



# All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

## Answer Key Explanation

### Test 10 – GS Paper I

Maximum Questions: 100

Maximum Marks: 200

**1. Ans. D**

**Exp:** Statement 1 is incorrect: First fish appeared during Ordovician period not Cambrian.

Statement 2 is incorrect: Extinction of Dinosaur's happened in Cretaceous period. Jurassic period is known as "Age of Dinosaurs".

**2. Ans. B**

**Exp:** Statement 2 is incorrect: The transfer of heat through horizontal movement of air is called advection and that through vertical movement is called convection.

- Statement 4 is incorrect: Maximum insolation is received over the subtropical deserts, where the cloudiness is the least.

**Insolation (Variability/distribution)**

- The amount and the intensity of insolation vary during a day, in a season and in a year. The factors that cause these variations in insolation are :
  - 1) the rotation of earth on its axis;
  - 2) the angle of inclination of the sun's rays;
  - 3) the length of the day;
  - 4) the transparency of the atmosphere;
  - 5) the configuration of land in terms of its aspect.
- The insolation received at the surface varies from about 320 Watt/m<sup>2</sup> in the tropics to about 70 Watt/m<sup>2</sup> in the poles. Maximum insolation is received over the subtropical deserts, where the cloudiness is the least. Equator receives comparatively less insolation than the tropics.

- The heat energy from the solar radiation is received by the earth through various mechanisms— conduction, convection, advection, and terrestrial radiation.
- The earth after being heated by insolation transmits the heat to the atmospheric layers near to the earth in long wave form. The air in contact with the land gets heated slowly and the upper layers in contact with the lower layers also get heated. This process is called conduction.
- The air in contact with the earth rises vertically on heating in the form of currents and further transmits the heat of the atmosphere. This process of vertical heating of the atmosphere is known as convection.
- The transfer of heat through horizontal movement of air is called advection.
- The insolation received by the earth is in short waves forms and heats up its surface.
- The earth after being heated itself becomes a radiating body and it radiates energy to the atmosphere in long wave form. This energy heats up the atmosphere from below. This process is known as terrestrial radiation.

**3. Ans. A**

**Exp:** Central Issue Price (CIP) is the price at which central government issues food grains to state governments and governments of Union territories for distribution under Targeted Public Distribution System (TPDS) to serve families of Below Poverty Line (BPL), Above Poverty Line (APL) and Antyodaya Anna Yojana (AAY) at rates fixed by the

Government of India. Hence statement 1 is correct.

- Ministry of Consumer Affairs, Food & Public Distribution Government of India, fixes the Central Issue Prices (CIP) of wheat and rice which is uniform throughout the country.
- CIP is less than the economic cost incurred by the Central Government by way of procurement, storage, transport and distribution. The difference between the economic cost and the CIP, called the consumer subsidy, is borne by the Central Government. Hence statement 2 is not correct.

#### 4. Ans. C

**Exp:** In March 2019, the Indian government has come up with a new National Mineral Policy (NMP) that replaced the earlier 2008 Policy. The latest mineral policy, which pertains to non-coal and non-fuel minerals, says that a major outcome expected from the policy proposals is to “increase the production of major minerals by 200 per cent in 7 years”. The target is tied to the Government’s Make in India initiative and to boost India’s economic growth.

- It introduces the concept of Exclusive Mining Zones which will come with in-principle statutory clearances for grant of mining lease.
- The policy intends to incentivise exploration to attract private investments as well as state-of-the-art technology, within the ambit of auction regime, through Right of First Refusal at the time of auction or seamless transition from Reconnaissance permit to Prospecting Licence to Mining Leases or auctioning of composite Reconnaissance permit cum Prospecting License cum Mining Lease in virgin areas on revenue sharing basis or any other appropriate incentive as per international practice.

#### Some of its other proposals include:

- Proposes to identify critically fragile ecosystems and declare such areas as “no-go areas”/ “inviolable areas”.
- Encourages merger and acquisition of mining entities, and transfer of mining leases that have been granted in a transparent manner to ensure seamless supply of ores and scaling up of business.
- Focuses on a long term export-import policy for the mineral sector to provide stability for investing in large scale commercial mining activity.
- Proposes harmonising royalty and all other levies and taxes with mining jurisdiction across the world.
- Emphasises on ensuring welfare of mining-affected people / communities and ensuring rehabilitation and resettlement, by suitable implementation of all relevant Acts / Rules.
- Introduces the concept of Inter-Generational Equity in mineral resource exploitation.

#### 5. Ans. A

**Exp:** Statement 1 is correct: In sixth century BCE plough Agriculture was spread in fertile alluvial river valleys like the Ganga and the Kaveri. The iron-tipped ploughshare was used to turn the alluvial soil in areas which had high rainfall. In some parts of the Ganga valley, production of paddy was dramatically increased by the introduction of transplantation.

- Statement 2 is not correct: Use of iron ploughshare led to a growth in agricultural productivity, its use was restricted to certain parts of the subcontinent – cultivators in areas which were semi-arid, such as parts of Punjab and Rajasthan did not adopt it till the twentieth century, and those living in hilly tracts in the north-eastern and central parts of the subcontinent practised hoe agriculture.

**6. Ans. A**

**Exp:** Trade was facilitated by the use of money. The coin or metal money bearing the stamp of an authority was invented in the seventh century BC in Lydia in Asia Minor. How it was first introduced in India is not clear. The terms nishka and satamana in the Vedic texts are taken to be names of coins, but they seem to have been prestige objects made of metal.

- It appears that in Vedic times, exchange was conducted through barter, and the mutual gift system served as a mode of exchange in pre-Buddhist times. Sometimes cattle served the purpose of currency. Coins made of metal appear first in the age of Gautama Buddha. The earliest were made largely of silver, though a few copper coins also existed. They are called punch-marked because pieces of silver and copper were punched with certain marks, such as a hill, tree, fish, bull, elephant, and crescent. Hence statement 1 is correct.
- The large, long-service army had to be fed by the state exchequer. The Nandas possessed enormous wealth which must have enabled them to maintain the army with a well-established fiscal system.
- Warriors and priests, that is, the kshatriyas and the brahmanas, were exempted from payment of taxes, and the burden fell on the peasants who were mainly vaishyas or grihapatis. Bali, a voluntary payment made by the tribesmen to their chiefs in Vedic times, became a compulsory payment to be made by the peasants in the age of the Buddha, and officers called balisadhakas were appointed to collect it. Hence statement 2 is not correct.
- It appears that one-sixth of the produce was collected as tax by the king from the peasant. Taxes were assessed and collected by the royal agents with the help of village headmen.

**7. Ans. B**

**Exp:** Amendment to the Constitution requires two different kinds of special majorities: in the first place, those voting in favour of the amendment bill should constitute at least half of the total strength of that House.

- Secondly, the supporters of the amendment bill must also constitute two-thirds of those who actually take part in voting. Both Houses of the Parliament must pass the amendment bill separately in this same manner (there is no provision for a joint session). For every amendment bill, this special majority is required.
- In the Lok Sabha there are 545 members. Therefore, any amendment must be supported by a minimum of 273 members. Even if only 300 members are present at the time of voting, the amendment bill must get the support of 273 out of them.

**8. Ans. C**

**Exp:** Directives in Part IV of the Constitution were not enforceable in any manner under the original Constitution.

- However, in order to accord primacy to some of the directives over Fundamental rights, the 25<sup>th</sup> Amendment Act inserted a new Article 31C which contained the following two provisions:
- No law which seeks to implement the socialistic Directive Principles specified in Article 39 (b) and (c) shall be void on the ground of contravention of the Fundamental Rights conferred by Article 14 (equality before law and equal protection of laws) or Article 19 (protection of six rights in respect of speech, assembly, movement, etc).
- Article 39 (b) - They direct the state to secure the equitable distribution of material resources of the community for the common good
- Article 39 (c) - They direct the state to prevent the concentration of wealth and means of production

- No law containing a declaration for giving effect to such policy shall be questioned in any court on the ground that it does not give effect to such a policy.
- This provision was declared unconstitutional by the Supreme Court in the Minerva Mills case(1980).

#### 9. Ans. A

**Exp:**Permanent Lok Adalat, established under the Legal Services Authorities Act, 1987.

- Permanent Lok Adalats have been set up as permanent bodies with a Chairman and two members for providing a compulsory pre-litigative mechanism for conciliation and settlement of cases relating to Public Utility Services like transport, postal, telegraph etc.
- Here, even if the parties fail to reach a settlement, the Permanent Lok Adalat gets jurisdiction to decide the dispute, provided, the dispute does not relate to any offence. Further, the Award of the Permanent Lok Adalat is final and binding on all the parties.
- The jurisdiction of the Permanent Lok Adalats is up to Rs. one crore. Here if the parties fail to reach a settlement, the Permanent Lok Adalat has the jurisdiction to decide the case.
- The award of the Permanent Lok Adalat is final and binding upon the parties. The Lok Adalat may conduct the proceedings in such a manner as it considers appropriate, taking into account the circumstances of the case, the wishes of the parties like requests to hear oral statements, speedy settlement of dispute etc. Hence, statement 2 is not correct and statements 1 and 3 are correct.

#### Other types of Lok Adalat are:

- National Level Lok Adalats are held for at regular intervals where on a single day Lok Adalats are held throughout the country, in all the courts right from the Supreme Court till the Taluk Levels wherein cases are disposed off in huge

numbers. From February 2015, National Lok Adalats are being held on a specific subject matter every month.

- Mobile Lok Adalats are also organized in various parts of the country which travel from one location to another to resolve disputes in order to facilitate the resolution of disputes through this mechanism.

#### 10. Ans. B

**Exp:** Statement 1 is incorrect: It is South Asia's first centre to offer proton therapy with high precision.

- Statement 3 is incorrect: Proton therapy is effective only for some particular types of cancer.

#### Proton Therapy

- Proton therapy is a type of radiation therapy, which is also called proton beam therapy.
- It can also be combined with x-ray radiation therapy, surgery, chemotherapy, and/ or immunotherapy. Like x-ray radiation, proton therapy is a type of external-beam radiation therapy. While X-ray beams are effective in controlling many cancers, they also deliver an 'exit dose' along the path beam. This exposes not just the targeted tumor to the radiation, but also the nearby healthy tissues.
- This exit dose is a cause of concern as the damage to the normal tissue or organs can affect the patient's quality of life post-treatment. In comparison, proton beams target the tumor with sub-millimeter accuracy, leaving the nearby tissues unharmed.
- Proton therapy is effective against many kinds of cancers, particularly effective on tumors affecting eye and brain, spinal cord or other vital organs, head and neck cancers, deep seated abdominal and pelvic cancers, recurrent cancers and pediatric cancers.
- Under this method, proton beams are regulated and channelled through a

vacuum passageway to the precise site of tumor, thereby resulting in minimal damage to the surrounding healthy tissues and reduced side effects.

- Recently South Asia's first proton therapy centre built by Apollo Hospitals was set up in Chennai to offer world class proton therapy to cancer patients using pencil-beam scanning technology with the highest degree of precision.
- With the launch of Apollo Proton Cancer Centre (APCC), India has become the 16<sup>th</sup> country in the world to offer proton therapy for cancer.

**11. Ans. B**

**Exp:** An ecological niche is the role and position a species has in its environment; how it meets its needs for food and shelter, how it survives, and how it reproduces.

A species' niche includes all of its interactions with the biotic and abiotic factors of its environment. Biotic factors are living things, while abiotic factors are non-living things.

It is advantageous for a species to occupy a unique niche in an ecosystem because it reduces the amount of competition for resources that species will encounter.

**12. Ans. A**

**Exp:** Phenotypic plasticity is the ability of an organism to change in response to stimuli or inputs from the environment. Synonyms are phenotypic responsiveness, flexibility, and condition sensitivity.

The response may or may not be adaptive, and it may involve a change in morphology, physiological state, or behaviour, or some combination of these, at any level of organization, the phenotype being all of the characteristics of an organism other than its genes.

The phenotype is the physical expression of the interaction between the genotype of an organism and its environment. The phenotypes show variations due to

differences in the environmental conditions within the local conditions of the habitat.

Such variation among individuals produced by the influence of the local conditions of the habitat is known as phenotypic plasticity. Usually, species having a wide range of distribution evolve genetically adapted populations called ecotypes.

**13. Ans. D**

**Exp:** All statements are correct

**Aatmanirbhar Bharat ARISE-ANIC Initiative**

- Atal Innovation Mission (AIM), NITI Aayog, launched its programme, the Aatmanirbhar Bharat ARISE-Atal New India Challenges, to spur applied research and innovation in Indian

MSMEs and startups.

- The programme will be driven by Indian Space Research Organization (ISRO), four ministries—Ministry of Defence; Ministry of Food Processing Industries; Ministry of Health and Family Welfare; and Ministry of Housing and Urban Affairs—and associated industries to facilitate innovative solutions to sectoral problems.
- The Aatmanirbhar Bharat ARISE-ANIC programme will support deserving applied research-based innovations by providing funding support of up to Rs 50 lakh for speedy development of the proposed technology solution and/or product.
- The objective of Aatmanirbhar Bharat ARISE-ANIC program is to proactively collaborate with esteemed Ministries and the associated industries to catalyse research, innovation and facilitate innovative solutions to sectoral problems. The objective is also to provide a steady stream of innovative products & solutions where the Central Government Ministries / Departments will become the potential first buyers.

**14. Ans. C**

**Exp:**Statement 1 is incorrect: Streets for people challenge, launched alongside Climate Smart Cities Assessment Framework (CSCAF) 2.0 aims to support cities to develop unified vision of streets in consultation with stakeholders and inspire cities to create walking-friendly/ vibrant streets through quick, innovative/ low-cost measures. All participating cities to be encouraged to use 'test-learn-scale' approach to initiate both, flagship and neighbourhood walking interventions

**Climate Smart Cities Assessment Framework (CSCAF) 2.0**

- The Ministry of Housing and Urban Affairs has launched the Climate Smart Cities Assessment Framework (CSCAF) 2.0 under the Smart Cities Mission.
- The objective of CSCAF is to provide a clear roadmap for cities towards combating Climate Change while planning and implementing their actions, including investments.
- CSCAF initiative intends to inculcate a climate-sensitive approach to urban planning and development in India.

**The framework has 28 indicators across five categories namely;**

- (i) Energy and Green Buildings,
- (ii) Urban Planning, Green Cover & Biodiversity,
- (iii) Mobility and Air Quality,
- (iv) Water Management and
- (v) Waste Management.
- The Climate Centre for Cities under National Institute of Urban Affairs (NIUA) is supporting MoHUA in implementation of CSCAF.

