulus
3. Stratus
4. Nimbus

Cirrus

- Cirrus clouds are formed at high altitudes (8,000 - 12,000m). They are thin and detached clouds having a feathery appearance. They are always white in colour.

Cumulus

- Cumulus clouds look like cotton wool. They are generally formed at a height of 4,000 - 7,000 m. They exist in patches and can be seen scattered here and there. They have a flat base.

Stratus

- As their name implies, these are layered clouds covering large portions of the sky. These clouds are generally formed either due to loss of heat or the mixing of air masses with different temperatures.

Nimbus

- Nimbus clouds are black or dark gray. They form at middle levels or very near to the surface of the earth. These are extremely dense and opaque to the rays of the sun. Sometimes, the clouds are so low that they seem to touch the ground. Nimbus clouds are shapeless masses of thick vapour.

51. Ans. B

Exp: Statement 1 is incorrect: It is a joint mission of the European Space Agency (ESA) and the Russian Federal Space Agency (Roscosmos).

ExoMars (Exobiology on Mars) Programme

- It is a joint mission of the European Space Agency (ESA) and the Russian Federal Space Agency (Roscosmos).
- It is an astrobiology project to investigate whether life has ever existed on Mars.
- The term 'exo' in the ExoMars refers to the study of exobiology (sometimes referred to as astrobiology).
- The mission's objective is also to demonstrate new technologies paving the way for subsequent Mars missions in the 2020's.
- The programme comprises two missions:
- The first launched in March 2016 and consisted of the Trace Gas Orbiter (TGO) and Schiaparelli, an entry, descent and landing demonstrator module.
- TGO's main objectives are to search for evidence of methane and other trace atmospheric gases that could be signatures of active biological or geological processes. The Schiaparelli probe crashed during its attempt to land on Mars.
- The second, comprising a rover and surface platform, is planned for 2022. Together they will address the question of whether life has ever existed on Mars.
- In News: Launch of ExoMars rover delayed to 2022.

52. Ans. D

Exp: All statements are correct:

Cord Blood:

- Cord blood is the blood from the baby that is left in the umbilical cord and placenta after birth.

- It contains special cells called hematopoietic stem cells that can be used to treat some types of diseases.

Hematopoietic Stem Cells:

- Most cells can make copies only of themselves. For example, a skin cell only can make another skin cell.
- Hematopoietic stem cells, however, can mature into different types of blood cells in the body.
- Hematopoietic stem cells also are found in blood and bone marrow in adults and children.
- Hematopoietic stem cells can be used to treat more than 70 types of diseases, including diseases of the immune system, genetic disorders, neurologic disorders, and some forms of cancer, including Leukemia and Lymphoma.
- For some of these diseases, stem cells are the primary treatment. For others, treatment with stem cells may be used when other treatments have not worked or in experimental research programs.

Stem Cells:

- Stem cells are cells that can differentiate into other types of cells, and can also divide in self-renewal to produce more of the same type of stem cells.

53. Ans. B

Exp: Statement 1 is incorrect: It is an autonomous body of the Union Ministry of Women and Child Development.

Central Adoption Resource Authority (CARA)

- It is the nodal body for adoption of Indian children.
- It regulates in-country and inter-country adoptions following the provisions of The Hague Convention on Inter-Country Adoption, 1993, ratified by Government of India in 2003.

- It is an autonomous body of the Union Ministry of Women and Child Development.
- The mandatory registration of Child Care Institutions (CCIs) and linking to CARA has been provided in Juvenile Justice (Care and Protection of Children) Act, 2015.
- In News: The Central Adoption Resource Authority (CARA) has invited suggestions and feedback for simplification of the adoption process from all stakeholders, including prospective adoptive parents, specialized adoption agencies, child welfare committees, state adoption resource agencies and the general public.

54. Ans. D

Exp: Through Archimedes principles it can be shown that an object will sink in a liquid if its density is more than that of a liquid. If the density of the object is less than the liquid, it will float on it.

55. Ans. C

Exp: Sugar charcoal is obtained from the carbonization of sugar and is particularly pure. It is purified by boiling with acids to remove any mineral matter and is then burned for a long time in a current of chlorine in order to remove the last traces of hydrogen.

It gets liquefied at even room temperature but under high pressure. It is the purest form of amorphous carbon.

56. Ans. D

Exp: Statement 4 is incorrect: Loan given to the states by the centre comes under capital expenditure.

Revenue expenditure

- Revenue Expenditure is that part of government expenditure that does not result in the creation of assets. Payment

of salaries, wages, pensions, subsidies and interest fall in this category.

- Revenue expenses are incurred by the government for its operational needs.
- The Union government's revenue expenditure comprises money spent on revenue account — the amount spent on running its elaborate machinery.
- All grants given to state governments and Union territories are also treated as revenue expenditure, even if some of these grants may be used for the creation of capital assets.
- In India, the payment of subsidies is also included in revenue expenditure. The central government pays subsidy under three major heads – food subsidy, fertilizer subsidy and fuel subsidy.

57. Ans. B

Exp: Statement 1 is incorrect: An increasing trend of Gini Coefficient indicates that income inequality is rising Independent of absolute incomes of the population.

Gini Coefficient

- In economics, it (sometimes expressed as a Gini ratio or a normalized Gini index) is a measure of statistical dispersion intended to represent the income or wealth distribution of a nation's residents and is the most commonly used measure of income inequality.
- It is used to gauge the rich-poor income or wealth divide.
- It measures inequality of a distribution — be it of income or wealth — within nations or States.
- It can be used to compare income distribution of a country over time as well.

Its value varies anywhere from zero to 1; zero indicating perfect equality and one indicating the perfect inequality.

58. Ans. B

Exp: Statement 3 is incorrect: The use of Pali language helped in the spread of Buddhism.

