PRELIMSURE TEST 15 DETAILED ANSWER KEY

1. A

- Non-OLED TVs are made of two main parts: An LCD panel and a backlight. The LCD panel contains the pixels — the little colored dots that make up a TV's image. On their own, however, these pixels cannot be seen. They require a backlight. When light from the backlight shines through an LCD pixel, you can see its color.
- The "LED" in LED TV simply refers to how the backlight is made. In the past, a thicker and less efficient technology called CCFL (cold-cathode fluorescent light) was used. But these days, virtually every flat-screen TV uses LEDs as its source of backlighting. Thus when you see the term "LED TV," it simply refers to an LED-backlit LCD TV
- The "OLED" in OLED TV stands for "organic light-emitting diode." OLEDs have the unusual property of being able to produce both light and color from a single diode when they're fed electricity. Because of this, OLED TVs don't need a separate backlight. Each pixel you see is a self-contained source of color and light.
- Some of the inherent benefits to OLED screens are that they can be extremely thin, flexible, and even rollable. But the biggest benefit when we compare them to LED TVs is the ability of an individual OLED pixel to turn off and on. When it's on, you can see it. When it's off, it emits no light at all — it's completely black. We'll discuss how this affects black levels in a moment
- A display's ability to produce deep, dark blacks is arguably the most important factor in achieving excellent picture quality. Deeper blacks allow for higher contrast and richer colors (among other things), and thus a more realistic and dazzling image. When it comes to black levels, OLED reigns as the undisputed champion

2. C

- The Indian Data Relay Satellite System (IDRSS) will track Indian satellites in low-earth orbits. It is a new satellite series that plans to set up a communication system between the space assets of India.The mission consists of more than 2 satellites. The first two IDRSS satellites are to be sent at the end of 2020.
- These satellites will precede the experimental mission of Gaganyaan that will carry humanoid dummies. The first of this kind is to be launched in 2020 and the second satellite is to be launched in 2021.
- During the launch of Gaganyaan at least one ground should monitor the satellite 24/7. This is not possible for India with its current infrastructure.
- Also, to make the tracking continuous ISRO has to create a number of ground stations or hire them globally. The IDRSS helps to solve this problem providing full time tracking of the mission.

3. B

- Logical: Can be inferred from the words which signify the process is quick.
- Flash drought refers to relatively short periods of warm surface temperature and anomalously low and rapid decreasing soil moisture (SM).
- Based on the physical mechanisms associated with flash droughts, it is classified into two categories: heat wave and precipitation (P) deficit flash droughts. The heat wave flash droughts are initialized by severe warm air temperature. Heat waves increase evapotranspiration (ET) due to vegetation. That leads to the decrease of SM. The P deficit droughts are initialized by P deficits. The lack of P decreases SM.

4. C

- Weight is proportional to the product of the masses of two objects acting on each other. The mass of the person is same and does not change. However, the weight will change because it is dependent upon the distance between the two bodies as well. The two bodies in this case are the Earth and the person itself.

- While standing in the sea level , the distance between the centre of Earth and person will be lower than when he/she stands at the hills. As a result, weight will be more while standing at the sea level when compared to the hills, given in option C.

5. D
- A state of matter is one of the distinct forms that different phases of matter take on. Four states of matter are observable in everyday life: solid, liquid, gas, and plasma. Many other states are known such as Bose–Einstein condensates and neutron-degenerate matter but these only occur in extreme situations such as ultra cold or ultra dense matter. Other states, such as quark–gluon plasmas, are believed to be possible but remain theoretical for now.
- There are more than 15 states of matter observed as of now. Kindly visit https://en.wikipedia.org/wiki/List_of_states_of_matter for a detailed list

6. B
- When the elevator accelerates downward, you feel lighter. The force exerted by the scale is known as apparent weight; it does not change with constant speed

7. C
- Logical: Maharashtra is India's richest.
- Tamil Nadu is among the most urbanised state in India, among major states, considering the proportion of people living in urban areas.

8. D
- 'Project NETRA' is an early warning system initiated by ISRO to detect debris and other hazards to Indian satellites.The NETRA effort would make India a part of international efforts towards tracking, warning about and mitigating space debris.
- The project will give India its own capability in space situational awareness (SSA) like the other space powers — which is used to 'predict' threats from debris to Indian satellites.
- Space debris could be floating particles from dead satellites or rocket parts that stay in orbit for many years. Satellite agencies worry over even a speck of paint or fragment floating towards their spacecraft: it disables on board electronics and cripples the satellite worth several hundred crore rupees. Agencies constantly look for debris at the time of a launch and through the life of a satellite.