**15. Ans. B**

**Exp:** Statement 1 is incorrect: The rights guaranteed under Article 32 are not absolute.

**Article 32**

- Art. 32 is one of the fundamental rights listed in the Constitution that each citizen is entitled.
- Article 32 deals with the 'Right to Constitutional Remedies', or affirms the right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred in Part III of the Constitution.
- During the 1975 Emergency, a five-judge bench of the Supreme Court, in the ADM Jabalpur vs Shivakant Shukla case, had ruled that the right to constitutional remedies under Article 32 would remain suspended during a national emergency.
- The 44th Amendment also stated that according to Article 359, the president could issue orders suspending the right to move any court for the enforcement of fundamental rights, under Article 32, during a national emergency, with the exception of Article 20 (deals with protection of certain rights in case of conviction for offences) and Article 21 (protection of life and personal liberty).
- Constitutional experts say that it is eventually at the discretion of the Supreme Court and each individual judge to decide whether an intervention is warranted in a case, which could also be heard by the High Court first.
- The power has been conferred on the Supreme Court (Article 32) and the High Courts (Article 226) that can declare a law unconstitutional and invalid on the ground of contravention of any of the Fundamental Rights.

**16. Ans. A**

**Exp:** Constitution of India provides for a parliamentary system of government in the states similar to the that of the Union.

- The council of ministers headed by the chief minister is the real executive authority in the state.

**Two important articles in this regard are:**

- Article 163 - deals with the status of the council of ministers
- Article 164
- Deals with the appointment, tenure, responsibility, qualifications, oath and salaries and allowances of the ministers.
- The Chief Minister shall be appointed by the Governor and the other Ministers shall be appointed by the Governor on the advice of the Chief Minister.

**Deputy CM**

- At times, the council of ministers may also include a deputy chief minister. However, the post of Deputy Chief Minister does not find mention in the Constitution. It is based upon the discretion of the Chief Minister and not backed by any statute or act. Hence statement 1 is correct.
- The deputy chief ministers are appointed mostly for local political reasons. They are also appointed by Governor. Hence statement 2 is not correct.
- There is no limitation as to how many Deputy CMs can be appointed. Recently In Uttar Pradesh, two Deputy CMs have been appointed. In Karnataka, three Deputy CMs have been appointed. While Bihar and Goa have two Deputy CMs and Andhra Pradesh has five Deputy CMs.

**17. Ans. D**

**Exp:** Under the Transaction of Business Rules, the Government of India has reconstituted Cabinet Committees (The allocation of the eight committees to various Cabinet Ministers were revised (latest) on June 06, 2019 and are as follows:

- Appointments Committee of the Cabinet- chaired by the Prime Minister of India
- Cabinet Committee on Accommodation- chaired by the Minister of Home Affairs
- Cabinet Committee on Economic Affairs- chaired by the Prime Minister

- Cabinet Committee on Parliamentary Affairs- chaired by the Minister of Defence
- Cabinet Committee on Political Affairs- chaired by the Prime Minister of India
- Cabinet Committee on Security- chaired by the Prime Minister of India
- Cabinet Committee on Investment and Growth- chaired by the Prime Minister of India and
- Cabinet Committee on Employment and Skill Development- chaired by the Prime Minister of India

**18. Ans. C**

**Exp:** Statement 2 is incorrect: It also includes snow leopards. Supplementary notes:

**Global Tiger Initiative**

- The Global Tiger Initiative (GTI) was launched in 2008 as a global alliance of governments, international organizations, civil society, the conservation and scientific communities and the private sector, with the aim of working together to save wild tigers from extinction.
- In 2013, the scope was broadened to include Snow Leopards.
- The GTI's founding partners included the World Bank, the Global Environment Facility (GEF), the Smithsonian Institution, Save the Tiger Fund, and International Tiger Coalition (representing more than 40 nongovernment organizations). The initiative is led by the 13 tiger range countries (TRCs).

**19. Ans. B**

**Exp:** Silappadikaram, (Tamil: "The Jeweled Anklet") also spelled Silappatikaram, the earliest epic poem in Tamil, written in the 5th–6th century AD by Prince Ilanko Adikal (Ilango Adigal).

The Tamil tradition attributes Silappatikaram to the pseudonym Iḷaṅkō Aṭikaḷ ("the venerable

ascetic prince"), also spelled Ilango Adigal. He is reputed to be as Jain Monk and the brother of Chera king Chenkuttuvan, whose family and rule are described in the Fifth Ten of the Patirruppattu, a poem of the Sangam literature.

Silappatikaram, is the earliest Jain Tamil epic. It is a poem of 5,730 lines in almost entirely akaval (aciriyam) meter. The epic is a tragic love story of an ordinary couple, Kannaki and her husband Kovalan.

According to V R Ramachandra Dikshitar, the title Silappatikaram – is a combination of two words, "silambu" (anklet) and "adikaram" (the story about). It therefore connotes a "story that centers around an anklet".

The Silappatikaram tells about the young merchant Kovalan's marriage to the virtuous Kannaki (Kannagi), his love for the courtesan Madhavi, and his consequent ruin and exile in Madurai, where he is unjustly executed after trying to sell his wife's anklet to a wicked goldsmith who had stolen the queen's anklet and charged Kovalan with the theft.

- The Silappatikaram is a fine synthesis of mood poetry in an ancient Tamil Sangam tradition and the rhetoric of Sanskrit poetry, including the dialogues of Kalittokai (poems of unrequited or mismatched love), chorus folk song, descriptions of city and village, lovingly technical accounts of dance and music, and strikingly dramatic scenes of love and tragic death.
- Unlike the Silappatikaram, its incomplete sequel, Manimekalai, the story of Kovalan's and Madhavi's daughter, reflects a Buddhist perspective.

#### 20. Ans. A

**Exp:** According to the Abhinaya Darpanam, the Sangitaratnakara and other medieval treatises, dance is divided into three distinct aspects, that is, natya, nritya and nritya.

- Natya corresponds to drama. It is the combined manifestation of bhava, rasa and abhinaya. Natya highlights the dramatic element and most dance forms do not give emphasis to this aspect today with the exception of dance-drama forms like Kathakali. Hence statement 1 is correct.
- Nritya consists of footwork and abhinaya. It relates to Rasa and psychological state. Angika abhinaya relating to Hasta, eyes, eye brows, lips etc. are very important in Nritya. It can be termed as the explanatory aspect of dance where hand gestures and facial expressions convey the meaning of the lyrics of the performing song. Bhava of the dancer is of prime importance in this so it can also be considered as the miming aspect of dance. Hence statement 2 is not correct.
- Nritya corresponds to pure dance steps performed rhythmically. Here the movements of the body do not convey any mood or meaning and its purpose is just creating beauty by making various patterns, lines in space and time. Hence statement 3 is not correct.

#### 21. Ans. D

**Exp:** Statement 1 is incorrect: RANET is an initiative of IAEA.

- Statement 2 is incorrect: Maintaining peacekeeping forces is not a goal of SCO.
- Statement 3 is incorrect: Mongolia is not a member nation of SCO.

#### Shanghai Cooperation Organization

- India has become the 35th country to join the International Atomic Energy Agency (IAEA) Response and Assistance Network (RANET), a group of states which offer assistance to mitigate the consequences of nuclear or radiological emergencies.
- The Shanghai Cooperation Organisation, also known as the Shanghai Pact, is a Eurasian political, economic, and military organisation which was founded in 2001 in Shanghai.

- The SCO's main goals are: strengthening mutual trust and neighbourliness among the member states; promoting their effective cooperation in politics, trade, the economy, research, technology and culture, as well as in education, energy, transport, tourism, environmental protection, and other areas; making joint efforts to maintain and ensure peace, security and stability in the region; and moving towards the establishment of a democratic, fair and rational new international political and economic order.
- China, Kazakhstan, Kyrgyz Republic, Russian Federation, Tajikistan, and Uzbekistan. India and Pak became members in 2017.
- Recently India hosted the SCO heads of Government summit for the first time after it gained full membership of the influential grouping in 2017.

## 22. Ans. A

**Exp:** Statement 3 is incorrect: Asteroids are also a source of meteor shower.

- Statement 4 is incorrect: The number is less than 100.

### Meteor Shower

- The Geminids meteor showers are unique because their origin does not lie in a comet, but what is believed to be an asteroid or an extinct comet.
- The Geminids meteor shower, believed to be the strongest of the year, is active from December 4-December 20.
- Soon after the Geminids meteor shower, viewers in the northern hemisphere can expect to see the Ursids meteor shower.

### What are meteor showers?

- Meteors are bits of rock and ice that are ejected from comets as they manoeuvre around their orbits around the sun. For instance, the Orionids meteors emerge from the comet 1P/ Halley and make their yearly presence in October.

- Meteor showers are witnessed when Earth passes through the trail of debris left behind by a comet or an asteroid.
- When a meteor reaches the Earth, it is called a meteorite and a series of meteorites, when encountered at once, is termed a meteor shower.
- According to NASA, over 30 meteor showers occur annually and are observable from the Earth.
- Meteors are best visible on a cloudless night and when the Moon is not extremely bright. Chances of a successful viewing are higher from locations far away from the lights of cities. Generally, pollution makes viewing meteor showers from India difficult to view.

## 23. Ans. D

**Exp:** The Godavari River is an important river in India and it flows from western to southern India before draining into the Bay of Bengal. The catchment area of the river is regarded as one of the biggest in the country.

- It rises from a place called Trimbak (Trimbakeshwar) located in the Western Ghats in Nashik district in the state of Maharashtra. Hence statement 1 is correct.
- It is known as the Dakshin Ganga or Vridha Ganga (old Ganga) because of its age, size and length. It is navigable in the delta region.
- The river is 1,465 km long and ranks as the second longest river in the country (after the Ganges). The drainage basin of the river is present in seven states of India: Chhattisgarh, Maharashtra, Andhra Pradesh, Telangana, Madhya Pradesh, Karnataka, and Orissa UT of Puducherry. Hence statement 2 is correct.
- Major Tributaries of the Godavari river are Indravati, Pranhita, Penganga, Purna, Duhna, Manjra, Wardha, Wainganga, Sabari, etc.
- Polavaram Project is an under construction multi-purpose National project on the Godavari River in the West

Godavari District and East Godavari District in Andhra Pradesh. Hence statement 3 is correct.

- In 2014 the government declared the Polavaram project a National project and the ministry kept the —Stop Work Order (a legal device used in the construction industry to suspend work until a decision or an agreement between the contracted parties has been reached) in abeyance to allow the construction works. It is designed to overcome the deficit in water in the country. The project is entirely funded by the Centre and is also known as National River-Linking Project.
- In June 2019, Union Environment Ministry had given two years of extension and allowed the construction works related to Polavaram Multipurpose Project.

#### 24. Ans. B

**Exp:** Volcanic landforms are divided into extrusive and intrusive landforms based on whether magma cools within the crust or above the crust. Extrusive landforms are formed from material thrown out during volcanic activity. The materials thrown out during volcanic activity includes lava flows, pyroclastic debris, volcanic bombs, ash and dust and gases such as nitrogen compounds, sulphur compounds and minor amounts of chlorine, hydrogen and argon.

#### Examples of Extrusive Landforms are:

- Conical Vent and Fissure Vent ☐ Mid-Ocean Ridges
- Composite Type Volcanic Landforms
- Shield Type Volcanic Landforms
- Fissure Type Flood Basalt Landforms
- Caldera
- Cinder cone
  
- A Cinder cone has the features of a steep conical hill with loose pyroclastic fragments which include volcanic clinkers, cinder, volcanic ash (scoria) around the vent.

- Cinder cone volcanoes are made entirely of the loose grainy cinders, and they lack lava. Cinder cone usually has very steep sides along with a small crater on its top. They are small volcanoes.
- The intrusive igneous rocks or plutonic rocks are formed when the Magma cools within the earth's crust and does not erupt to the surface. Various forms of intrusive igneous rocks are formed due to the intrusive activity of volcanoes.

#### Examples of intrusive landforms are:

- Batholiths
- Laccoliths
- Lapolith
- Phacolith
- Sills
- Dykes
  
- Sills are the intrusive igneous rocks which are formed by the solidified and near horizontal lava layers inside the earth. The thinner deposits of these rocks are called sheets, while the thicker horizontal deposits are known as sills.
- When the Magma moves upwards through the cracks and fissures, and solidifies almost perpendicularly to the earth's surface, developing a wall like structure, they are known as dykes. Dykes are the most common intrusive igneous rocks in Western Maharashtra and other parts of Deccan traps.

#### 25. Ans. A

**Exp:** Statement 2 is incorrect: It is a feature of APMC Model Act of 2003.

#### Agricultural Produce Market Committee (APMC)

- The role of the agriculture market is to deliver agricultural produce from the farmer to the consumer in the most efficient way.
- Agriculture markets are regulated in India through the APMC Acts.
- According to the provisions of the APMC Acts of the states, every APMC

(Agricultural Produce Marketing Committee) is authorised to collect market fees from the buyers/traders in the prescribed manner on the sale of notified agricultural produce.

- The relatively high incidence of commission charges on agricultural/horticultural produce renders their marketing cost high, which is an undesirable outcome.
- All this suggests that a single point market fee system is necessary for facilitating free movement of produce, bringing price stabilisation, and reducing price differences between the producer and consumer market segments.

**26. Ans. D**

**Exp:** All statements are correct

**Indirect farm subsidies**

- These are the farm subsidies which are provided in the form of cheaper credit facilities, farm loan waivers, reduction in irrigation and electricity bills, fertilizers, seeds and pesticides subsidy as well as the investments in agricultural research, environmental assistance, farmer training, etc.
- These subsidies are also provided to make farm products more competitive in the global market. The subsidies provided on the fertilizers as 'input' subsidies are in the form of indirect subsidies.

**27. Ans. B**

**Exp:** Ecosystem services are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life. According to The Economics of Ecosystems and Biodiversity (TEEB), ecosystem services can be categorized in four main types: Provisioning services are the products or primary product obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.

- Regulating services are defined as the benefits obtained from the regulation of

ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.

- Habitat services highlight the importance of ecosystems to provide habitat for migratory species and to maintain the viability of gene-pools.
- Cultural services include non-material benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation and aesthetic values.



- Hence option (b) is the correct answer.

**28. Ans. A**

**Exp:** A comprehensive milk safety and quality survey has questioned the perception of large-scale milk adulteration in India. It was undertaken on 6,432 samples collected last year between May and October, and picked from over 1,100 town/cities with over 50,000 population. The survey by an independent agency at the behest of the Food Safety and Standards Authority of India (FSSAI) found 93% of the samples were absolutely safe.

- The samples were tested for 13 common adulterants and three contaminants — pesticides, aflatoxin M1 and antibiotics. Only 12 adulterated samples were found to be unsafe for consumption. The adulterated samples — they were also subjected to confirmatory tests — were from just three States: Telangana (nine), Madhya Pradesh (two) and Kerala (one).
- The survey claims that quantitative analysis of all adulterated samples showed the amount of adulterants and contaminants in the dozen samples was not high and hence “unlikely to pose

serious threat” to human health. However, it did find 368 samples (5.7%) had aflatoxin M1 residues beyond the permissible limit of 0.5 microgram per kilogram.