Special Features of Buddhism and causes for its Spread

- Buddhism does not recognize the existence of god and soul.
- It appealed to the common people, and particularly won the support of the lower orders because it attacked the Varna system. People were accepted by the Buddhist order without any consideration of caste, and women too were admitted to the sangha and thus brought on a par with men. In comparison with Brahmanism, Buddhism was liberal and democratic.
- Buddhism particularly appealed to the people of the non-Vedic areas where it found virgin soil for conversion. The people of Magadha responded readily to Buddhism because they were looked down upon by the orthodox Brahmanas.
- The use of Pali, the language of people, contributed to the spread of Buddhism. It facilitated the spread of Buddhist doctrines amongst the common people.
- The personality of the Buddha and the method adopted by him to preach his religion helped the spread of Buddhism. He sought to fight evil by goodness and hatred by love and refused to be provoked by slander and abuse. He maintained his poise and calm under difficult circumstances and tackled his opponents with wit and presence of mind.

59. Ans. A

Exp: Statement 3 is incorrect: Mansabdars did not reside in or administer their own jagirs.

Mansabdari System

- Mansabdar refers to an individual who holds a Mansab, meaning a position or rank.

- It was a grading system used by the Mughals to fix: rank, salary and military responsibilities.
- Rank and salary were determined by a numerical value called zat. The higher the zat, the more prestigious was the noble position in court and the larger his salary.
- The mansabdar's military responsibilities required him to maintain a specified number of sawar or cavalymen. Mansabdars received their salaries as revenue assignments called jagirs.
- Mansabdars did not actually reside in or administer their jagirs. They only had rights to the revenue of their assignments which was collected for them by their servants while the mansabdars themselves served in some other part of the country.

60. Ans. D

Exp: All statements are correct

Mughal India

- The name 'Mughal' derives from Mongol. The term evokes the grandeur of an empire, it was not the name the rulers of the dynasty chose for themselves.
- They referred to themselves as Timurids, as descendants of the Turkish ruler Timur on the paternal side.
- Babur, the first Mughal ruler, was related to Ghenghiz Khan from his mother's side. He spoke Turkish and referred derisively to the Mongols as barbaric hordes.
- As the Mughals were Chaghtai Turks by origin, Turkish was their mother tongue.
- Mughal court chronicles were written in Persian.
- Under the Sultans of Delhi it flourished as a language of the court and of literary writings, alongside north Indian languages, especially Hindavi and its regional variants.

- It was Akbar who consciously set out to make Persian the leading language of the Mughal court.
- Cultural and intellectual contacts with Iran, as well as a regular stream of Iranian and Central Asian migrants seeking positions at the Mughal court, might have motivated the emperor to adopt the language.

61. Ans. B

Exp: Statement 1 is incorrect: It is Russia's new intercontinental hypersonic missile system that can fly 27 times the speed of sound.

Avangard Missile System

- Russia's military deployed a new intercontinental weapon, the Avangard hypersonic missile system that can fly 27 times the speed of sound.
- This will be the Russian military's first Avangard hypersonic intercontinental ballistic missile (ICBM).
- This feat is highly significant and comparable to the 1957 Soviet launch of the first satellite.
- Previously referred to as Project 4202, the Avangard hypersonic missile system is a re-entry body carried atop an existing ballistic missile, which has the capability to manoeuvre.
- The missiles have a range of over 6,000 km, weigh approximately 2,000 kg and can withstand temperatures of over 2000 degree Celsius.
- It's manoeuvring capability makes it difficult to predict its trajectory and gives it the ability to protect itself from the air and ballistic missile defences by delivering nuclear warheads to targets, for instance, in Europe and the US.

62. Ans. A

Exp: Statement 2 is incorrect: To calculate the swap ratio, companies analyze financial ratios such as book value, earnings per share, profits after tax, and dividends paid,

as well as other factors, such as the reasons for the merger or acquisition.

Swap Ratio

- It is the ratio at which an acquiring company will offer its own shares in exchange for the target company's shares during a merger or acquisition.
- To calculate the swap ratio, companies analyze financial ratios such as book value, earnings per share, profits after tax, and dividends paid, as well as other factors, such as the reasons for the merger or acquisition.
- The current market prices of the target and acquiring company's stock are compared along with their respective financial situations.
- A ratio is when configured which states the rate at which the target company's shareholders will receive acquiring company shares of stock for every one share of target company stock they currently hold.
- In News: Eight state-owned banks have announced swap ratios for the proposed mergers.

63. Ans. B

Exp: Statement 1 is incorrect: Payment Gateways in India allow the merchants to deal in a specific payment option put on the portal, whereas Payment aggregators offer multiple options for payment, from bank transfers, credit/debit cards, e-wallet transactions, and recently UPI.

Difference between Payment Gateways & Payment Aggregators:

- Payment Aggregator is the inclusion of all these payment gateways. Payment aggregators are service providers through which e-commerce merchants process payments. They allow merchants to accept bank transfers without setting up a merchant account that is associated with a bank.
- A Payment Gateway is an e-commerce software application, software that

allows online transactions to take place. It is a pass-through mechanism through which cards, net banking and e-wallet payments are done. Payment gateways offer a means to accept online payments.

- Both payment gateways and payment aggregators are inclusive. A payment aggregator need not act as a payment gateway, but a payment gateway will need an aggregator.
- Options: Payment Gateways in India allow the merchants to deal in a specific payment option put on the portal, whereas Payment aggregators offer multiple options for payment, from bank transfers, credit/debit cards, e-wallet transactions, and recently UPI.
- Small Businesses: Payment gateways use payment aggregators to be able to cater to small businesses. This is due to the fact that small businesses generally find the transaction fees provided by payment gateways too high and complex.
- Intermediary & Interface: Payment Gateways play the role of an intermediary with merchants and customers who want to pay for any goods or services they are purchasing from the site. A payment aggregator is more an interface through which said intermediaries accept payments and make settlements.
- Ownership: Payment gateways in India are owned by Payment aggregators (financial service providers) who act as a processing unit for implementing online payments. Payment gateways are merchants and vendors who cannot License: Payment gateways require RBI authorization before they set up a business. But a payment aggregator requires a payment aggregator license and obtains necessary certification from the Payment Card Industry (Data Security Standard/ PCI DSS).