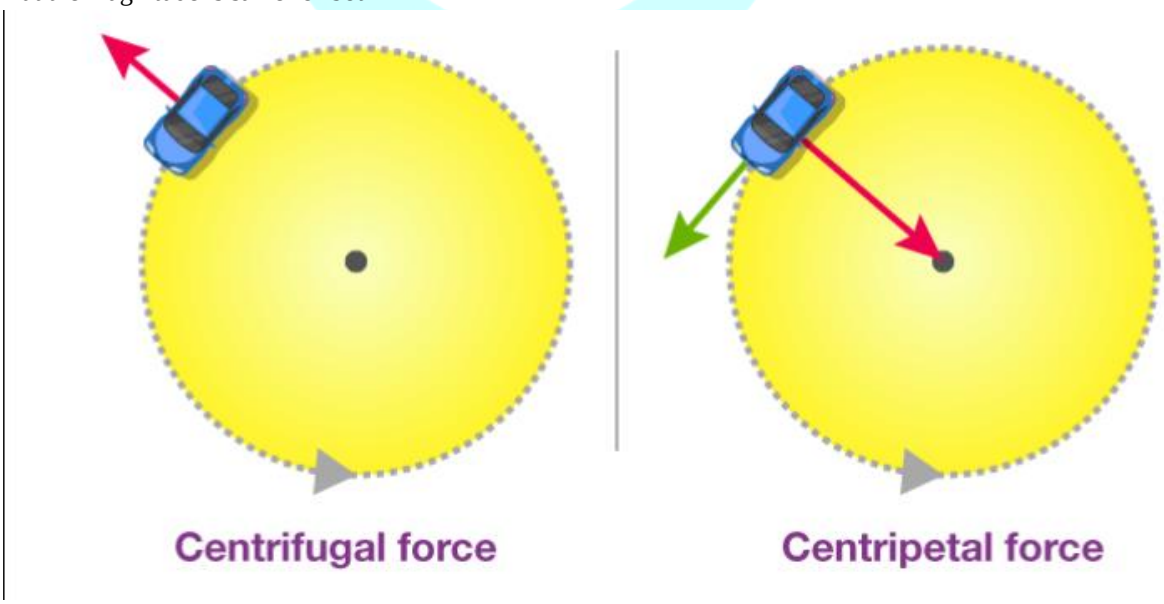
9. D
- Statement 1 is correct: India has a highly uneven pattern of population distribution. The percentage shares of population of the states and Union Territories in the country show that Uttar Pradesh has the highest population followed by Maharashtra, Bihar and West Bengal.
- Statement 2 is correct: Such an uneven spatial distribution of population in India suggests a close relationship between population and physical, socioeconomic and historical factors.
- Statement 3 is incorrect: The period from 1901-1921 is referred to as a period of stagnant or stationary phase of growth of India's population.
- Statement 4 is incorrect: The National Youth Policy of Government of India, launched in 2003, stresses on an all-round improvement of the youth and adolescents enabling them to shoulder responsibility towards constructive development of the country.

10. A
- Cloud seeding or weather modification is an artificial way to induce moisture in the clouds so as to cause a rainfall. In this process, either silver iodide or dry ice or potassium iodide is dumped onto the clouds by using an aircraft or an artillery gun which leads to a rain shower.

11. D
- Leaves contain chlorophyll which gives green colour to the leaves. The chlorophyll absorbs light in the red (long wavelength) and the blue (short wavelength) regions of the visible light spectrum. Green light is not absorbed but reflected, making the plant appear green.

12. B
- To replenish natural fish stock in the sea off the coast of Tamil Nadu, the Fisheries Department has planned to ranch seeds of black tiger shrimps, Indian prawns etc.
- Mariculture is a specialized branch of aquaculture involving the cultivation of marine organisms for food and other products in the open ocean, an enclosed section of the ocean, or in tanks, ponds or raceways which are filled with seawater.
- Where as sea ranching

13. B
- The three parent baby was created via an IVF (in vitro fertilization) procedure that involved three people: the mother, the father and a woman who donated eggs. This specialized IVF procedure is called spindle nuclear transfer.
- Scientists took DNA from the nucleus of the mother's egg cell and inserted that genetic material into an egg cell from the donor.
- The nucleus of the donor egg had been removed, but the egg still contained a bit of DNA from the donor woman: That is, it contained genetic material from the mitochondria, or the cell's energy powerhouses, which have their own DNA. The egg was then fertilized with sperm from the father.