- At 227, aflatoxin M1 was more widely present in processed milk samples than in raw milk (141). This is the first time the presence of the contaminant in milk has been assessed.
- According to the FSSAI, aflatoxin M1 in milk is from feed and fodder, which is not regulated. The highest residue levels of aflatoxin M1 in milk were seen in samples from three States — Tamil Nadu (88 out of 551 samples), Delhi (38 out of 262) and Kerala (37 out of 187). According to the International Agency for Research on Cancer the contaminant has been classified as “possibly carcinogenic to humans”. Its carcinogenic potency is estimated to be about a one-tenth of aflatoxin B1.
- Since the current survey has limited itself to milk, it is not clear how widespread aflatoxin M1 contamination is in milk products such as cheese, and hence the total exposure to it.
- Aflatoxin M1 in milk and milk products is a public health concern especially in infants and young children as milk constitutes one of the major sources of nutrients.
- According to the World Health Organisation, exposure to aflatoxin M1 in milk and milk products is especially high in areas where the grain quality used as animal feed is poor. Hence all attempts need to be taken both before and after food crop harvest to reduce the toxin amount. Improper storage of food harvest in warm and humid conditions leads to aflatoxin contamination that is much higher than what is seen in the field. Equally important is in having facilities to regularly test for aflatoxin M1.

**29. Ans. D**

**Exp:** All Statements are correct

**Forward Search Experiment (FASER)**

- The European Organisation for Nuclear Research (CERN) has approved the experiment designed to look for light and weakly interacting particles at the Large Hadron Collider (LHC)
- FASER, the Forward Search Experiment, is a proposed experiment dedicated to searching for light, extremely weakly interacting particles at the LHC.
- Such particles may be produced in the LHC’s high-energy collisions in large numbers in the far-forward region and then travel long distances through concrete and rock without interacting.
- They may decay to visible particles in FASER, which is placed 480 m downstream of the ATLAS interaction point.
- In its first stage, FASER is an extremely compact and inexpensive detector, sensitive to decays in a cylindrical region of radius  $R = 10$  cm and length  $L = 1.5$  m.
- FASER and FASER 2 have the potential to discover dark photons, dark Higgs bosons, heavy neutral leptons, axion like particles, and many other long lived particles, as well as provide new information about neutrinos, with potentially far-ranging implications for particle physics and cosmology.

**30. Ans. A**

**Exp:** Statement 3 is incorrect: High thrust-to-weight ratio is its disadvantage.

**Scramjet Vehicle**

- The Defence Research and Development Organization (DRDO) on Monday successfully flight tested the Hypersonic Technology Demonstrator Vehicle (HSTDV) – an unmanned scramjet vehicle with a capability to travel at six times the speed of sound.
- The indigenous development of the technology will also boost the development of the systems built with hypersonic vehicles at its core, including both offensive and defensive hypersonic

cruise missile systems and also in the space sector.

- The scramjets are a variant of a category of jet engines called the air breathing engines. The ability of engines to handle airflows of speeds in multiples of speed of sound, gives it a capability of operating at those speeds.
- Hypersonic speeds are those which are five times or more than the speed of sound. The unit tested by the DRDO can achieve upto six times the speed of sound or Mach 6, which is well over 7000 kilometers per hour or around two kilometers per second.
- While the technology helps achieve hypersonic speeds, it comes with its set of disadvantages, and the obvious one being its very high cost and high thrust-to-weight ratio.

**31. Ans. D**

**Exp:** All statements are correct

**Assam Rifles**

- The Delhi High Court had granted 12 weeks to the Union government to decide on whether to scrap or retain the dual control structure for Assam Rifles, which comes under both the Ministry of Home Affairs (MHA) and the Ministry of Defence (MoD).
- Assam Rifles is one of the six central armed police forces (CAPFs) under the administrative control of Ministry of Home Affairs (MHA).
- The other forces being the Central Reserve Police Force (CRPF), the Border Security Force (BSF), the Indo- Tibetan Border Police (ITBP), the Central Industrial Security Force (CISF) and the Sashastra Seema Bal (SSB).
- It is the oldest paramilitary force raised way back in 1835 in British India as a militia to protect British tea estates and its settlements from the raids of the NE tribes. The force was first known as Cachar Levy. It was reorganised later as

Assam Frontier Force as its role was expanded.

- It is tasked with the maintenance of law and order in the North East along with the Indian Army and also guards the Indo-Myanmar border in the region.
- It is the only paramilitary force with a dual control structure. While the administrative control of the force is with the MHA, its operational control is with the Indian Army, which is under the MoD.
- This means that salaries and infrastructure for the force is provided by the MHA, but the deployment, posting, transfer and deputation of the personnel is decided by the Army.

**32. Ans. B**

**Exp:** Statement 2 is incorrect: ETPBS enables only the entitled service voters to cast their vote using an electronically received postal ballot from anywhere outside their constituency.

**Electronically Transmitted postal Ballot System:**

- It is a system enabling only to the entitled service voters to cast their vote using an electronically received postal ballot from anywhere outside their constituency.
- Service voters: Individuals working in central forces under arms act and government officials deployed in embassies outside the country are classified as service voters and are provisioned for online enrolment.
- ETPBS is a flagship programme of Election Commission of India (ECI) developed with the help of Centre for Development of Advanced Computing (C-DAC).
- Eligible Electors for ETBPS
- Classified Service Voters: Service Voters (other than those who opt for proxy voting)
- The wife of a Service Voter who ordinarily resides with him

- Overseas Voters
- ECI has recently proposed to extend the eligibility of ETBPS to NRIs but this is not yet final (as of Dec 2020).

### 33. Ans. C

**Exp:** Statements 1 is incorrect: Natural cannabinoids are obtained from the inflorescences of the plant Cannabis sativa

Statements 3 is incorrect: India has voted with the majority to remove cannabis and cannabis resin from schedule IV of the Single Convention on Narcotic Drugs, 1961.

#### “Cannabinoids” and Cannabis Plant

- Cannabinoids are a group of chemicals, which interact with cannabinoid receptors present principally in the brain.
- Natural cannabinoids are obtained from the inflorescences of the plant Cannabis sativa.
- The flower tops, leaves and the resin of cannabis plant are used in various combinations to produce marijuana, hashish, charas and ganja.

#### United Nations Commission on Narcotic Drugs (CND)

- UN agency mandated to decide on the scope of control of substances and drugs that have potential of abuse.
- Founded in 1946 and headquartered in Vienna.
- Post 1961 Convention global attitudes towards cannabis have changed dramatically.
- As of now, over 50 countries allow medicinal cannabis programmes
- Its recreational use has been legalised in Canada, Uruguay and 15 states of the USA WHO January 2019 recommendation:
- Six recommendations related to the scheduling of cannabis in UN treaties, including the deletion of cannabis and cannabis resin from Schedule IV of the Single Convention on Narcotic Drugs, 1961.

- Schedule IV include the category of Drugs considered to have “particularly dangerous property”

#### India’s Stand and Regulations:

- India has voted with the majority to remove cannabis and cannabis resin from schedule IV of the Single Convention on Narcotic Drugs, 1961.
- Under India’s Narcotic Drugs and Psychotropic Substances (NDPS) Act 1985, the production, manufacture, possession, sale, purchase, transport, and use of cannabis is a punishable offence.

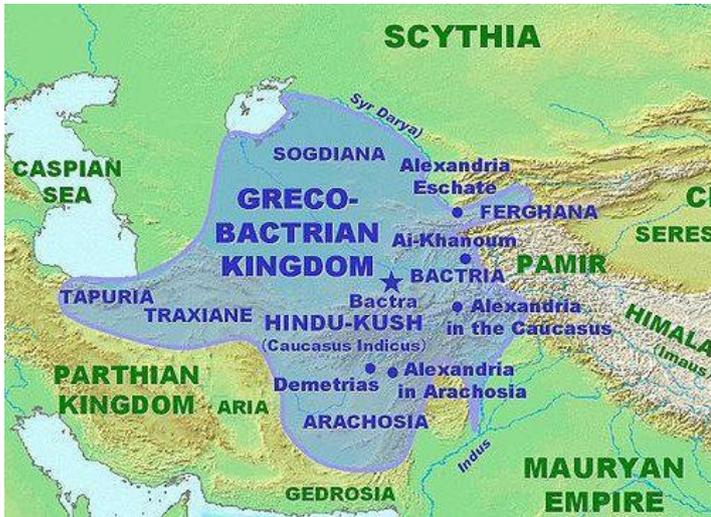
### 34. Ans. D

**Exp:** The period which began in about 200 B.C. did not witness a large empire like that of Mauryas, but it is notable for intimate contacts between Central Asia and India. A series of invasions began in about 200 B.C.

The first to cross the Hindukush were the Greeks, who ruled Bactria, lying south of the Oxus river in the area covered by north Afghanistan. The invaders came one after another, but some of them ruled at one and the same time.

One important cause of invasions was the weakness of the Seleucid empire, which had been established in Bactria and the adjoining areas of Iran called Parthia.

- On account of growing pressure from the Scythian tribes, the later Greek rulers were unable to hold their power in this area. With the construction of the Chinese Wall, the Scythians were now pushed back from the Chinese border. So they turned their attention towards neighbouring Greeks and Parthians. Pushed by the Scythians tribes, the Bactrian Greeks were forced to invade India. Hence option (d) is the correct answer.



35. Ans. C

Exp: Both statements are correct

#### The Great Conjunction

- In a rare celestial event, Jupiter and Saturn was seen very close to each other (conjunction) on 21st December 2020 (Winter Solstice), appearing like one bright star or “Double Planet”.
- **Conjunction:** If two celestial bodies visually appear close to each other from Earth, it is called a conjunction.
- **Great Conjunction:** This term is used to describe meetings of the two biggest planets in our solar system, Jupiter and Saturn. It is the result of the orbital paths of Jupiter and Saturn coming into line, as viewed from Earth.
- It happens about every 20 years but this conjunction is exceptionally rare because of how close the planets will appear to one another. They will be at closest distance and will look like they are a ‘double planet’.

36. Ans. C

Exp: Option (c) is the correct answer.

#### Mustard:

- It is predominantly grown in the northern belt of India, its production has made rapid progress in the last decade. It is a Rabi crop.
- The biggest advantage is that they can be grown in a wide range of agro-

climatic conditions. In India, rapeseed and mustard are grouped together. Amongst the nine major oilseeds cultivated in India, they come second, only after groundnut. The harvest usually takes place in March or April.

- The oil content in rapeseed and mustard is between 36 and 42 %. Indian mustard has a pungent flavour and is often used as a spice in the varied Indian cuisine.

#### Flaxseed:

- Flax is a herbaceous annual.
- The plant is adaptable to a variety of soils and climates but grows best in well-drained sandy loam and in temperate climates.
- In most areas planting of the same land with flax is limited to once in six years to avoid soil exhaustion.
- Cool moist growing seasons produce the most-desirable fibre.
- Regular flaxseed oil contains between 57% and 71% polyunsaturated fats (alpha-linolenic acid, linoleic acid).
- Sesame Seed - Sesame is a flowering plant naturalized in tropical regions around the world and is cultivated for its edible seeds.
- Sesame varieties have adapted to many soil types but thrive best on well-drained, fertile soils of medium texture and neutral pH. However, these have a low tolerance for soils with high salt and water-logged conditions.
- Commercial sesame crops require 90 to 120 frost-free days. Warm conditions above 23 °C favour growth and yields.

#### Soybean

- It is a leguminous species native to East Asia, widely grown for its edible bean. It needs about 15 to 32 °C for germination but for rapid growth the crop needs a higher temperature.
- The crop requires about 60-65 cm annual rainfall drought at flowering or just before flowering results in flower and pod drops, while rains during

maturity impair the grain quality of soybean. The best soil type is sandy loam having good organic matter content.

- Two cropping seasons of soybean Kharif and spring.
- In case of Kharif season most common time of sowing is the onset of monsoon or last week of June to the first week of July while spring sowing is done between 15th of February and 15th of March

### 37. Ans. A

**Exp:** Once a haven for migratory birds, the Kanwar lake in Bihar, Asia's largest freshwater oxbow lake, is today a dying wetland ecosystem. Kanwar jheel, as it is locally called, is located 22 km north-west of Begusarai town.

It is a residual oxbow lake, formed due to meandering of Gandak river, a tributary of Ganga, in the geological past. Kanwar lake was declared a notified area under the Wildlife (Protection) Act of 1972. To check the poaching of birds, it was declared a protected zone by the Bihar state government in 1986; the government of India declared it a bird sanctuary in 1989.

The authorities had notified 15,000 acres (one acre equals 0.4 ha) in the area as a wetland, which makes it six times bigger than Keoladeo National Park in Bharatpur, Rajasthan. It is shrinking fast. The lake covered 6,786 ha in 1984, which reduced to 6,043.825 ha in 2004. By 2012, the lake area had reduced to a mere 2,032 ha.

The water level in the lake has reduced, there is heavy siltation and eutrophication (when excess algae and plant growth and their decomposition deprive water of available oxygen, causing the death of other organisms) has set in.

- Barua Sagar Tal is a large lake situated in Barua Sagar near Jhansi in the Indian state of Uttar Pradesh

- The Udhwa Lake Bird Sanctuary is the only bird sanctuary in the entire state of Jharkhand. This Sanctuary is famous as a stopping point for a large number of migratory birds that come here in winters from Europe and Siberia.
- Keoladeo National Park or Keoladeo Ghana National Park is formerly known as the Bharatpur Bird Sanctuary in Bharatpur, Rajasthan, India. It is a famous avifauna sanctuary. Keoladeo Ghana National Park is a man-made and man-managed wetland and one of the national parks of India. It is also a World Heritage Site.

### 38. Ans. B

**Exp:** Statement 1 is incorrect: It also includes sanctions against countries that engage in significant transactions with Russia's defence and intelligence sectors.

#### **CAATSA: Countering America's Adversaries Through Sanctions Act**

- Enacted in 2017, it is a US federal law that imposed sanctions on Iran, North Korea and Russia.
- It also includes sanctions against countries that engage in significant transactions with Russia's defence and intelligence sectors.

#### **The Act provides sanctions for activities concerning:**

- (1) cyber security,
- (2) crude oil projects,
- (3) financial institutions,
- (4) corruption,
- (5) human rights abuses,
- (6) evasion of sanctions,
- (7) transactions with Russian defence or intelligence sectors,
- (8) export pipelines,
- (9) privatization of state owned assets by government officials, and
- (10) arms transfers to Syria.

### CAATSA Sanctions on Turkey:

- The USA administration has recently imposed sanctions on Turkey for its purchase of the S-400 missile system from Russia.
- Previously in 2019, the USA had removed Turkey from its F-35 jet program over concerns that sensitive information could be accessed by Russia if Turkey used Russian systems along with the USA jets. S-400 Triumf air defense system:
  - It is a mobile, surface-to-air missile system (SAM).
  - It is the most dangerous operationally deployed modern long-range SAM (MLR SAM) in the world, considered much ahead of the US-developed Terminal High Altitude Area Defense system (THAAD)
  - Thaad is anti-ballistic missile defence system of the USA.