- In news: RBI releases new guidelines for payment aggregators.

64. Ans. B

- Infrared light
- Visible light
- Ultraviolet light
- X rays

Exp: Statement 1, correct: Biochemical oxygen demand (BOD) is a measure of the amount of oxygen that bacteria will consume while decomposing organic matter under aerobic conditions.

Biochemical oxygen demand is determined by incubating a sealed sample of water for five days and measuring the loss of oxygen from the beginning to the end of the test.

Statement 2, correct: So, after 5 days if you measure lesser O₂ it means that BoD has been higher for the water sample. Statement 3, incorrect: CoD is a better indicator because,

- It includes measurement of organic matter alone but inorganic matter
- CoD result are instantaneous – we need not wait for 5 days to get a result!

65. Ans. D

Exp: Statement 1, correct: Black carbon is a particulate matter which acts as a heat trapping system.

It is said that black carbon is the most solar energy-absorbing component of particulate matter and can absorb one million times more energy than CO₂.

But unlike CO₂, which can stay in the atmosphere for hundreds to thousands of years, black carbon, because it is a particle, remains in the atmosphere only for days to weeks before it returns to earth with rain or snow.

Statement 2 & 3, correct: Because black carbon absorbs solar energy, it warms the atmosphere. When it falls to earth with

precipitation, it darkens the surface of snow and ice, reducing their albedo (the reflecting power of a surface), warming the snow, and hastening melting. Because of its inherent GHG properties, its effect includes depletion of ozone layer.

Around the world, three billion people cook their food and heat their homes by burning biomass or coal in crude stoves or open fires.

So, Ujjwala Yojana can be a potential scheme for reduction of GHG emission. At the Paris climate talks in 2015, the Climate and Clean Air Coalition comprised of government and industry groups, agreed on plans to tackle the emissions of “short-lived climate pollutants” which include black carbon, HFCs, methane and ground-level ozone.

66. Ans. C

Exp: Smog is air pollution that reduces visibility. Smog is common in industrial areas and remains a familiar sight in the cities.

- Most of the smog seen is photochemical smog. Photochemical smog is produced when sunlight reacts with nitrogen oxides and at least one volatile organic compound (VOC) in the atmosphere. Nitrogen oxides come from car exhaust, coal power plants and factory emissions.
- VOCs are released from gasoline, paints and many cleaning solvents. When sunlight hits these chemicals, they form airborne particles and ground-level ozone — or smog.
- Smog is unhealthy to humans and animals, and it can kill plants. Smog is also ugly. It makes the sky brown or gray. Smog is common in big cities with a lot of industries and traffic. Cities located in basins surrounded by mountains may have smog problems, because the smog is trapped in the valley and cannot be carried away by wind. Los Angeles, California; and

Mexico City, Mexico, both have high smog levels, partly because of this kind of landscape.

67. Ans. A

Exp: Carbon monoxide (CO) is an odourless and colourless gas.

- CO is found in fumes produced any time you burn fuel in cars or trucks, small engines, stoves, lanterns, grills, fireplaces, gas ranges or furnaces.
- The most common symptoms of CO poisoning are headache, dizziness, weakness, upset stomach, vomiting, chest pain and confusion.
- But, unlike flu, carbon monoxide poisoning does not cause a high temperature.

68. Ans. C

Exp: Option (c) is the correct answer.

Statement 1 is Incorrect: Although the Chairman and members of a SPSC are appointed by the governor, they can be removed only by the President (and not by the Governor).

Statement 2 is Correct: The President can also remove the Chairman or any other member of SPSC for misbehaviour. However, in this case, the President has to refer the matter to the Supreme Court for an enquiry.

Statement 3 is Correct: If the Supreme Court, after the enquiry, upholds the cause of removal and advises so, the president can remove the Chairman or a member. Under the provision of the Constitution, the advice tendered by the Supreme Court in this regard is binding on the President.

Source: Indian Polity, M Laxmikanth, Fifth Edition Part VII, Constitutional Bodies Chapter 44 SPSC, Page 44.1 and 44.2

69. Ans. B

Exp: Option (b) is the correct answer.

Statement 1 is incorrect. The writ of habeas corpus can be issued against both public authorities as well as private individuals. The

writ, on the other hand, is not issued where the

- (a) detention is lawful,
- (b) the proceeding is for contempt of a legislature or a court,
- (c) detention is by a competent court, and
- (d) detention is outside the jurisdiction of the court.

Statement 2 is correct. The writ of certiorari could be issued against judicial and quasi-judicial authorities, and against administrative authorities. It is not available against legislative bodies and private individuals or bodies.

Statement 3 is correct. The writ of prohibition can be issued only against judicial and quasi-judicial authorities. It is not available against administrative authorities, legislative bodies, and private individuals or bodies.

Some other writs:

- 1) Mandamus literally means 'we command'. It is a command issued by the court to a public official asking him to perform his official duties that he has failed or refused to perform. It can also be issued against any public body, a corporation, an inferior court, a tribunal or government for the same purpose.
- 2) Quo-Warranto means 'by what authority or warrant'. It is issued by the court to enquire into the legality of claim of a person to a public office. Hence, it prevents illegal usurpation of public office by a person.

Source: Indian Polity, M Laxmikanth, Fifth Edition Part I, Fundamental Rights, Chapter 7 Page 7.19, 7.20

70. Ans. A

Exp: Option (a) is the correct answer.

Statement 1 is correct: The members of Electoral College for election of President includes:

- Elected members of both Houses of Parliament

- Elected members of Legislative Assemblies of the States and Union territories of Delhi and Puducherry. While, the process of impeachment is carried out by members of both Houses of Parliament - both elected and nominated.

Statement 2 is correct: During the process of election of President, the sum of the value votes of all MLAs is equal to the sum of value of votes of all MPs.

Statement 3 is incorrect: The process of impeachment of President is a quasi-judicial process carried out by the legislators.

Source: Indian Polity, M Laxmikanth, Fifth Edition Part I, Chapter 5, Page 5.2

71. Ans. D

Exp: Option (d) is the correct answer.

In England, the Cabinet system is based on conventions. The framers of our Constitution considered it fit to incorporate the system in the Constitution.

The principle of collective responsibility finds place in Art. 75(3) where it is stated that the Council of Ministers shall be collectively responsible to the Lok Sabha. In other words, this provision means that a Ministry which loses confidence of the Lok Sabha is obliged to resign.

The loss of confidence is expressed by rejecting a Money Bill or Finance Bill or any other important policy measure or by passing a motion of no-confidence or rejecting a motion expressing confidence in the Ministry.

When a Minister loses confidence of the Lok Sabha the whole of the Ministry has to resign including those Ministers who are from the Rajya Sabha. The Ministers fall and stand together. In certain cases, the Ministry may advise the President to dissolve the Lok Sabha and call for fresh elections.

Source: Chapter 19 and 20 (page no 19.2 and 20.2) Indian Polity by M. Laxmikanth fifth edition

72. Ans. A

Exp: Statement 1 is incorrect: When the rivers originate from a hill and flow in all directions, the drainage pattern is known as 'radial'.

Important Drainage Patterns

- The drainage pattern resembling the branches of a tree is known as "dendritic" the examples of which are the rivers of northern plain.
- When the rivers originate from a hill and flow in all directions, the drainage pattern is known as 'radial'. The rivers originating from the Amarkantak range present a good example of it.
- When the primary tributaries of rivers flow parallel to each other and secondary tributaries join them at right angles, the pattern is known as 'trellis'.
- When the rivers discharge their waters from all directions in a lake or depression, the pattern is known as 'centripetal'.

73. Ans. A

Exp: Option (a) is correct:

| Term | Definition |
|------------------|---|
| A. Lithification | 2. Turning of fragments into rocks through compaction |
| B. Foliation | 3. Arrangement of minerals in layers in metamorphic rocks |
| C. Banding | 1. Arrangement of minerals into thin to thick layers appearing in light and dark shades |

Terms and their definitions

- Rocks (igneous, sedimentary and metamorphic) of the earth's surface are exposed to denudational agents and are broken up into various sizes of

fragments. Such fragments are transported by different exogenous agencies and deposited. These deposits turn into rocks through compaction. This process is called lithification. In many sedimentary rocks, the layers of deposits retain their characteristics even after lithification.

- In the process of metamorphism in some rocks grains or minerals get arranged in layers or lines. Such an arrangement of minerals or grains in metamorphic rocks is called foliation or lineation.
- Sometimes minerals or materials of different groups are arranged into alternating thin to thick layers appearing in light and dark shades. Such a structure in metamorphic rocks is called banding and rocks displaying banding are called banded rocks.

74. Ans. B

Exp: Statement 1 is incorrect: It is the force per unit area exerted against a surface by the weight of the air above that surface.

Atmospheric Pressure

- Atmospheric pressure is the weight of a column of air contained in a unit area from the mean sea level to the top of the atmosphere.
- Therefore, at a place, if the air is dense for instance near the Earth's surface (due to Gravity), the atmospheric pressure will be more.
- It is expressed in atm (Atmosphere), mb (millibar) and Pa (Pascal).
- It is measured with the help of a mercury barometer or the aneroid barometer.
- At sea level, the average atmospheric pressure is 1 atm or 1,013.2 mb or 1,013.2 h Pa(kilo Pascal).

Variations of Atmospheric Pressure

- As the Pressure depends on the number of air molecules present at any place, it

varies both vertically as well as horizontally.

- This variation of the Atmospheric Pressure has been playing a very important role in Weather and Climate.
- Its variation is the main cause of air motion/ wind.

Vertical Variation

- The pressure decreases with height because air gets thinner.
- The average decrease is about 1 mb per each 10m increase in elevation, subject to other factors such as Temperature, local topography, closeness to the sea, etc.
- Therefore, if the surface Atmospheric Pressure at any place is 1,000 mb, then the Pressure at 1 km above the surface will be $(1000 - 100)$ mb i.e. 900mb.
- Despite high vertical pressure gradient, there is weak upward wind because the pressure gradient gets weakened by the Gravitational force.

Horizontal Variation

- The horizontal variation of the Pressure depends on the differential heating (insolation) of the surface which causes the differential air volumes.
- These variations are highly significant in terms of wind direction and speed. Though the direction and speed depend also on Frictional force and Coriolis force.
- Horizontal distribution of pressure is studied by drawing isobars (lines connecting places having equal pressure) at constant levels.

75. Ans. D

Exp: The Ministry of Earth Science has launched 'Sagar Vani' app on the occasion of its foundation Day.

- It is a software platform where various dissemination modes will be integrated on a single central server.

- It aims to provide ocean information services for the benefit of various user communities in the country
- It will serve the coastal community, especially the fishermen community with the advisories and alerts towards their livelihood as well as their safety at Sea.

76. Ans. B

Exp: Statement 1 is Incorrect:

Air-independent propulsion (AIP) is any marine propulsion technology that allows a non-nuclear submarine to operate without access to atmospheric oxygen.