### Concerns for India:

- India has recently inked a Rs. 39,000 crore deal to buy the S-400 Triumf long range surface-to-air missile systems from Almaz-Antey Corporation of Russia in October 2018 and the delivery is expected to start in 2021.
- The CAATSA contains 12 types of sanctions. Of these, two sanctions may impact either India-Russia relations or India-US relations in near future.
- The first of these, which is likely to have an impact on India-Russia relations, is the “Prohibition of Banking transactions”.
- This would mean difficulties for India in making payments in US Dollars to Russia for the purchase of the S-400 systems.
- The second sanction will have greater consequences for India-US relations.
- This is the “export sanction” which has the potential to completely derail the India-US Strategic and Defence partnership.

### 39. Ans. D

**Exp:** The General Agreement on Trade in Services (GATS) is a treaty of the World Trade Organization (WTO) that entered into force

in January 1995 as a result of the Uruguay Round negotiations. The treaty was created to extend the multilateral trading system to service sector, in the same way the General Agreement on Tariffs and Trade (GATT) provides such a system for merchandise trade.

- According to GATS, services are supplied by four modes of supply
- Cross-border trade in services (Mode 1) - A mode of service supply or trade where services are supplied from the territory of one member of a trade agreement into the territory of another. An example is architectural design services, supplied, by an architect in one country by post or electronic mail to consumers in another country.
- Consumption abroad (Mode 2)-A mode of service supply or trade where services are supplied in the territory of one member of a trade agreement to the consumers of another. This mode of supply requires that the consumer of services move abroad. An example is the traveling abroad to receive: medical treatment or to enroll in an education program.
- Commercial presence (Mode 3)-A mode of service supply or trade where services are supplied through any type of business or professional establishment, i.e. foreign direct investment, of one member of the agreement in the territory of another. An example is the establishment of a branch of a foreign bank or of a franchising outlet in a foreign location.
- Temporary movement of natural persons (Mode 4)- A mode of service supply or trade where services are supplied by nationals of one member of a trade agreement in the territory of another, requiring the physical presence of the service provider in the host country. This mode includes both independent service providers as well as employees of the service providers of another member. Examples include consultants, teachers

and actors of one country supplying services through their physical presence in a member country, or the managers of a multinational enterprise.

- Hence all the pairs are correctly matched.

#### 40. Ans. B

**Exp:** Minimum Wage: It is the wage that is paid by an employer/industry to its workers irrespective of its ability to pay. It must provide not only for the bare sustenance of life but for the preservation of the efficiency of the workers. It is fixed by the government in consultation with business organizations and trade unions.

- **Living Wage:** It should enable the earner to provide for himself and his family not only the bare essentials of food, clothing, and shelter but a measure of frugal comfort including education for his children, protection against ill-health, requirements of essential social needs and a measure of insurance against the more important misfortunes including old age.
- **Fair Wage:** It is linked with the capacity of the industry to pay. Factors such as labour productivity, prevailing wage rates, the level of national income and its distribution, etc. are variables in determining fair wage. It is above the minimum wage but below the living wage

#### 41. Ans. C

**Exp:** Option (c) is correct: Global Climate Change Performance Index 2020 has been recently released by not-for profit German Organizations: The New Climate Institute, German watch and CAN (Climate Action Network).

International Labour Organization (ILO) publishes the Global Wage Report.

#### Energy Efficiency Report

- Recently International Energy Agency (IEA) has released the annual Energy Efficiency Report 2020.
- About International Energy Agency (IEA):

- Established in 1974 as an autonomous intergovernmental organization under the OECD framework.
- Headquarters: Paris, France.
- Members: It has 30 member countries and eight association countries.
- India became an associate member in 2017.

#### Climate Change Performance Index

- Global Climate Change Performance Index 2020 has been recently released by not-for-profit German Organizations: The New Climate Institute, German watch and CAN (Climate Action Network).
- CCPI is prepared by assessing performances of 57 countries and the European Union in four categories that contribute 97% of total GHG Emissions.

Parameters	Weightage in %
GHG Emission	40
Renewable Energy	20
Energy Use	20
Climate Policy	40

India's position: Slipped to 10th (2020) from 9th position (2019)

- Global Scenario:
- None of the countries are on the path to meet their respective Paris Agreement Commitments.
- No country has been placed in the top three positions in the index.
- China: 33rd position and is deemed as the biggest emitter of GHGs.
- The US: 52nd position.
- Only two G20 countries India and UK were among the high rankers
- Referring to the largest fossil fuel exporting and producing nations it mentions that none of them have any productive federal climate policy in place

#### World Trade Report

- It published by World Trade Organization annually.
- Recently it has released this year report entitled "WTR 2020: Government policy

to promote Innovation in the Digital Age.”

#### Findings:

- Uptake of Digital
- Innovation: (Crisis is an opportunity Principle) COVID-19 pandemic has accelerated the uptake of digital innovation and e-commerce and led countries to strengthen policies aimed at boosting growth through innovation and technological upgrading.
- Transition to Digital Economy: The report warns the transition towards digital economy can have positive spill overs and negative spill overs.
- Positive spill overs: generating growth, creating new markets and encouraging technology diffusion.
- Negative spill overs: distorting trade, diverting investment or promoting unfair competition with the winner-takes-all characteristics of certain digital industries

#### Global Wage Report

- Recently, International Labour Organization (ILO) has released the Global Wage Report 2020
- The report looks trends in wages, the global economic and labour market context and the impact that the pandemic has had on wages.

#### Additional Facts about ILO:

- founded in 1919 to promote social justice and thereby contribute to universal and lasting peace.
- HQs: Geneva, Switzerland

#### Popular Reports:

- (a) World Employment and Social Outlook
- (b) Global Wage Report and
- (c) World Social Protection Report

#### 42. Ans. C

**Exp:** Both the statements are correct

#### Pangda village

- It is a new border village built by China.
- The village is located on territory disputed by China and Bhutan.
- The area is east of the India-Bhutan-China trijunction on the Doklam plateau, the site of a 72- day standoff in 2017.

#### 43. Ans. D

**Exp:** Tropical forests are closed canopy forests growing within 28 degrees north or south of the equator. They are very wet places, receiving more than 200 cm rainfall per year, either seasonally or throughout the year. Rainforest trees are quite different from trees of temperate forests. In the rainforest, trees grow to gigantic size, supported by strong, strut-like buttresses at the base of the trunk that help to stabilize them in shallow forest soils. Huge creepers twine themselves around the trunks of trees.

- Most tropical rainforest soils are relatively poor in nutrients. Millions of years of weathering and torrential rains have washed most of the nutrients out of the soil. Tropical rain forest soils contain less organic matter than temperate forests and most of the available nutrients are found in the living plant and animal material.
- Nutrients in the soil are often in forms that are not accessible by plants. Constant warmth and moisture promote rapid decay of organic matter. When a tree dies in the rainforest, living organisms quickly absorb the nutrients before they have a chance to be washed away. When tropical forests are cut and burned, heavy rains can quickly wash the released nutrients away, leaving the soil even more impoverished.
- Few pure stands of trees exist in the rain forest. Though the tropics have great potential in timber resources, commercial extraction is difficult. The trees do not occur in homogenous stands, there are no frozen surfaces to facilitate logging and the tropical hardwoods are sometimes too heavy to

float in the rivers even if these flow in the desired directions.

- Hence option (d) is the correct answer.

#### 44. Ans. D

**Exp:** Commensalism

- This is the interaction in which one species benefits and the other is neither harmed nor benefited. An orchid growing as an epiphyte on a mango branch, and barnacles growing on the back of a whale benefit while neither the mango tree nor the whale derives any apparent benefit.
- An orchid derives two basic benefits from this commensalistic relationship. As filter feeders, they depend on the availability of plankton, which they filter into their bodies through feather-like appendages extended through holes in their shells. When the whales swim into plankton-rich waters to feed, so do the barnacles. They are consistently carried from feeding to feeding. Protection from predators is another benefit. Barnacles attached to stationary objects often fall prey to fish, sea worms, starfish and snails.
- The cattle egret and grazing cattle in the close association is a classic example of commensalism. The egrets always forage close to where the cattle are grazing because the cattle, as they move, stir up and flush out from the vegetation insects that otherwise might be difficult for the egrets to find and catch.
- Hence option (d) is the correct answer.

#### Amensalism

- Amensalism is a type of biological interaction. It is an association between two organisms of different species where one is adversely affected and the other stays unaffected.

#### Parasitism

- Parasitism is a type of symbiotic relationship, or long-term relationship between two species, where one

member, the parasite, gains benefits that come at the expense of the host member.

#### Mutualism

- This interaction confers benefits on both the interacting species. Lichens represent an intimate mutualistic relationship between a fungus and photosynthesising algae or cyanobacteria.
- Similarly, the mycorrhizae are associations between fungi and the roots of higher plants. The fungi help the plant in the absorption of essential nutrients from the soil while the plant in turn provides the fungi with energy-yielding carbohydrates.

#### 45. Ans. C

**Exp:** Statement 2 is incorrect: For the first time in the world, GRAPES-3 muon telescope has measured the electrical potential of a thundercloud, size and height of a thundercloud.

#### GRAPES-3

- For the first time in the world, researchers at the GRAPES-3 muon telescope facility in Ooty have measured the electrical potential, size and height of a thundercloud that passed overhead on December 1, 2014
- GRAPES-3 (Gamma Ray Astronomy PeV Energies phase-3) is designed to study cosmic rays with an array of air shower detectors and a large area muon detector.
- It aims to probe acceleration of cosmic rays in the following four astrophysical settings.
- These include acceleration of particles to,
  - (i) ~100 MeV in atmospheric electric fields through muons,
  - (ii) ~10 GeV in Solar system through muons,
  - (iii) ~1 PeV in our galaxy through nuclear composition of cosmic rays,

(iv) ~100 EeV in nearby universe through measurement of diffuse - ray flux.

- The GRAPES-3 experiment located at Ooty in India started as a collaboration of the Tata Institute of Fundamental Research, Mumbai, India and the Osaka City University, Osaka, Japan.

#### 46. Ans. A

**Exp:** Statement 2 is incorrect: Till now superconductivity was achieved in materials at temperatures below 0°C, making their practical utility difficult.

- Statement 3 is incorrect: Superconductors exhibit diamagnetism i.e. they are repelled by external magnetic fields.

#### Superconductivity at Room Temperature

- Scientists at the Indian Institute of Science (IISc) have developed a material exhibits major properties of superconductivity at ambient temperature and pressure.
- A material is said to be a superconductor if it conducts electricity with nil resistance to the flow of electrons.
- Till now, scientists have been able to make materials superconduct only at temperatures much below zero degree C and hence making practical utility very difficult.
- Superconductors will help build very high efficient devices leading to huge energy savings.
- Superconductivity at ambient temperature has been a holy grail in physics for about a century.
- The material that exhibited superconductivity is in the form of nanosized films and pellets made of silver nanoparticles embedded in a gold matrix. Interestingly, silver and gold independently do not exhibit superconductivity.
- Two of the most important properties of superconductivity are diamagnetism and zero resistance.

- Diamagnetism is a weak magnetic behaviour generally shown by all materials and easily suppressed in the presence of stronger magnetic properties. Diamagnetic materials create an induced magnetic field in a direction opposite to an externally applied magnetic field. They are repelled by the applied magnetic field. The permanent dipoles are absent in diamagnetic materials.

#### 47. Ans. B

**Exp:** Statement 3 is incorrect: The Convention has 53 signatories, including India, China and the U.S.

#### Singapore Convention on Mediation

- The Singapore Convention on Mediation came into force recently and will provide a more effective way for enforcing mediated settlements of corporate disputes involving businesses in India and other countries that are signatories to the Convention.
- Also known as the United Nations Convention on International Settlement Agreements Resulting from Mediation, this is also the first UN treaty to be named after Singapore.
- With the Convention in force, businesses seeking enforcement of a mediated settlement agreement across borders can do so by applying directly to the courts of countries that have signed and ratified the treaty, instead of having to enforce the settlement agreement as a contract in accordance with each country's domestic process.
- The Singapore Convention can be resorted to only in case of an international commercial dispute, and specifically excludes disputes arising from personal, family, inheritance or employment matters.

#### 48. Ans. C

**Exp:** Statement 1 is incorrect: Coalition for Disaster Resilient Infrastructure (CDRI) was

launched at the UN Climate Action Summit 2019 held in New York City, USA, on September 23, 2019 by PM Modi. It is a global partnership aims to promote resilience of new and existing infrastructure systems to climate and disaster risks.

#### **Environmental Ministerial Meeting of G20**

- The Environment Ministerial Meeting (EMM) of the G20 countries took place through video conferencing under the Presidency of Kingdom of Saudi Arabia.
- Representing India, Union Environment Minister Prakash Javadekar applauded the launch of Global Initiative to reduce Land Degradation and Coral Reef program and two documents on climate change related to managing emissions and climate change adaptations under the G20 this year.
- The Global Initiative on Reducing Land Degradation aims to strengthen the implementation of existing frameworks to prevent, halt, and reverse land degradation within G20 member states and globally, taking into account possible implications on the achievement of other SDGs.
- The Global Coral Reef R&D Accelerator Platform is an innovative action-oriented initiative aimed at creating a global research and development (R&D) program to advance research, innovation and capacity building to enhance coral reefs conservation.

#### **49. Ans. A**

**Exp:** Statement 3 is incorrect: The settlement by the Conciliation Board will be binding on the parties

#### **Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020**

- The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, provides a buyer a right to engage in trade and commerce of a farmer's produce across the country.

- This means a farmer has freedom to engage in intra-state and inter-state trade with buyers, expanding her choices beyond a traditional market.
- The law also provides for a dispute resolution mechanism. Section 8 of the Act, which lays down the "dispute resolution mechanism for farmers" states that "in case of any dispute arising out of a transaction between the farmer and a trader", a Conciliation Board appointed by the Sub-Divisional Magistrate will settle the dispute.
- It says the settlement by the Conciliation Board will be binding on the parties.
- What if the parties cannot reach a settlement?
- If the dispute is not settled within 30 days of being brought to the Board, the SDM will hear the dispute acting as the "Sub-Divisional Authority" for settlement of such dispute.
- The Sub-Divisional Authority is empowered to pass three kinds of orders under the law:
- Pass an order for the recovery of the amount payable to the farmers and traders.
- Impose a penalty.
- Suspend for such period as he deems fit or cancel the right to operate as an electronic trading and transaction platform.

#### **50. Ans. A**

**Exp:** Statement 3 is incorrect: The fungus is not contagious.

#### **Mucormycosis Fungal Infection**

- It can occur in almost any part of the body. It can affect the sinuses or the lungs if the fungus enters through inhaling. It can also enter the skin through a cut, burn or any other type of skin injury.
- If not detected early, the infection – Mucormycosis also known as black fungus – can kill half the patients and lead to loss of vision or jaw in others.