- AIP can augment or replace the diesel-electric propulsion system of nonnuclear vessels.
- AIP is usually implemented as an auxiliary source, with the traditional diesel engine handling surface propulsion.
- The DRDO is currently trying to integrate AIP in some of the Scorpene submarines which are currently being manufactured in the Madzgaon dock.

Statement 2 is Correct:

- A scramjet is a variant of a ramjet air breathing jet engine in which combustion takes place in supersonic airflow.
- A scramjet relies on high vehicle speed to compress the incoming air forcefully before combustion (hence ramjet), but whilst ramjet decelerates the air to subsonic velocities before combustion, the airflow in a scramjet is supersonic throughout the entire engine.
- That allows the scramjet to operate efficiently at extremely high speeds. India has already undertaken experimental flights by using scramjet technology. The recent Scramjet Engine Technological Demonstrator was an experimental flight.

77. Ans. B

Exp: Statements 1 and 3 are incorrect:

- Transpiration level is the transfer of moisture from the fruit / produce into the atmosphere.
- Respiration is the chemical process by which fruits and vegetables convert sugars and oxygen into carbon dioxide, water, and heat.
- Both processes increase with rise in temperature. Thus Cold storage reduces rate of both these process.

78. Ans. A

Exp:Statement 2 is incorrect: The bill provides for the establishment of a DNA Regulatory Board chaired by Secretary to Department of Biotechnology.

Statement 3 is incorrect: The bill provides for consent based collection of DNA for DNA Profiling in certain categories of cases like where imprisonment is up to 7 years.

DNA Technology (Uses and Application) Regulation Bill, 2019

- The bill is for the regulation of use and application of DNA technology for the purpose of establishing identity of missing persons, victims, offenders, under trials and unknown deceased persons.
- The primary intended purpose is to expand the application of DNA-based forensic technologies to support and strengthen the justice delivery system of the country.
- By providing for the mandatory accreditation and regulation of DNA laboratories, the Bill seeks to ensure that with the proposed expanded use of this technology in this country, there is also the assurance that the DNA test results are reliable, and furthermore that the data remain protected from misuse or abuse in terms of the privacy rights of our citizens.
- Establishment of the National and Regional DNA Data Banks, as envisaged in the Bill, will assist in forensic investigations

- Under the bill, DNA testing is allowed only in respect of matters listed in the schedule to the bill. These include offences under the Indian Penal Code, 1860, and for civil matters such as paternity suits.
- Consent based collection of DNA for DNA Profiling in certain cases.
- The Bill provides for the establishment of a National DNA Data Bank and Regional DNA Data Banks, for every state, or two or more states. DNA laboratories are required to share DNA data prepared by them with the National and Regional DNA Data Banks
- The Bill provides for the establishment of a DNA Regulatory Board, which will supervise the DNA Data Banks and DNA laboratories. The Secretary, Department of Biotechnology, will be the ex officio Chairperson of the Board.
- The Bill specifies penalties for various offences like for disclosure of DNA information or using DNA sample without authorization.

79. Ans. B

Exp:Statement 1 is incorrect: Atmospheric Waves Experiment (AWE) will be launched by National Aeronautics and Space Administration (NASA).

Statement 3 is incorrect: It will be attached to the exterior of Earth-orbiting International Space Station (ISS).

Atmospheric Waves Experiment (AWE)

- The Atmospheric Waves Experiment (AWE) mission will be launched by National Aeronautics and Space Administration (NASA) and is planned to launch in 2022.
- This experiment will help scientists understand and, ultimately, forecast the vast space weather system around our planet.
- Space weather is important because it can have profound impacts – affecting technology and astronauts in space,

disrupting radio communications and, at its most severe, overwhelming power grids.

- Earlier it was thought that only the Sun's constant outflow of ultraviolet light and particles, the solar wind, could affect the region. However, recently it is learned that solar variability is not enough to drive the changes observed, and Earth's weather also must be having an effect.
- To help unravel this connection, AWE will investigate how waves in the lower atmosphere, caused by variations in the densities of different packets of air, impact the upper atmosphere.
- AWE will be attached to the exterior of Earth-orbiting International Space Station (ISS).

80. Ans. A

Exp: Such types of questions can be solved by my elimination and this can save time. Redundant statements, thus, gets eliminated. Key word here is explicitly mentioned.

Statement 2, FR, incorrect: Because FR is basically a political rights section which does not have direct reference to environment. However, indirectly, SC has opined that Article 21 implicitly covers Right to Clean Environment (MC Mehta Case) Option B & D gets eliminated. This leaves with Option A & C where Statement 1 is deciding factor.

Statement 1, Correct: Article 51A (g) states that "to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures" is duty of every citizen. So with this we arrive at the answer without going through S3, S4 & S5. This saves time and also even if we don't know any of S3, S4 & S5, we can still get the question correct. Statement 3 & 4, Correct:

Article 48A states that protection and improvement of environment and safeguarding of forests and wildlife is prime

responsibility of government. This was added by 42nd Amendment Act to Constitution. Sch. 7 which concerns to division of power says forest management is responsibility of both Union and State (42nd CAA)

Statement 5, incorrect: Schedule 1 corresponds to names of States and union territories.

81. Ans. B

Exp: Bioremediation is the use of living micro-organisms to degrade the environmental contaminants into less toxic forms. It uses naturally occurring bacteria and fungi or plants to degrade or detoxify substances hazardous to human health and/or the environment.

- The micro-organisms may be indigenous to a contaminated area or they may be isolated from elsewhere and brought to the contaminated site. Contaminant compounds are transformed by living organisms through reactions that take place as a part of their metabolic processes. Biodegradation of a compound is often a result of the actions of multiple organisms.
- Bioremediation can be effective only where environmental conditions permit microbial growth and activity. The application often involves the manipulation of environmental parameters to allow microbial growth and degradation to proceed at a faster rate.