- How does it affect the eyesight? It enters through the nose and then spreads to the eyes, paralyses the muscles around the pupils which might lead to blindness. It may also cause meningitis if it spreads to the brain.
- This is not contagious.
- The connection between Covid-19 and Mucormycosis is the weakened immunity response.
- One-sided facial swelling, headache, nasal or sinus congestion, black lesions on nasal bridge or upper inside of mouth, fever are symptoms of mucormycosis in sinus and brain.
- Fever, cough, chest pain, shortness of breath are the symptoms of mucormycosis in the lungs.

**51. Ans. D**

**Exp:** As per Article 243F, no person shall be disqualified on the ground that he is less than twenty-five years of age if he has attained the age of twenty-one years. Hence, a person become eligible for contesting the elections to Panchayats and municipalities after he/she has attained the age of twenty-one years. This is in contrast to eligibility for contesting legislative assembly elections and Lok Sabha elections wherein the minimum age required for the candidates is twenty-five years. Hence statement 1 is not correct.

- A person shall be disqualified for being a member of a Panchayat if he is so disqualified by or under any law for the time being in force for the purposes of elections to the Legislature of the State concerned or if he is so disqualified by or under any law made by the Legislature of the State.
- If any question arises as to whether a member of a Panchayat has become subject to any of the disqualifications, the question shall be referred for the decision of such authority and in such manner as the Legislature of a State may provide. Hence statement 2 is not correct

**52. Ans. B**

**Exp:** Under Article 239A(1) Parliament may by law create for the Union territory of Puducherry (The Government of Union Territories Act, 1963):

- (a) a body, whether elected or partly nominated and partly elected, to function as a Legislature for the Union territory, or
- (b) a Council of Ministers, or both with such constitution, powers and functions, in each case, as may be specified in the law.

- Article 239A (2) states that any such law (under Article 239A(1)) shall not be deemed to be an amendment of this Constitution for the purposes of article 368 notwithstanding that it contains any provision which amends or has the effect of amending this Constitution.
- Article 239AA (1) states that as from the date of commencement of the Constitution (Sixty-ninth Amendment) Act, 1991, the Union territory of Delhi shall be called the National Capital Territory and the administrator thereof appointed under Article 239 shall be designated as the Lieutenant Governor.
- Also, Article 239AA (2) (a) provides that here shall be a Legislative Assembly for the National Capital Territory and the seats in such Assembly shall be filled by members chosen by direct election from territorial constituencies in the National Capital Territory. Thus NCT legislature has been provided directly under the Constitution itself whereas legislature of Puducherry is provided by the Parliament. Hence statement 1 is not correct.
- Section 18 of the Government of Union Territories Act, 1963 Act, which deals with —extent of legislative power of the Puducherry Assembly, says that MLAs —may make laws for the whole or any part of the Union Territory with respect to any of the matters enumerated in the State List or the Concurrent List. Whereas, as provided under Article

239AA(3) (a) under the constitutional scheme, the Delhi Assembly has the power to legislate on all subjects except law and order and land. Hence statement 2 is correct.

**53. Ans. D**

**Exp:** Ashoka led a huge army against Kalinga, following the footsteps of his forefathers to expand his empire. Kalinga war took place in 261 B.C. Kalinga offered stiff resistance to the Mauryan army.

The whole of Kalinga turned into a battle arena. However, the limited forces of Kalinga were no match for the overwhelming Magadha army. Contrary to Ashoka's expectations, the people of Kalinga fought with such great valour that on a number of occasions they came very close to a victory.

The soldiers of Kalinga perished in the battlefield fighting till their last breath for their independence. The victory ultimately rested with Ashoka.

- The war took a tremendous toll on life and property. The 13th rock edict of Ashoka throws light on this war. Ashoka appealed ideologically to the tribal people and the frontier kingdoms. The subjects of the independent states in Kalinga were asked to obey the king as their father and to repose confidence in him.
- The officials appointed by Ashoka were instructed to propagate this idea among all sections of his subjects. The tribal peoples were similarly asked to follow the principles of dhamma (dharma). He no longer treated foreign dominions as legitimate areas for military conquest. He took steps for the welfare of men and animals in foreign lands, which was a new thing considering the conditions in those times. Hence statement 1 is correct.
- Ashoka disapproved of rituals, especially those observed by women. He forbade killing certain birds and animals,

prohibited the slaughter of animals in the royal kitchen, and forbade the slaughter of animals in sacrifices. Hence statement 2 is correct.

- Ashoka is important in history for his policy of peace, nonaggression, and cultural conquest. Although Kautilya advised the king to be always intent on physical conquest, Ashoka followed quite the reverse policy. He asked his successors to give up the policy of conquest and aggression, followed by the Magadhan princes till the Kalinga war, and counselled them to adopt a policy of peace sorely needed after a period of aggressive wars lasting for two centuries. He consistently adhered to his policy, for though he possessed sufficient resources and maintained a huge army, he did not wage any war after the conquest of Kalinga. Hence statement 3 is correct.

**54. Ans. C**

**Exp:** Statement 1 is not correct: Turkish troops did not have superior weapons as compared to Indians. Turkish bows could shoot arrows to a longer distance, but the Indian bows were supposed to be more accurate and more deadly, the arrowheads being generally dipped in poison. In hand to hand combat, the Indian swords were considered to be the best in the world.

- Statement 2 is not correct: The Indians had the advantage of elephants. However, Turks had horses which were swifter and more sturdy than the horses imported into India.
- Statement 3 is correct: The Turks were more socially and organisationally superior. The growth of feudalism, that is rise of local landed elements and chiefs weakened the administrative structure and military organisation of the Indian states. The rulers had to depend more on the various chiefs who rarely acted in coordination and quickly dispersed to their areas after the battle. On the other hand, the tribal structure of the Turks and the growth of iqta and khalisa

system enabled the Turks to maintain large standing army which could be kept in the field for a long time.

- The Indians were not effective to move as an organised body of horseman which covered long distances and fight. Rajputs put up prolonged resistance to the incursions of Arab and Turks but they never tried to be offensive and try to push the Arabs or Turks from the strategic lands like Afghanistan, Punjab that they had occupied. That is to say, Rajputs lacked a strategic vision.

#### 55. Ans. C

**Exp:** The Deccani states had a number of cultural contributions to their credit.

- Ali Adil Shah was very fond of organizing discussions with Hindu and Muslim saints.
- Adil Shah invited Catholic missionaries to his court, much before Akbar had done so. He had an excellent library to which he appointed the well-known Sanskrit scholar, Waman pandit. Patronage of Sanskrit and Marathi was continued by his successors.
- Ibrahim Adil Shah II (1580-1627), the successor of Adil Shah, ascended the throne (of Bijapur) at the age of nine. He was very attentive of the poor, and had the "title of Abla Baba", or Friend of the Poor.
- Adil Shah II was very fond of music; he composed a book namely Kitab-i-Nauras (Book of Nine Rasas).
- In this book, he set various musical modes or togas. In his songs, he freely prayed the goddess of music and learning, Saraswati. Due to his broad approach, he came to be called as Jagat Guru.
- Adil Shah II, further, built a new capital, Nauraspur; where he invited a large number of musicians (to settle).
- He offered patronage to all, including Hindu saints and temples. This included grants to Pandharpur, the center of the worship of Vithoba, which became the

center of the Bhakti movement in Maharashtra.

#### 56. Ans. A

**Exp:** Bushfires and grassfires are common throughout Australia. Grassfires are fast-moving, passing in five to ten seconds and smouldering for minutes. Bushfires are generally slower-moving but have a higher heat output. This means they pass in two to five minutes, but they can smoulder for days. Bushfires are an intrinsic part of Australia's environment.

Many of Australia's native plants are fire-prone and very combustible, while numerous species depend on fire to regenerate. Indigenous Australians have long used fire as a land management tool and it continues to be used to clear land for agricultural purposes and to protect properties from intense, uncontrolled fires.

- The basic factors which determine whether a bushfire will occur include the presence of fuel, oxygen and an ignition source. The fire intensity and speed at which a bushfire spreads will depend on ambient temperature, fuel load, fuel moisture, wind speed and slope angle.
- Fuel load: Fuel load describes the amount of fallen bark, leaf litter and small branches accumulating in the landscape.
- Fuel moisture: Dry fuel will burn quickly, but damp or wet fuel may not burn at all. As a consequence, the time since rainfall and the amount of rain received is an important consideration in assessing bushfire danger.
- Wind speed: Wind acts to drive a fire by blowing the flames into fresh fuel, bringing it to ignition point and providing a continuous supply of oxygen. Wind also promotes the rapid spread of fire by spotting, which is the ignition of new fires by burning embers lofted into the air by wind.

- Ambient temperature: The higher the temperature the more likely it is that a fire will start or continue to burn. This is because the fuel is closer to its ignition point at high temperatures and preheated fuel loads burn faster.
- Relative humidity: Dry air promotes a greater intensity fire than moist air. Plants become more flammable at low humidity because they release their moisture more easily.
- Slope angle: Fires pre-heat their fuel source through radiation and convection. As a result, fires accelerate when travelling uphill and decelerate travelling downhill.
- Ignition Source: Bushfires can originate from both human activity and natural causes with lightning the predominant natural source, accounting for about half of all ignitions in Australia.
- Hence all the options are correct.

#### 57. Ans. C

**Exp:** Our Solar system consists of eight planets. Out of the eight planets, mercury, venus, earth and mars are called as the inner planets as they lie between the sun and the belt of asteroids the other four planets are called the outer planets. Alternatively, the first four are called Terrestrial Planets, meaning earth-like as they are made up of rock and metals, and have relatively high densities. The rest four are called Jovian or Gas Giant planets. Jovian means Jupiter-like. Most of them are much larger than the terrestrial planets and have a thick atmosphere, mostly of helium and hydrogen. Reason for the same are:

- The terrestrial planets were formed in the close vicinity of the parent star where it was too warm for gases to condense to solid particles. Jovian planets were formed at quite a distant location.
- The solar wind was most intense nearer the sun; so, it blew off lots of gas and dust from the terrestrial planets. The solar winds were not all that intense to cause similar removal of gases from the

Jovian planets. Hence statement 1 is correct.

- The terrestrial planets are smaller and their lower gravity could not hold the escaping gases. Hence, statement 2 is correct.

#### 58. Ans. C

**Exp:** Statement 1 is incorrect: In 1969, the Rules Committee of the Lok Sabha recommended that the gap between the date of summons and of the commencement of the House should be 21 days. It is not an inflexible rule and say “unless the Speaker otherwise decides”. Also the Parliament changed it to 15 days.

- Statement 2 is incorrect: In *Nabam Rebia and Baman Felix v. Deputy Speaker (2016)*, the Supreme Court concluded that the Governor can summon and prorogue and dissolve the House only on the aid and advice of the Council of Ministers with the Chief Minister as the head not on his own.

#### Governor’s Role in Calling an Assembly Session

- Kerala Governor has turned down a request by Chief Minister Pinarayi Vijayan to summon a special sitting of the Assembly to debate the new three central farm laws. This raises questions on the role of a Governor and the contours of the powers he or she has under the Constitution.
- According to Article 174 of the Constitution “The Governor shall from time to time summon the House or each House of the Legislature of the State to meet at such time and place as he thinks fit”.
- The provision also puts on the Governor the responsibility of ensuring that the House is summoned at least once every six months.
- Although it is the Governor’s prerogative to summon the House, according to Article 163, the Governor is required to

act on the “aid and advice” of the Cabinet.

- So, when the Governor summons the House under Article 174, this is not of his or her own will but on the aid and advice of the Cabinet.
- There are a few instances where the Governor can summon the House despite the refusal of the Chief Minister who heads the Cabinet.
- When the Chief Minister appears to have lost the majority and the legislative members of the House propose a no-confidence motion against the Chief Minister, then the Governor can decide on his or her own on summoning the House.

### 59. Ans. A

**Exp:** Option a is correct: The National Green Tribunal (NGT) has directed the Odisha government to prepare an action plan within 3 months on 14 identified elephant corridors for providing stress-free migration to jumbos from one habitation to another in the State.

#### Elephant Corridors

- Elephant Corridors are narrow land connecting two large elephant habitats. They are essential to reduce animal deaths due to accidents and other causes.
- This movement of elephants helps to increase the survival rate and birth rate of the species. The activities of elephants are essential to ensure that their populations are genetically viable. It also helps regenerate forests that other species depend on, including tigers.
- The State government had proposed 14 corridors, stretching over a total area of 870.61 sq.km, having a length of 420.8 km. Despite the passing of several years, no tangible progress had been made on government’s proposal.
- Traditionally 14 corridors have been identified in the State which used to be used by elephants during the course of their migration. These corridors need to be protected. The all-round development

like human settlements, roads, railway line, electric lines, canal and mining are the main cause of corridor fragmentation,” the government mentioned in the plan.

- Biswajit Mohanty, secretary of the Wildlife Society of Orissa (WSO), a voluntary organization, had moved the NGT seeking concrete action on strengthening of corridors.
- The government was urged to remove the unauthorized buildings from the reserve forest land in Dhenkanal district, which sees acute human-elephant conflict, and make the forestland free from encroachment.
- According to the National Elephant Corridor Project, the Wildlife Trust of India has identified 88 elephant corridors all over the country.

### 60. Ans. D

**Exp:** The balance of payments (BoP) records the transactions in goods, services, and assets between residents of a country with the rest of the world. It consists of Current and Capital accounts. The current account records exports and imports in goods and services and transfer payments.

The capital account records all international purchases and sales of assets such as money, stocks, bonds, etc. A country that has a deficit in its current account (spending more abroad than it receives from sales to the rest of the world) must finance it by selling assets or by borrowing abroad. Thus, any current account deficit is of necessity financed by a net capital inflow.

- Forex reserves can increase even in case of current account deficit if the capital inflows during that period are greater than the current account deficit. For example, in April-September 2005-06, the current account deficit of US\$13 billion was financed by a capital inflow of US\$19.5 billion, the extra capital inflow of US\$ 6.5 billion being added to our

stock of foreign exchange. Reserves of foreign exchange are accumulated when a country has an overall balance of payments surplus. Hence statement 2 is not correct.

- Alternatively, the country could engage in official reserve transactions, running down its reserves of foreign exchange, in the case of a deficit by selling foreign currency in the foreign exchange market. The decrease in official reserves is called the overall balance of payments deficit.
- India's forex reserves comprise foreign currency assets (FCAs), gold reserves, special drawing rights (SDRs) and India's reserve position with the International Monetary Fund (IMF). Hence statement 1 is not correct.