Salient Features

- It is cost effective. No construction or additional infrastructure is required.
- These microbes are effective in controlling odour, reducing TSS (Total suspended solids), BOD (Biochemical Oxygen Demand), oil / grease accumulation in sewage / polluted water and solids.
- These microbial consortia exhibit growth at wider temperature range.

- These strains maintain a satisfactory level of DO (Dissolved Oxygen) and therefore aerators, which consume high power, can be avoided or its use can be reduced.
- Control the nutrient level in water, thus helps in controlling “Eutrophication” process.

82. Ans. B

Exp: There are two GEAC’s in India which needs to be studied to answer this question. Statement 1, incorrect & Statement 2, correct :

The Genetic Engineering Advisory Committee (GEAC): GEAC is apex body under Environment Ministry for regulating manufacturing, use, import, export and storage of hazardous micro-organisms or genetically engineered organisms (GMOs) and cells in the country. It is also responsible for giving technical approval of proposals relating to release of GMOs and products including experimental field trials.

Genetic Engineering Approvals Committee: On 23 January 2003, India ratified the Cartagena Protocol which protects biodiversity from potential risks of genetically modified organisms, the products of modern biotechnology.

The protocol requires setting up of a regulatory body. Currently, the Genetic Engineering Approvals Committee, a body under the Ministry of Environment and Forests (India) is responsible for approval of genetically engineered products in India.

83. Ans. D

Exp: Stagflation is a combination of inflation and rising unemployment due to recession.

Deflation is when there is a general fall in the level of prices.

Disinflation, which is the reduction of the rate of inflation.

Skewflation refers to rise in price of one or small group of commodities over a sustained period of time, along with decreasing prices in others.

84. Ans. B

Exp: Fiscal deficit is the difference between the government's total expenditure and its total receipts excluding borrowing.

Gross fiscal deficit = Total expenditure - (Revenue receipts + Non-debt creating capital receipts)

It indicates total borrowing requirements of the government from all sources.

Gross fiscal deficit = Net borrowing at home + Borrowing from RBI + Borrowing from abroad.

Borrowings of private sector is not accounted in fiscal deficit. Hence, statement 3 is incorrect.

Net borrowing at home includes that directly borrowed from the public through debt instruments (for example, the various small savings schemes) and indirectly from commercial banks through Statutory Liquidity Ratio (SLR).

85. Ans. D

Exp: India Brand Equity Foundation (IBEF) is a Trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India.

Hence, statement 1 is not correct.

It is established as an Investment Promotion Agency for creating the —brand India||. Hence, statement 2 is correct.

Structure and Mandate:

Set up in 1996, IBEF is fully funded, owned and controlled by Union Government. Hence, statement 3 is correct.

86. Ans. B

Exp: Correct Option: (b)

- Statement 3 is incorrect: There was a weakening of central paramount power during the period of Indian feudalism.

Feudalism

- Feudalism was a kind of socio-political organization which was based on land tenure given by the King to the Samantas who served their masters in various ways. In other words, feudalism was a part of the feudal society where the subordinate subjects showed loyalty to their Lords and obtained from them a piece of land thereby serving their master, in various ways seeking protection from them for their life and property.
- The parallelization of sovereignty could take place because of the dismemberment of the centralized political structure of the pre-feudal days.

Chief features of the feudal economy were:

- Conversion of royal and communal rights on land into the private holding of vassals
- Peasant bearing the burdens of numerous legal and extra-legal levies, including vishti or forced labor.
- Slumps in crafts, commerce and urban decay resulting in the stagnant and enclosed village economy.

87. Ans. B

Exp: Statement 1 is incorrect: The act created a new office of Secretary of State for India vested with complete authority and control over Indian administration.

Government of India Act 1858

- The Act was enacted in the wake of the Revolt of 1857—also known as the First War of Independence or the ‘sepoy mutiny’. The act known as the Act for the Good Government of India abolished the East India Company and transferred the powers of government, territories, and revenues to the British Crown.

Salient Features of the Act:

- It changed the designation of the Governor-General of India to that of Viceroy of India. He (viceroy) was the direct representative of the British Crown in India. It did not create any new office of the viceroy.
- It ended the system of double government by abolishing the Board of Control and Court of Directors.
- It created a new office, Secretary of State for India, vested with complete authority and control over Indian administration. The secretary of state was a member of the British cabinet and was responsible ultimately to the British Parliament.
- It established a 15-member Council of India to assist the secretary of state for India. The council was an advisory body. The secretary of state was made the chairman of the council.

88. Ans. D

Exp: Statement 1 is incorrect: It was introduced in Madras and Bombay Presidencies in the beginning of 19th century.

Statement 2 is incorrect: The Ryotwari settlement did not bring into existence a system of peasant ownership.

Statement 3 is incorrect: The Ryotwari system was planned by Reed and Munro.

Ryotwari Settlement

- It was introduced by Reed and Munro in parts of Madras and Bombay Presidencies in the beginning of 19th century.
- Under the system, the cultivator was to be recognized as the owner of his plot of land subject to the payment of land revenue.
- The settlement under this system was not made permanent; but was reviewed

periodically after 20-30 years when the revenue demand was usually raised.

- The Ryotwari settlement did not bring into existence a system of peasant ownership. The peasants soon discovered that the large number of zamindars have been replaced by the one giant zamindari – the state. In fact, the Government later openly claimed that land revenue was rent and not a tax.
- The ryot's right of ownership of his land was also negated by three other factors:
- In most areas the land revenue fixed was exorbitant; the ryot was hardly left with bare maintenance even in the best of seasons.
- The Government retained the right to enhance land revenue at will.
- The ryot had to pay revenue even when his produce was partially or wholly destroyed by drought or floods.

89. Ans. C

Exp: Both statements are correct

The Role of the Press and Literature

- The chief instrument through which the nationalist-minded Indians spread the message of patriotism and modern economic, social and political ideas and created an all-India consciousness was the press.
- Large numbers of nationalist newspapers made their appearance during the second half of the 19th century.
- In their columns, the official policies were constantly criticized; the Indian point of view was put forward; the people were asked to unite and work for national welfare; and ideas of self-government, democracy, industrialization, etc., were popularised among the people. The press also enabled nationalist workers living in different parts of the country to exchange views with One another.
- Some of the prominent nationalist newspapers of the period were the Hindu Patriot, the Amrita Bazar Patrika, the

Indian Mirror, the Bengalee, the Som Prakash and the Sanjivani In Bengal; the Rast Goftar, the Native Opinion, the Indu Prakash, the Mahratta, and the Kesari in Bombay; the Hindu, the Swadesamitran, the Andhra Prakasika, and the Kerala Patrika in Madras; the Advocate, the Hindustani, and the Azad in U. P.; and the tribune, the Akhbar-i-Am, and the Koh-i-Noor in Punjab.

90. Ans. C

Exp: Option (c) is the correct answer.

The 73rd amendment act provides for a Gram Sabha as the foundation of the Panchayati Raj system. The term Gram Sabha is defined in the Constitution of India under Article 243(b).

It is a body consisting of persons registered in the electoral rolls of a village comprised within the area of Panchayat at the village level. Thus it is a village assembly consisting of all the registered voters in the area of a Panchayat.

It may exercise such powers and perform such functions at the village level as the legislature of a state determines.

Gram Sabha is the primary body of the Panchayati Raj system and by far the largest. It is also a permanent body.

91. Ans. A

Exp: Option (a) is the correct answer.

Statement 1 is correct. The Constitution does not specify the castes or tribes which are to be called the SCs or the STs. It leaves to the President the power to specify as to what castes or tribes in each state and union territory are to be treated as the SCs and STs.

Thus, the lists of the SCs or STs vary from state to state and union territory to union territory. In the case of states, the President issues the notification after consulting the Governor of the concerned state. But, any inclusion or exclusion of any caste or tribe

from Presidential notification can be done only by the Parliament and not by a subsequent Presidential notification.

Statement 2 is correct. The 82nd Amendment Act of 2000 provides for the making of any provision in favour of the SCs and STs for relaxation in qualifying marks in any examination or lowering the standards of evaluation, for reservation in matters of promotion to the public services of the Centre and the states.

Statement 3 is incorrect. The Centre should pay grants-in-aid to the states for meeting the costs of schemes of welfare of STs (Article 275(1)) and for raising the level of administration in scheduled areas. There is no such mandatory provision for SCs.

Source: Chapter 63, Laxmikanth, 5th edition

92. Ans. B

Exp: Option (b) is the correct answer.

Statement 1 is incorrect. The office of whip is neither mentioned 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.

Statement 2 is incorrect. Every political party, whether ruling or Opposition has its own whip in the Parliament.

Statement 3 is correct. Functions of Whip: He is appointed by the political party to serve as an assistant floor leader. He 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 behaviour of members of the political party in the Parliament.

Source: Indian Polity by M Laxmikanth/ Chapter 22 / Whip, page no. 22.11

93. Ans. C

Exp: Statement 1 is incorrect: The plan rejected the demand for a full-fledged Pakistan

Statement 2 is incorrect: Three tier executive and legislature at all i.e. provincial, section and union levels.

Cabinet Mission Plan

- The Cabinet Mission reached Delhi on March 24, 1946. It had prolonged discussions with Indian leaders of all parties and groups on the issues of:
 - Interim government; and
 - Principles and procedures for framing a new constitution giving freedom to India.
- The plan reject the demand for a fullfledged Pakistan, because:
 - Pakistan so formed would include a large non-Muslim population-38 % in the North-West and 48 % in the North-East;
 - The very principle of communal self -determination would claim separation of Hindu-majority western Bengal and Sikh-and Hindu-dominated Ambala and Jullundur divisions of Punjab (already some Sikh leaders were demanding a separate state if the country was partitioned);
 - Deep-seated regional ties would be disturbed if Bengal and Punjab were partitioned;
 - Partition would entail economic and administrative problems, for instance, the problem of communication between the western and eastern parts of Pakistan; and
 - The division of the armed forces would be dangerous.
- Three-tier executive and legislature at provincial, section and union levels.

Other recommendations of Cabinet Mission Plan:

- Grouping of existing provincial assemblies into three sections:

- Section-A: Madras, Bombay, Central Provinces, United Provinces, Bihar and Orissa (Hindu-majority provinces).
- Section-B: Punjab, North-West Frontier Province and Sindh (Muslim- majority provinces).
- Section-C: Bengal and Assam (Muslim majority provinces).
- A constituent assembly to be elected by provincial assemblies by proportional representation (voting in three groups— General, Muslims, Sikhs). This constituent Assembly to be a 389-member body with provincial assemblies sending 292, chief commissioner's provinces sending 4, and princely states sending 93 members. This was a good, democratic method not based on weightage.
- In the constituent assembly, members from groups A, B and C were to sit separately to decide the constitution for provinces and if possible, for the groups also. Then, the whole constituent assembly (all three sections A, B and C combined) would sit together to formulate the Union constitution.
- A common centre would control defence, communication and external affairs.
- Provinces were to have full autonomy and residual powers.
- After the first general elections, a province was to be free to come out of a group and after 10 years, a province was to be free to call for a reconsideration of the group or the Union constitution.
- Meanwhile, an interim government to be formed from the constituent assembly.

94. Ans. C

Exp: Statement 2 is incorrect: North-East India was also affected. Manipuris took a brave part in it and Nagaland produced a brave heroine in Rani Gaidilieu.

Statement 4 is incorrect: During it, a section of Garhwal Rifles soldiers refused to fire on an unarmed crowd in Peshawar.