**61. Ans. D**

**Exp:** Both statements are correct

**IFFCO Gas Leak**

- Two persons died and several took ill in a major ammonia gas leakage at the Indian Farmers Fertilizer Cooperative Limited (IFFCO) unit at Prayagraj (Allahabad), recently.
- A tri-hydride of nitrogen (NH<sub>3</sub>), ammonia is a building block for ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>) that is used in agriculture as a high-nitrogen fertilizer.
- Ammonia is stored for industrial use in liquid form under high pressure or in gaseous form at low temperature.
- Ammonia, even in moderate concentration, can cause irritation to eyes, skin, nose and throat. It interacts immediately upon contact with moisture present in the skin, eyes, oral cavity, and respiratory tract to form ammonium hydroxide, which is very caustic and disrupts the cell membrane lipids, ultimately leading to cellular destruction. As cell proteins break down, water is extracted, resulting in an inflammatory response that causes further damage.
- Ammonia, which is highly soluble in water, is found in soil, air, and water; it is

naturally present in the body and secreted by the kidneys to neutralize excess acid. However, it is highly diluted when in the environment and does not affect the human body to a noticeable level.

- Ammonia is critical in the manufacturing of fertilizers, and is one of the largest volume synthetic chemicals produced in the world. More than 80 per cent of ammonia made is consumed in the manufacturing of fertilizer, and most of the remainder goes into the production of formaldehyde.

**62. Ans. B**

**Exp:** Statement 1 is incorrect: It is listed as Critically Endangered in IUCN Red List.

Statement 3 is incorrect: It is the state bird of Rajasthan.

**Great Indian Bustard**

- The Ministry of Environment along with the Wildlife Conservation Society, India, has come up with a unique initiative — a “firefly bird diverter” for overhead power lines in areas where Great Indian Bustard (GIB) populations are found in the wild.
- It is the state bird of Rajasthan.
- Firefly bird diverters are flaps installed on power lines. They work as reflectors for bird species like the GIB. Birds can spot them from a distance of about 50 metres and change their path of flight to avoid collision with power lines.
- A 2019 report by the Ministry pointed out that power lines, especially high-voltage transmission lines with multiple overhead wires, are the most important current threat for GIBs in the Thar region, and are causing unsustainably high mortality in about 15% of their population.
- Great Indian Bustard is a bustard found in Indian-Subcontinent. Its stronghold was once the Thar Desert in north-west and the Deccan plateau of the peninsula

but today its population is confined mostly to Rajasthan and Gujarat with small numbers in Maharashtra, Karnataka and Andhra Pradesh.

- They generally favour flat open landscapes with minimal visual obstruction and disturbance, therefore adapt well in grasslands. (Considered flagship grassland species representing the health of grassland ecology).

**63. Ans. D**

**Exp:** All statements are correct

**3D Printing**

- The Ministry of Electronics and Information Technology (MeitY) will soon come up with a policy aimed at promoting 3D printing on an industrial scale in view of its emerging market.
- 3D printing or additive manufacturing uses computer-aided designing to make prototypes or working models of objects by laying down successive layers of materials such as plastic, resin, thermoplastic, metal, fibre or ceramic.
- With the help of software, the model to be printed is first developed by the computer, which then gives instructions to the 3D printer.

**Some applications of 3D printing include:**

- In aerospace and defence (A&D) industry to make functional prototypes, lightweight components etc. A few examples of parts that can be produced with 3D printing include air ducts, wall panels and even structural metal components.
- In areas like motorsports and performance racing, design tools like generative design and topology optimization are slowly changing traditional approaches to designing parts.
- From medical devices to prosthetics and even bioprinting, the applications of additive manufacturing for the medical industry are versatile and wide-ranging.

- From consumer electronics to toys and sportswear, key players within the consumer goods industry are increasingly recognizing 3D printing as a valuable addition to existing manufacturing solutions.
- Additive manufacturing of food is being developed by squeezing out food, layer by layer, into three-dimensional objects. A large variety of foods are appropriate candidates, such as chocolate and candy, and flat foods such as crackers, pasta and pizza.
- 3D printing has been considered as a method of implanting stem cells capable of generating new tissues and organs in living humans. With their ability to transform into any other kind of cell in the human body, stem cells offer huge potential in 3D bioprinting.

**64. Ans. B**

**Exp:** Statement 1 is incorrect: Phosphine, a colourless, smelly gas, is known to be made only by some species of bacteria that survive in the absence of oxygen.

**Phosphine Gas**

- An international team of astronomers has announced the finding of phosphine gas in the atmosphere of Venus, triggering excitement about the possibility of presence of life forms on that planet.
- Apart from being produced in industrial processes, phosphine, a colourless, smelly gas, is known to be made only by some species of bacteria that survive in the absence of oxygen. The presence of phosphine in the atmosphere of Venus is something that was not expected and is "unexplained". Any presence of phosphorus in that atmosphere was expected to be in oxidized forms.
- In a paper published in Nature Astronomy, a team of scientists have reported traces of phosphine in a concentration of approximately 20 parts per billion. Scientists have been careful to emphasize, that as of now, this is no

confirmation of the presence of life on Venus.

**65. Ans. B**

**Exp:** Statement 2 is incorrect: The organization is not a United Nations agency, but the PCA is an official United Nations Observer.

**Permanent Court of Arbitration (PCA)**

- Recently, the Permanent Court of Arbitration (PCA) has ruled that the Indian government was wrong in applying a retrospective tax on energy giant Cairn Plc.
- The Permanent Court of Arbitration, established by treaty in 1899, is an intergovernmental organization providing a variety of dispute resolution services to the international community.
- The PCA was established by the Convention for the Pacific Settlement of International Disputes, concluded at The Hague in 1899 during the first Hague Peace Conference.
- The PCA has a three-part organizational structure consisting of an Administrative Council that oversees its policies and budgets, a panel of independent potential arbitrators known as the Members of the Court, and its Secretariat, known as the International Bureau, headed by the Secretary-General.
- It is not a court in the traditional sense, but provides services of arbitral tribunal to resolve disputes that arise out of international agreements between member states, international organizations or private parties.
- The cases span a range of legal issues involving territorial and maritime boundaries, sovereignty, human rights, international investment, and international and regional trade.
- The decision is binding on the parties, and there is no mechanism for appeal.

**66. Ans. A**

**Exp:** Statement 2 is incorrect: The Chairperson of a Committee shall be appointed by the Speaker.

**Parliamentary Committee on Management of Covid-19**

- A Parliamentary Standing Committee of Home Affairs on the management of the Covid-19 pandemic, headed by Rajya Sabha MP Anand Sharma, had submitted its report.
- The Committee has made a detailed assessment of four aspects: the country's preparedness, augmentation of health infrastructure, social impact, and economic impact.

**Key recommendations of the Parliamentary Committee are:**

- Insurance cover not given to many; need regulatory oversight on hospitals to prevent refusal to accept insurance claims.
- Reports of hospital beds being sold; need law to keep check and control over private hospitals.
- Migrant workers worst affected; govt. should start national database on migrant workers to identify and deliver benefits.
- Students deprived of Mid-Day Meals; should be continued until schools reopen.
- Parliamentary committees draw their authority from Article 105 (on privileges of Parliament members) and Article 118 (on Parliament's authority to make rules for regulating its procedure and conduct of business).
- The members of a Committee shall be appointed or elected by the House on a motion made, or nominated by the Speaker as the case may be. No member shall be appointed to a Committee if unwilling to serve on it.
- The Chairperson of a Committee shall be appointed by the Speaker from amongst members of the Committee: Provided

that the Deputy Speaker, in case is a member of the Committee, shall be appointed as Chairperson of the Committee.

- The sittings of a Committee shall be held in private.

**67. Ans. A**

**Exp:**

- The Mughals made a distinctive contribution in the field of painting. They introduced many new themes portraying the court, battle grounds, and the chase scenes. Besides, Mughal painters also introduced many new colours and new forms.
- Statement 1 is correct: During Jahangir's period, some of the historians claimed that Jahangir had the sense to distinguish the work of each artist separately in a picture.
- Jahangir himself was a great painter of his times.
- Statement 2 is correct: During those days, it was a fashion in the Mughal School that in a single painting - the face, the body, and the feet of a person to be painted by different artists.
- During Jahangir's period, special progress was made in portrait painting and paintings of animals.
- Mansur was the great name in this field.
- During the Akbar's reign, the two great painters (who came to India with Humayun), organized painting in one of the imperial establishments. Besides, a large number of painters from different parts of the country were invited; many of them were from the lower castes.
- From the beginning, both Hindus and Muslims painters joined in the work. Daswant and Basawan both were the famous painters of Akbar's court. Hence statement 3 is not correct.
- Mughal painting was at climax under Jahangir's period who had a very peculiar sense of paintings.

**68. Ans. B**

**Exp:** The period between 800-900 AD was a period of stagnation and even of decline. This is seen in steady decline of towns, and the absence of gold and silver coins between the 7th and 10th centuries.

Statement 1 is not correct: One of the major reasons for the decline was decline in the west of the Roman empire with which India had a flourishing and profitable trade.

- Statement 2 is correct: Another major reason for the decline of trade was the rise of many states and the growth of 'localism'. In these states, there was marked growth of self-sufficiency which grew in conjunction with small towns. Within these states, in many areas, there was a growth of agriculture.
- Statement 3 is correct: The religious prohibitions on travel also played a major role in the decline in trade and commerce. In some of the Dharamshastras which were written during this period, a ban is put on travel beyond the areas where the munja grass doesn't grow or where the black gazelle doesn't roam, that is, outside India. Travel across the salt seas was considered polluting.

**69. Ans. C**

**Exp:** Both statements are correct

**El Nino and Indian Droughts**

- As per latest findings, nearly six out of 10 droughts, in non-El Nino years, that occurred during the Indian summer monsoon season in the past century may have been driven by atmospheric disturbances from the North Atlantic region.
- In 2014, India saw a 14% rainfall deficit — or a drought — that wasn't linked to El Nino and before that in 1986 and 1985.

### Factors that influence these droughts:

- These droughts are a consequence of a sudden and steep drop in rainfall in late August.
- Winds in the upper atmosphere are interacting with a deep cyclonic circulation above the abnormally cold North Atlantic waters. The resulting wave of air currents, called a Rossby wave, curved down from the North Atlantic squeezed in by the Tibetan plateau and hit the subcontinent around mid-August, suppressing rainfall and throwing off the monsoon that was trying to recover from the June slump

### El Niño

- El Niño is the name given to the occasional development of warm ocean surface waters along the coast of Ecuador and Peru.
- When this warming occurs the usual upwelling of cold, nutrient rich deep ocean water is significantly reduced.
- El Niño normally occurs around Christmas and usually lasts for a few weeks to a few months.
- Sometimes an extremely warm event can develop that lasts for much longer time periods. In the 1990s, strong El Niños developed in 1991 and lasted until 1995, and from fall 1997 to spring 1998

### Effects of El Nino

- The warmer waters had a devastating effect on marine life existing off the coast of Peru and Ecuador.
- Fish catches off the coast of South America were lower than in the normal year (Because there is no upwelling).
- Severe droughts occur in Australia, Indonesia, India and southern Africa.
- Heavy rains in California, Ecuador, and the Gulf of Mexico.

### 70. Ans. D

**Exp:** All statements are correct

### Saguna Rice Technique

- Saguna Rice Technique is a unique new method of cultivation of rice and related rotation crops without ploughing, puddling and transplanting (rice) on permanent raised beds.
- This is a zero-till, Conservation Agriculture (CA) type of cultivation method.
- The permanent raised beds used in this method facilitates ample of oxygen supply to root zone area while maintaining optimum moisture condition there.
- SRT has made suitable changes in the conventional rice cultivation to ease farmers' laborious work and to prevent fertility loss during puddling.

### Important principles of SRT are:

- SRT insists that all roots and small portion of stem should be left in the beds for slow rotting.
- No ploughing, puddling and hoeing is to be done to control weeds.
- This system will get the crop ready for harvesting 8 to 10 days earlier. Take this into consideration while choosing a variety to avoid getting harvesting caught in receding rain.
- Chanrdashekhar H Bhadsavle is the person who is largely responsible for the success story of Saguna baug and development of SRT (Saguna Rice Technique). SRT method evolved at Saguna Baug, Neral, Dist. Raigad, Maharashtra.

### 71. Ans. C

**Exp:** Both statements are correct

### Winter Solstice

- December 21 was Winter Solstice, the shortest day of the year in the Northern Hemisphere. In the Southern Hemisphere, conversely, December 21 was Summer Solstice, the year's longest day.

- The Earth's axis of rotation is tilted at an angle of 23.5 degrees away from the perpendicular. This tilt — combined with factors such as Earth's spin and orbit — leads to variations in the duration of Sunlight that any location on the planet receives on different days of the year.
- The Northern Hemisphere spends half the year tilted in the direction of the Sun, getting direct sunlight during long summer days. During the other half of the year, it tilts away from the Sun, and the days are shorter. Winter Solstice, December 21, is the day when the North Pole is most tilted away from the Sun.
- It happens twice yearly, once in each hemisphere (Northern and Southern). For that hemisphere, the winter solstice is the day with the shortest period of daylight and longest night of the year, when the Sun is at its lowest daily maximum elevation in the sky. Its opposite is the summer solstice.
- The winter solstice occurs during the hemisphere's winter. In the Northern Hemisphere, this is the December solstice (usually December 21 or 22) and in the Southern Hemisphere, this is the June solstice (usually June 20 or 21).

#### 72. Ans. A

**Exp:** Statement 3 is incorrect: The card has been launched on the RuPay network by SBI in association with JCB. It comes with a unique dual-interface feature that will enable customers to perform both contact and contactless transactions in the domestic market and seamless contact transactions overseas.

#### Contactless Debit Card

- State Bank of India (SBI), National Payments Corporation of India (NPCI) and Japan's JCB International Co. launched the 'SBI RuPay JCB Platinum Contactless Debit Card'.
- JCB is a major global payment brand and a leading credit card issuer and acquirer in Japan.

- With this card, customers would be able to transact on ATMs (Automatic Teller Machines) & PoS (Point of Sale) terminals across the globe under the JCB network. They can also shop online from JCB-partnered international e-commerce merchants using the card.
- The card supports RuPay offline wallet-based transactions, enabling an additional payment mode within the card.

Consumers will be able to load the offline wallet and utilise it for transit in India (bus and metro) and retail (merchant) payments.

#### 73. Ans. B

**Exp:** Statement 2 is incorrect: It is grown directly from cells in a laboratory.

#### Cultured Meat

- In its June 2020 Food Outlook Report, the UN Food and Agriculture Organisation (FAO) stated that world meat output was set to contract row to 333 million tonnes, 1.7% less than in 2019. The disruption has been caused mainly by Covid-19, but it has added to already widespread fears about zoonotic diseases, especially African swine fever and highly pathogenic avian influenza.
- The lab-grown meat is made from plant sources such as soy or pea protein, while cultured meat is grown directly from cells in a laboratory. Both have the same objective: to offer alternatives to traditional meat products that could feed a lot more people, reduce the threat of zoonotic diseases, and mitigate the environmental impact of meat consumption.
- In terms of cellular structure, cultured or cultivated meat is the same as conventional meat — except that cultured meat does not come directly from animals.
- Conventional meat still dominates the market, and industry lobbies have been fighting to hold on to their market, not

least by challenging the very idea of alternative meats.