Civil Disobedience Movement

- On March 2, 1930, Gandhi informed the viceroy of his plan of action. According to this plan, Gandhi, along with a band of seventy eight members of Sabarmati Ashram, was to march from his headquarters in Ahmedabad through the villages of Gujarat for 240 miles.
- On reaching the coast at Dandi, the salt law was to be violated by collecting salt from the beach. The historic march, marking, the launch of the Civil Disobedience Movement, began on March 12, and Gandhi broke the salt law by picking up a handful of salt at Dandi on April 6.
- North-East India was also affected. Manipuris took a brave part in it and Nagaland produced a brave heroine in Rani Gaidilieu, who at the age of thirteen responded to the call of Gandhi and the Congress and raised the banner of rebellion against foreign rule. She was captured in 1932 and sentenced to life imprisonment.
- In the north-west the most famous leader was Abdul Gaffar Khan, nicknamed as "Frontier Gandhi". Gaffar Khan, also called Badshah Khan had started the first Pushto political monthly 'Pukhtoon' and had organised a volunteer brigade 'Khudai Khidmatgars', popularly known as the 'Red-Shirts', who were pledged to the freedom struggle and non-violence.
- During it, a section of Garhwal Rifles soldiers refused to fire on an unarmed crowd in Peshawar. This upsurge in a province with 92 per cent Muslim population left the British government nervous.

95. Ans. C

Exp: Statements 1 is incorrect: Prominent tribal community from west to east are the Monpa, Abor, Mishmi, and Nyishi and Naga.

Arunachal Himalayas

- These extend from the east of the Bhutan Himalayas up to the Diphu pass in the east.
- The general direction of the mountain range is from southwest to northeast. Some of the important mountain peaks of the region are Kangtu and Namcha Barwa.
- An important aspect of the Arunachal Himalayas is the numerous ethnic tribal community inhabiting these areas.
- Some of the prominent ones from west to east are the Monpa, Abor, Mishmi, Nyishi and the Nagas.
- Most of these communities practice Jhumming. It is also known as shifting or slash and burn cultivation. This region is rich in biodiversity which has been preserved by the indigenous communities.
- Due to rugged topography, the inter valley transportation linkages are nominal. Hence, most of the interactions are carried through the duar region along the Arunachal-Assam border.

96. Ans. A

Exp: Statement 2 is incorrect: For the formation of dew, it is necessary that the dew point is above the freezing point.

Dew

- When the moisture is deposited in the form of water droplets on cooler surfaces of solid objects (rather than nuclei in the air above the surface) such as stones, grass blades, and plant leaves, it is known as dew.
- The ideal conditions for its formation are a 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.

97. Ans. C

Exp: Both statements are correct

The Himalayan Mountains and other Peninsular Mountain

- The Himalayan Mountains along with Peninsular Mountain are young, weak and flexible in their geological structure unlike the rigid and stable Peninsular Block.
- Consequently, they are still subjected to the interplay of exogenic and endogenic forces, resulting in the development of faults, folds and thrust plains.
- These mountains are tectonic in origin, dissected by fast-flowing rivers that are in their youthful stage. Various landforms like gorges, V-shaped valleys, rapids, waterfalls, etc. are indicative of this stage.

98. Ans. C

Exp: Statement 1 is incorrect: A farmer scientist of Junagadh district, Gujarat Shri Vallabhai Vastambhai Marvaniya developed bio-fortified carrots. The carrots are locally called "Madhuban Gajar".

Biofortified Carrots

- A farmer scientist of Junagadh district, Gujarat Shri Vallabhai Vastambhai Marvaniya developed bio-fortified carrots. The carrots are locally called "Madhuban Gajar".
- The Madhuban Gajar is a highly nutritious carrot variety developed through the selection method.
- It has higher β -carotene content (277.75 mg/kg) and iron content (276.7 mg/kg) dry basis and is used for various value-added products like carrot chips, juices, and pickles. Among all the varieties tested, beta-carotene and iron content were found to be superior.
- Shri Vallabhai Vasrambhai Marvaniya was conferred with a National Award by

the President of India at Rashtrapati Bhavan, New Delhi during Festival of Innovation (FOIN) – 2017. He was conferred with Padma Shri in the year 2019 for his extraordinary work.

99. Ans. B

Exp: Statement 2 is incorrect: Tara Tarini hill shrine is located at Kumari hill on banks of the Rushikulya River.

Chaitra Jatra Festival

- It is celebrated at Tara Tarini hill shrine in the Hindu month of Chaitra.
- Tara Tarini hill shrine is located at Kumari hill on banks of the Rushikulya River. It is a major centre of Shakti worship in Odisha.
- The Rushikulya River is one of the major rivers of the Odisha state. The river originated from Daringabadi a hill that is located in Eastern Ghats.
- In News: Odisha cancels annual Chaitra Jatra festival

100. Ans. C

Exp: Both statements are correct

Kurzarbeit scheme

- Kurzarbeit is German for “short-work”. The policy provides for a short-time work allowance, called kurzarbeitgeld, which partially compensates for lost earnings during uncertain economic situations.
- The policy was rolled out during the 2008 economic crisis while its origins date back as far as the early 20th century, before and after World War I.
- The scheme aims to address workers who are impacted by loss of income due to shortened work hours during such times.
- They can apply for short-term work benefits under the scheme, with the government stepping in to pay employees a part of their lost income.
- This helps the companies retain their employees instead of laying them off,

and allows the latter to sustain themselves for a period of up to 12 months.

- Quantum of payment: Payment under Kurzarbeit is calculated on the basis of net loss of earnings. As per Germany’s Federal Agency for Work, short-time employees generally receive about 60 per cent of the flat-rate net wage, In case there is at least one child in the house of the short-time worker, he/she receives 67 per cent of the flat-rate net wage.
- Germany’s Kurzarbeit scheme, for payment of staff hit by lost work hours.