**74. Ans. C**

**Exp:** Statement 1 is incorrect: Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female Anopheles mosquitoes, called “malaria vectors.”

There are 5 parasite species that cause malaria in humans, and 2 of these species – P. falciparum and P. vivax – pose the greatest threat.

**Plasmodium Ovale**

- A not very common type of malaria, Plasmodium ovale, has been identified in a soldier in Kerala. The soldier is believed to have contracted it during his posting in Sudan, from where he returned nearly a year ago, and where Plasmodium ovale is endemic.
- Malaria is caused by the bite of the female Anopheles mosquito, if the mosquito itself is infected with a malarial parasite. There are five kinds of malarial parasites — Plasmodium falciparum, Plasmodium vivax (the commonest ones), Plasmodium malariae, Plasmodium ovale and Plasmodium knowlesi.
- P ovale rarely causes severe illness and there is no need for panic because of the case detected in Kerala.
- P ovale is very similar to P vivax, which is not a killer form. Symptoms include fever for 48 hours, headache and nausea, and the treatment modality is the same as it is for a person infected with P vivax. P ovale is no more dangerous than getting a viral infection.
- It is termed ovale as about 20% of the parasitized cells are oval in shape.
- P ovale malaria is endemic to tropical Western Africa. P ovale is relatively unusual outside of Africa.

**75. Ans. B**

**Exp:** Statement 1 is incorrect: The Legion of Merit (LOM) is a military award of the United States Armed Forces.

- Statement 3 is incorrect: Field Marshal K.M. Cariappa had received the Legion of Merit (Degree: Chief Commander) in 1949 from then U.S. President Harry S. Truman.

**Legion of Merit: USA**

- Recently, the USA has awarded the ‘Legion of Merit’ to the Prime Ministers of India, Japan and Australia.
- Indian PM has been given this award for his role in “advancing the India-USA relationship”. The award recognizes the efforts of the people of India and the USA to improve bilateral ties, reflected in the bipartisan consensus in both countries about the Indo-USA Strategic Partnership.
- One of the USA’s highest military decorations, the award was instituted in 1942 by former President Franklin D. Roosevelt.
- It is awarded to members of the USA armed forces and also members of foreign (i.e. non-USA) armed forces and sometimes heads of state or government.
- The award is presented to foreign recipients in four categories: Chief Commander, Commander, Officer and Legionnaire.

**76. Ans. D**

**Exp:** Option (d) is correct

**Zomi**

- Manipur’s Zomi ethnic group has renewed its demand for the creation of Zoland Territorial Council (ZTC) under the Sixth Schedule of the Constitution, a self-administered zone on the lines of the Bodoland Territorial Council in Assam.
- The Zou people or Zomi are an indigenous community living along the

frontier of India and Burma. They are a sub-group of the Zo people (Mizo-Kuki-Chin).

- In India, they live with and are similar in language and habits to the Paite and the Simte peoples.
- In India, the Zou are officially recognized as one of the thirty-three indigenous peoples within the state of Manipur, and are one of the Scheduled tribes.
- According to the 2001 Census, the Zou/Jou population in Manipur is around 20,000, less than 3% of the population. The community is concentrated in Churachandpur and Chandel districts of Manipur.

**77. Ans. A**

**Exp:** Option (a) is correct

**Madan Mohan Malaviya Jayanti**

- The Prime Minister of India paid tribute to Pt. Madan Mohan Malaviya on his 159th birth anniversary (25th December, 2020).
- December 25 is the birth anniversary of Madan Mohan Malaviya, the famed Indian educationist and freedom fighter who is also called 'Mahamana'.
- Malaviya is known for founding the Banaras Hindu University and for becoming one of the torchbearers of the freedom struggle — acting as a bridge between the Moderates and the Extremists in the Congress.
- Born in Allahabad, Malaviya took early education under the 'pathshala' system, and was proficient in Sanskrit. In 1879, he graduated from the Muir Central College (today's Allahabad University) and started working as a teacher at a local high school.
- Drawn to politics, Malaviya joined the Indian National Congress at its Calcutta session in 1886.
- Malaviya rose up the ranks, and became president four times — in 1909 (Lahore), in 1918 (Delhi), in 1930 (Delhi), and in

1932 (Calcutta). Malaviya was part of the Congress for almost 50 years.

- Malaviya was one of the early leaders of the Hindu Mahasabha, and helped found it in 1906. He was a social reformer and a successful legislator, serving as a member of the Imperial Legislative Council for 11 years (1909–20).
- At the Banaras Hindu University (BHU), which he founded in 1916, he served as Vice-Chancellor from 1919 to 1938.
- Malaviya espoused free and compulsory primary education, opposed the system of indentured labour in the British Empire, and supported the nationalization of railways.
- In the freedom struggle, Malaviya was midway between the Liberals and the Nationalists, the Moderates and the Extremists, as the followers of Gokhale and Tilak were respectively called.
- In 1930, when Mahatma Gandhi launched the Salt Satyagraha and the Civil Disobedience Movement, he participated in it and courted arrest.

**78. Ans. D**

**Exp:** All statements are correct

**DakPay**

- The Department of Posts and the India Post Payments Bank (IPPB) on December 15 2020 unveiled a new digital payment application "DakPay" as part of its ongoing efforts to provide digital financial inclusion at the last mile across the country.
- This innovative service will not only give access to banking services and postal products online, but also is a unique concept where one can order and avail postal financial services at doorsteps," he said.
- DakPay is a suite of digital financial and assisted banking services provided through the postal network to cater to the financial needs of various sections of society, particularly those living in rural

areas. The services include free of-cost money receipts and transfers at doorsteps, and scanned QR codes, to make payments for a range of utility and banking services.

- Under the DakPay umbrella brand, India Post aims to provide facilities such as checking bank balances; transactions through multiple bank accounts; the payment facility through the IPPB mobile banking application for postal products' making payments using DakPay virtual debit card; and cash withdrawal and deposit using the Aadhaar-enabled payment system. The government is also contemplating a provision for credit facilities.
- The Department of Posts also signed a memo of agreement with CSC e-Governance Services India Limited to set up "Common Service Centres" in more than 10,000 post offices.

#### 79. Ans. B

**Exp:** Statement 2 is incorrect: Brucellosis is a bacterial disease that mainly infects cattle, swine, goats, sheep and dogs. Humans can get infected if they come in direct contact with infected animals or by eating or drinking contaminated animal products or by inhaling airborne agents. Hantavirus is contracted by humans from infected rodents.

#### Brucellosis Disease

- As the novel coronavirus pandemic continues, the health commission of Lanzhou City in China recently announced that a leak in a biopharmaceutical company last year caused an outbreak of brucellosis disease. More than 3,000 people have been infected with the disease since and no fatalities have been reported so far.
- Brucellosis is a bacterial disease that mainly infects cattle, swine, goats, sheep and dogs. Humans can get infected if they come in direct contact with infected animals or by eating or drinking contaminated animal products or by

inhaling airborne agents. According to the WHO, most cases of the disease are caused by ingesting unpasteurized milk or cheese from infected goats or sheep.

- Symptoms of the disease include fever, sweats, malaise, anorexia, headache and muscle pain. While some signs and symptoms can last for long periods of time, others may never go away. These include recurrent fevers, arthritis, swelling of the testicles and scrotum area, swelling of the heart, neurologic symptoms, chronic fatigue, depression and swelling of the liver or spleen.
- Human to human transmission is rare.

#### 80. Ans. A

**Exp:** State Chief Information Commissioner

- The Commission consists of a State Chief Information Commissioner and not more than ten State Information Commissioners.
- They are appointed by the Governor on the recommendation of a committee consisting of:
  - Chief Minister as Chairperson
  - Leader of Opposition in the Legislative Assembly
  - One State Cabinet Minister nominated by the Chief Minister.

#### State Human Rights Commission

- The chairperson and members are appointed by the Governor on the recommendations of a committee consisting of:
  - Chief minister as its head
  - Speaker of the Legislative Assembly
  - State home minister
  - Leader of the opposition in the Legislative Assembly.

#### The Judges of the High Court

- They are appointed by the President.
- The chief justice is appointed by the President after consultation with the chief justice of India and the governor of the state concerned.

- For the appointment of other judges, the chief justice of the concerned high court is also consulted. In case of a common high court for two or more states, the governors of all the states concerned are consulted by the president.
- However, the Chief Minister is not consulted in the process of appointments of judges of High court.

#### 81. Ans. C

**Exp:** The criteria for leader of opposition in the Lok Sabha was spelt out initially by GV Mavalankar, the first Lok Sabha speaker. He had ruled in the Lok Sabha that the strength of the main Opposition party, to be officially recognised as such, must be equal to the quorum of the house which is equivalent to 10 per cent of the members.

- Subsequently, the statutory definition of the leader of opposition, however, came with the Salary and Allowances of Leader of Opposition Act of 1977. It said the Leader of Opposition will be from the Opposition party having the greatest numerical strength and recognised as such by the Lok Sabha Speaker or the Rajya Sabha Chairperson in the respective houses.
- While this act did not set the 10 per cent condition but Mavalankar's was a ruling of the Speaker and was enforceable as law. Mavalankar rule was finally incorporated in Direction 121(1) in Parliament (Facilities) Act 1998. This rule remains unchanged. Consequently, leader of opposition in the Lok Sabha must be from an opposition party having at least 10 percent of the seats in the house and recognized as such by the Lok Sabha Speaker. Hence, statement 1 is not correct.
- The leader of the opposition in the Lok Sabha is a member of committees entrusted with the responsibility of selecting Central Vigilance Commissioner (CVC), Chief Information Commissioner (CIC), Director of CBI and Lokpal. In addition, the committees for selection of

CVC and CIC also provide for the inclusion of the leader of the largest opposition party in case there is no recognized leader of the opposition in the Lok Sabha. Hence, statement 2 is correct.

- The leader of the opposition in the Lok Sabha and Rajya Sabha were recognized for the first time in the year 1969. Hence, statement 3 is not correct.

#### 82. Ans. D

**Exp:** The Lucknow Session of the Indian National Congress (1916): Readmission of the Extremists to the Congress – The Lucknow Session of the Indian National Congress, presided over by a Moderate, Ambika Charan Majumdar, finally re-admitted the Extremists, led by Bal Gangadhar Tilak, to the Congress fold.

#### Various factors facilitated this reunion:

- (i) Old controversies had become meaningless now.
- (ii) Both the Moderates and the Extremists realized that the split had led to political inactivity.
- (iii) Annie Besant and Bal Gangadhar Tilak had made vigorous efforts for the reunion. To allay Moderate suspicions, Tilak had declared that he supported a reform of administration and not an overthrow of the government. He also denounced the acts of violence.
- (iv) The death of two Moderates, Gopal Krishna Gokhale and Pherozshah Mehta, who had led the Moderate opposition to the Extremists, facilitated the reunion.

#### 83. Ans. D

**Exp:** The songs composed by Rabindranath Tagore, Rajani Kanta Sen, Dwijendralal Ray, Mukunda Das, Syed Abu Mohammed and others later became the moving spirit for the nationalists of all hues, 'terrorists, Gandhian or Communists' and are still popular. Rabindranath's Amar Sonar Bangla, written at that time, was to later inspire the liberation struggle of Bangladesh and was adopted as the National Anthem of the country in 1971.

The Swadeshi influence could be seen in Bengali folk music popular among the Hindu and the Muslim villagers (Palligeet and Jan Gàn) and it evoked collections of the Indian fairy tales, such as Thakurmar Jhuli (Grandmother's tales), written by Daksinaranjan Mitra Majumdar.

In art, this was the period when Abanindranath Tagore broke the domination of the Victorian naturalism over Indian art and sought inspiration from the rich indigenous traditions of the Mughal, Rajput and Ajanta paintings.

Nandalal Bose, who left a major imprint on Indian art, was the first recipient of the scholarship offered by the Indian Society of Oriental Art, founded in 1907.

In science, Jagdish Chandra Bose, Prafulla Chandra Ray and others pioneered original research that was praised the world over.

**84. Ans. B**

**Exp:** A negotiable instrument is a signed document that promises a sum of payment to a specified person or the assignee. In other words, it is a transferable, signed document that promises to pay the bearer a sum of money at a future date or on-demand.

The payee, who is the person receiving the payment, must be named or otherwise indicated on the instrument.

In India, the negotiable instruments are regulated by the Negotiable Instrument Act, 1881 as amended from time to time.

**The different types of negotiable instruments recognized by the act include :-**

- **Promissory note:** An instrument in writing containing an unconditional undertaking, signed by the maker, to pay a certain sum of money only to or to the order of a certain person or the bearer

of the instrument. There are two parties, i.e. drawer and payee.

- **Bill of exchange (demand draft):** It is a written instrument showing the indebtedness of a buyer towards the seller of goods. There are three parties, i.e. drawer, drawee and payee. Example- a student paying a college fee through demand draft. Here, Student is a drawer, Bank is drawee and College is the payee.
- **Cheque:** It is an order by the account holder of the bank directing his banker to pay on demand the specified amount, to or to the order of the person named therein or to the bearer.
- **Currency Note:** It is a legal tender which gives the holder the right to receive the value of its denomination on exchange. So "holding" determines the entitlement. Even if somebody steals the currency he/she becomes the holder and so entitled to the rights. On the other hand, a negotiable instrument is a document which guarantee a specific sum of money to the payee whose name is mentioned in the instrument itself.
- Hence only options 1, 2 and 4 are correct.

**85. Ans. A**

**Exp:**Radioactive materials are those materials or elements that emit radiation, thus they are not stable and get transformed into other radioactive or non-radioactive materials. The harm that they can cause depends on the radioactive elements and their half time function (the time needed for their concentration to be reduced to half due to radioactive decay processes).

Basically, the higher the half-time, the lower the effects on human health. Radioactive elements with a short and very short half-time pose a serious threat to human health because of their hazardous effects. Most of the radioactive materials have half-lives of hundreds of thousands of years and, once generated, may persist in the environment for a very long time.

- Cosmic Rays come from outer space to our planet with intense radiation as their nature, therefore, causing radioactive pollution. Gamma rays, for example, are said to have the highest level of radiation and yet, depending on their intensity, some are not visible to the human eye. The quantity with which the rays hit the earth depends on the altitude of the earth and the geographical location.
- Radio isotopes are used to make detectors and in other industrial activities. Isotopes such as uranium have high concentrations of radiation in them. On the other hand, common Isotopes such as carbon-containing radioactive material are easily found in waterways through sewage lines. Examples of radioactive isotopes includes Chromium-51, Cobalt-57 & 60, Calcium-47, Iodine-123, Krypton-85, Nickel-63 etc.

**86. Ans. D**

**Exp:** All statements are correct

**Graveyard Orbit**

- A graveyard orbit also called a junk orbit or disposal orbit, is an orbit that lies away from common operational orbits.
- One significant graveyard orbit is a super synchronous orbit well above the geosynchronous orbit. Satellites are typically moved into such orbits at the end of their operational life to reduce the probability of colliding with operational spacecraft and generating space debris.
- A super synchronous orbit is either an orbit with a period greater than that of a synchronous orbit or just an orbit whose apogee is higher than that of a synchronous orbit.
- Most natural satellites in the Solar System are in super synchronous orbits. The Moon is in a super synchronous orbit of Earth, orbiting more slowly than the 24-hour rotational period of Earth.
- The inner of the two Martian moons, Phobos, is in a subsynchronous orbit of

Mars with an orbital period of only 0.32 days. The outer moon Deimos is in super synchronous orbit around Mars.

- The Mars Orbiter Mission—currently orbiting Mars — is placed into highly elliptical super synchronous orbit around Mars.

**87. Ans. B**

**Exp:** Option (b) is correct

**Pritilata Waddedar**

- The Government of Bangladesh is financing a film on the life of revolutionary freedom fighter Pritilata Waddedar.
- Addressing the launch of the film in Dhaka on Thursday, Information Minister Dr. Hasan Mahmud said that the film 'Bhalobasha Pritilata' will be based on the first woman Bengali revolutionary nationalist of the Indian subcontinent against the British regime.
- The film is based on the novel by Selina Hossain. Dr. Hasan expressed hope that the film will be screened in India and other countries also.
- Pritilata was born in Dhalghat village of Chittagong in (British India) present day Bangladesh on 5 May 1911. She had her education in Chattogram, Dhaka and then at Bethune College, Calcutta for graduation.
- She joined the freedom movement and worked with revolutionaries like Surya Sen and Nirmal Sen.
- She was involved in several revolutionary acts like the famous Chittagong armory raid and attack on the Pahartali European club at Chittagong in 1932 where she received bullet injury. However, she consumed cyanide before the British police could capture her.

**88. Ans. C**

**Exp:** Constitution empowers the Parliament to make laws on any matter enumerated in the State List especially under extraordinary circumstances.

- When the President's rule (under article 356) is imposed in a state, the Parliament becomes empowered to make laws with respect to any matter in the State List in relation to that state. A law made by the Parliament continues to be operative even after the President's rule. This means that the period for which such a law remains in force is not co-terminus with the duration of the President's rule. But, such a law can be repealed or altered or re-enacted by the state legislature. Hence statement 1 is correct.
- When the national emergency is in operation in country or part of it (352 article), Parliament acquires the power to legislate with respect to matters in the State List from article 250 of the constitution. The laws made on state list become inoperative on the expiration of six months after the emergency has ceased to operate. Hence, state legislatures are not required to repeal a law as it automatically dissolved after emergency. Hence statement 2 is not correct.
- As per article 253 of the constitution, Parliament can make laws on any matter in the State List for implementing the international treaties, agreements or conventions. This provision enables the Central government to fulfill its international obligations and commitments. This is exclusive power of Parliament, the state government cannot interfere in it. Hence statement 3 is not correct.

**89. Ans. D**

**Exp:** The individuals contesting elections have to file an affidavit, declaring

- their criminal records (if any),
- assets & liabilities and
- educational qualification.
- However, after getting elected, members of Parliament are required to file a declaration of assets and liabilities with

the Speaker of Lok Sabha and the Chairman of Rajya Sabha.

- Statement 1 and 2 are correct: The rules to this effect were made in 2004 under the Representation of Peoples Act, 1951. These declarations have to be made by MPs within 90 days of taking their seat in Parliament. Every elected member is required to furnish declaration regarding the assets of self, of their spouse and dependent children.
- Statement 3 is correct: The Rajya Sabha rules specify that the declarations made by MPs shall be made available to any person with the written permission of the Chairman. The rules also specify that Rajya Sabha MPs are required to update their declarations every year. The Lok Sabha rules specify that the declarations made by the Lok Sabha MPs shall be treated as confidential and shall not be made available to any person without the written permission of the Speaker.

**90. Ans. C**

**Exp:** Jamia Milia Islamia and Kashi Vidyapeeth were set up during the Non-Cooperation Movement. After the arrest of the Ali brothers, there was an increase of radicalization among the Khilafat Movement leaders and they demanded complete independence.

Unfortunately, in 1922, Gandhi abruptly called off the Movement when the news of violence committed by the angry peasants at Chauri Chaura, in Gorakhpur district in eastern UP, reached him. On 5<sup>th</sup> February, the peasants at Chauri Chaura had set a police station on fire, which burnt 22 policemen. Gandhi, shocked and enraged, decided to put an end to the Non-Cooperation Movement.

The "norevenue campaign" at Bardoli was never launched, Swaraj was not attained and the peasants, who firmly believed that 'they also followed Gandhi', became the 'murderers' and traitors of the nation overnight.

**91. Ans. D**

**Exp:** The Justice Movement in the Madras Presidency was started by C.N. Mudaliar, T.M. Nair and P. Tyagaraja to secure jobs and representation for the non-Brahmins in the legislature.

In 1917, the Madras Presidency Association was formed, which demanded separate representation for the lower castes in the legislature.

**92. Ans. C**

**Exp:** Devaluating a currency is decided by the government issuing the currency, and unlike depreciation, is not a result of non-governmental activities.

Increased Aggregate Demand (AD) - Exports become cheaper and more competitive to foreign buyers.

Higher exports relative to imports can increase aggregate demand as increased consumer spending on domestic goods and services.

- Inflation is more likely to occur because imports are more expensive causing cost-push inflation, AD is increasing causing demand-pull inflation and with exports becoming cheaper manufacturers may have less incentive to cut costs and become more efficient. Therefore over time, costs may increase.
- Improvement in the current account balance. With exports more competitive and imports more expensive, we may see higher exports and lower imports, which will reduce the current account deficit.
- Hence option (c) is the correct answer.

**93. Ans. D**

**Exp:** The Council of Scientific and Industrial Research (CSIR) recently announced the conclusion of a six month exercise of conducting a “whole-genome sequence” of 1,008 Indians. The project is part of a program called “IndiGen”.

The IndiGen initiative was undertaken by CSIR in April 2019, which was implemented by the CSIR-Institute of Genomics and Integrative Biology (IGIB), Delhi and CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad. CSIR first sequenced an Indian genome in 2009.

- A genome is the DNA, or sequence of genes, in a cell. Most of the DNA is in the nucleus and intricately coiled into a structure called the chromosome. The rest is in the mitochondria, the cell’s powerhouse.
- Every human cell contains a pair of chromosomes, each of which has three billion base pairs or one of four molecules that pair in precise ways. The order of base pairs and varying lengths of these sequences constitute the “genes”, which are responsible for making amino acids, proteins and, thereby, everything that is necessary for the body to function. It is when these genes are altered or mutated that proteins sometimes do not function as intended, leading to disease.
- Sequencing a genome means deciphering the exact order of base pairs in an individual. This “deciphering” or reading of the genome is what sequencing is all about.
- Whole-genome data will be important for building the knowhow, baseline data and indigenous capacity in the emerging area of Precision Medicine. Application of Genome Sequencing:
- The outcomes of the IndiGen will have applications in a number of areas including predictive and preventive medicine with a faster and efficient diagnosis of rare genetic diseases.
- To find out any genetic abnormality in people.
- Help in identifying mutations responsible for cancer and develop a measure for it.
- Help us know why certain people do not react to certain drugs or have adverse reactions to some drugs. For instance,

some people less responsive to clopidogrel, a key drug that prevents strokes and heart attacks.

- It will also lead to precision medication, instead of clinicians giving drugs based on collective knowledge.

#### 94. Ans. B

**Exp:** Statement 2 is incorrect: The cutting of DNA at specific locations is done by Restriction enzymes.

#### Genetic Engineering

- Genetic engineering, also called recombinant DNA technology, involves the group of techniques used to cut up and join together genetic material, especially DNA from different biological species, and to introduce the resulting hybrid DNA into an organism in order to form new combinations of heritable genetic material.
- In short, it is the process of modification of the DNA in an organism.
- Genetic engineering is used by scientists to enhance or modify the characteristics of an individual organism.

#### Applications:

- Genetic engineering can be used to produce plants that have a higher nutritional value or can tolerate exposure to herbicides.
- People with diabetes need insulin to control their blood sugar levels. Genetic engineering has been used to produce a type of insulin, very similar to our own, from yeast and bacteria like *E. coli*.
- This genetically modified insulin, 'Humulin' was licensed for human use in 1982.

#### Process of genetic engineering in Humulin production:

- A small piece of circular DNA called a plasmid is extracted from the bacteria or yeast cell.

- A small section is then cut out of the circular plasmid by restriction enzymes (also called 'molecular scissors').
- The gene for human insulin is inserted into the gap in the plasmid. This plasmid is now genetically modified.
- The genetically modified plasmid is introduced into a new bacteria or yeast cell.
- This cell then divides rapidly and starts making insulin.
- To create large amounts of the cells, the genetically modified bacteria or yeast are grown in large fermentation vessels that contain all the nutrients they need. The more the cells divide, the more insulin is produced.
- When fermentation is complete, the mixture is filtered to release the insulin.
- The insulin is then purified and packaged into bottles and insulin pens for distribution to patients with diabetes.

#### 95. Ans. B

**Exp:** Statement 2 is incorrect: The Organization comprises 57 participating States that span the globe, encompassing three continents - North America, Europe and Asia - and more than a billion people.

#### Organization for Security and Cooperation in Europe

- The Organization for Security and Cooperation in Europe (OSCE) is the world's largest security-oriented intergovernmental organization.
- The OSCE has a comprehensive approach to security that encompasses politico-military, economic and environmental, and human aspects. It therefore addresses a wide range of security-related concerns, including arms control, confidence- and security building measures, human rights, national minorities, and democratization, policing strategies, counter-terrorism and economic and environmental activities.
- All 57 participating States enjoy equal status, and decisions are taken by

consensus on a politically, but not legally binding basis.

- The Organization comprises 57 participating States that span the globe, encompassing three continents - North America, Europe and Asia - and more than a billion people.

#### 96. Ans. D

**Exp:** Statement 1 is not correct: The setting up of Contingency fund of India is not mandatory under the Indian constitution unlike the Consolidated fund of India and Public Account of India. Article 267 of the Indian constitution says that Parliament may by law establish a Contingency Fund to be entitled —the Contingency Fund of India.

- In addition, this fund shall be placed at the disposal of the President to enable advances to be made by him out of such fund for the purposes of meeting unforeseen expenditure pending authorisation of such expenditure by Parliament. In this context, the Parliament has enacted the Contingency Fund of India Act, 1950 to set up the Contingency fund of India.
- Statement 2 is not correct: The Secretary to the Government of India, Ministry of Finance, Department of Economic Affairs holds the fund on behalf of the President. While earlier the fund had a limit of Rs 50 crore, it was raised to Rs 500 crore in the last decade. Parliamentary approval for such unforeseen expenditure is obtained, ex-post-facto and an equivalent amount is drawn from the Consolidated Fund of India to recoup the Contingency Fund after such ex-post-facto approval.

#### 97. Ans. B

**Exp:** Article 74 provides for a council of Minister headed by Prime Minister to aid and advise the President.

- Before the Prime Minister enters upon his office, the president administers to

him the oaths of office and secrecy. Hence statement 1 is not correct.

- Article 75 states that the Prime Minister shall be appointed by the president.
- However, this does not imply that the president is free to appoint anyone as the Prime Minister.
- In accordance with the conventions of the parliamentary system of government, the President has to appoint the leader of the majority party in the Lok Sabha as the Prime Minister. Hence statement 2 is not correct.
- But, when no party has a clear majority in the Lok Sabha, then the President may exercise his personal discretion in the selection and appointment of the Prime Minister.

#### Leader of the House

- The term Leader of the House has been defined in Rules of Procedure of the Lok Sabha and the Rajya Sabha.
- Under the Rules of Lok Sabha, the 'Leader of the House' means the prime minister, if he is a member of the Lok Sabha, or a minister who is a member of the Lok Sabha and is nominated by the prime minister to function as the Leader of the House. Hence statement 3 is correct.
- There is also a 'Leader of the House' in the Rajya Sabha. He is a minister and a member of the Rajya Sabha and is nominated by the prime minister to function as such. If PM is a member of the upper house, he becomes its leader.

#### 98. Ans. C

**Exp:** The great Gujarati poet, Zaverchand Kalidas Meghani, in a famous poem gave expression to the nationalist misgivings regarding the 2nd Round Table Conference. Addressing Gandhiji on the eve of his departure for London, he sang in the first line :

'Chchello Katoro Jerno Aa : Pi Jayo Bapu!'  
(Even this last cup of poison, you must drink, Bapu!)

Mahatma Gandhi spontaneously gave him the title of Raashtreeya Shaayar.

**99. Ans. C**

**Exp:** The income elasticity of demand is a measure of the relationship between a change in the quantity demanded for a particular good and a change in real income. It refers to the sensitivity of the quantity demanded for a certain product in response to a change in consumer incomes.

- The formula for calculating income elasticity of demand is:  $\text{Income Elasticity of Demand} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$
- Normal goods have a positive income elasticity of demand. As incomes rise, more goods are demanded at each price level. The quantity demanded for normal necessities will increase with income, but at a slower rate than luxury goods. This is because consumers, rather than buying more of the necessities, will likely use their increased income to purchase more luxury goods and services. During a period of increasing incomes, the quantity demanded for luxury products tends to increase at a higher rate than the quantity demanded for necessities. The quantity demanded for luxury goods is very sensitive to changes in income.
- Inferior goods have a negative income elasticity of demand - the quantity demanded for inferior goods falls as incomes rise. For example, the quantity demanded for generic food items tends to decrease during periods of increased incomes.
- Hence, both the given statements are correct.

**100. Ans. A**

**Exp:** The Agrarian Reforms – There were certain basic constraints due to which the Congress Ministries could not undertake a

complete overhaul of the agrarian structure by completely abolishing the Zamindari.

**These constraints were –**

- (i) The Ministries did not have adequate powers.
- (ii) There were inadequate financial resources, as a lion's share was appropriated by the Government of India.
- (iii) Strategy of class adjustments was another hurdle, since the Zamindars, etc., had to be conciliated and neutralized.
- (iv) There was constraint of time, since the logic of the Congress politics was confrontation and not co-operation with colonialism.
- (v) War clouds had started hovering around 1938.
- (vi) The reactionary Second Chamber (The Legislative Council), dominated by the landlords, moneylenders and capitalists in the United Provinces, Bihar, Bombay, Madras and Assam, had to be conciliated, as its support was necessary for the legislations.
- (vii) The agrarian structure was too complex.

In spite of these constraints, the Congress Ministries managed to legislate a number of laws relating to land reforms, debt relief, forest grazing fee, arrears of rent, land tenures, etc.

But, most of these benefits went to the statutory and the occupancy tenants, while the sub-tenants did not gain much. Agricultural labourers did not benefit, as they had not been mobilized.