14. A
- A major difference between centrifugal and centripetal force is the direction of each. Centrifugal takes place along the radius of the circle from the center out towards the object. For centripetal, it is the opposite, taking place also along the radius of the circle, but from the object in towards the center.
- But the magnitude is same for both
- 

15. C

$$orbital velocity = \sqrt{\frac{(gravitational\ constant)(mass\ of\ earth)}{distance\ from\ object\ to\ center\ of\ the\ Earth}}$$

$$v = \sqrt{\frac{Gm_E}{r}}$$

v = the orbital velocity of an object (m/s)

G = the universal gravitational constant, G = $6.673 \times 10^{(-11)}$ $N \cdot m^2/kg^2$

m_E = the mass of the Earth (5.98×10^{24} kg)

r = the distance from the object to the center of the Earth

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- Ie, R is the radius of the earth + radius to the satellite

16. C
- The elite force of Special Protection Group was raised in 1985 in the wake of the killing of PM Indira Gandhi in 1984.
- The Special Protection Group (SPG) was set up in 1985 and then granted a statutory status through an act of Parliament in 1988. Initially, the Act did not include protection to former prime ministers and their families.
- In 1989, when VP Singh became the prime minister, his government removed SPG protection from outgoing PM Rajiv Gandhi's security detail. Rajiv Gandhi was assassinated in 1991 and that triggered an amendment to the SPG Act to include protection to all former PMs and their families for a minimum period of 10 years.
- The government of India withdrew the Special Protection Group (SPG) security cover given to the Gandhi family, which leads the Congress party, on Nov. 8. They will now be provided with CRPF Z-plus cover instead. Prime Minister Narendra Modi will now be the only one under the SPG's protection.

17. A
- The shape of an airplane's wings helps it to fly. The Airplanes' wings are curved on top and flatter on the bottom. That shape makes air flow over the top faster than under the bottom. So, less air pressure is on top of the wing which enables it to lift eventually and fly smoothly

18. C
- Gravitational waves are disturbances in the curvature of spacetime, generated by accelerated masses, that propagate as waves outward from their source at the speed of light.
- Gravitational waves transport energy as gravitational radiation, a form of radiant energy similar to electromagnetic radiation but not an electro magnetic force.
- Like electromagnetic waves, gravitational waves should exhibit shifting of wavelength due to the relative velocities of the source and observer, but also due to distortions of space-time, such as cosmic expansion. This is the case even though gravity itself is a cause of distortions of space-time. Redshifting of gravitational waves is different from redshifting due to gravity.

19. A
- Exothermic reactions are reactions that release energy into the environment in the form of heat. Exothermic reactions feel warm or hot or may even be explosive.
- More energy is released making chemical bonds than is used breaking them. In an exothermic reaction, the enthalpy change has a negative value

- Exergonic Reaction – A reaction that releases energy in any form (e.g., light, sound, heat). An exothermic reaction is a type of exergonic reaction.
- Freezing water into ice cubes,snow forming inside clouds,respiration,rain forming from water vapor in clouds,formation of ion pairs,making a gas molecule from atoms,burning sugar etc are few examples of exothermic reactions.

20. A

- Golconda and Panna the only two known diamond mines of India are located in the Vindhyan rock system. Panna is located in Madhya Pradesh , whereas, Golconda is in Guntur district of Andhra Pradesh.
- Vindhyan rocks system forms a dividing line between the Ganga Plain and the Deccan. The system covers an extensive area of over 103,600 square km. from Chittaurgarh in Rajasthan to Sasaram in Bihar.
- It contains an enormous deposit of over 4,270 m of thickness with sedimentary rocks like sandstones, shales and limestones. At places Vindhyan rocks have been buried under the Deccan lava.

21. A

- Tesla founder Elon Musk has launched tech startup Neuralink to build implants that connect human brains with computer interfaces via artificial intelligence. The approaching technology would see groups of minuscule, flexible electrode "threads" implanted into the human brain by a neurosurgical robot.
- These threads detect and record the electrical signals in the brain, and transmit this information outside the body. This has the potential to create a scalable high-bandwidth brain-machine interface (BMI) system, meaning that it connects the brain to an external device to form a brain-machine interface.

22. D

- Dark matter is composed of particles that do not absorb, reflect, or emit light, so they cannot be detected by observing electromagnetic radiation. Scientists speculate the existence of dark matter because in the normal case without dark matter, the gravitational force of the matter could have caused a collapse in the universe. Instead the universe tends to expand which indicate the presence of “dark matter”
- One way scientists indirectly study dark matter is by using gravitational lensing. Light going through a gravitational lens is similar to light going through an optical lens: It gets bent. It possibly indicates the presence of galaxy or cluster causes light to bend.
- Scientists at NASA think they have a direct way to detect dark matter using the Fermi Gamma-Ray Space Telescope. This telescope looks at gamma rays, the highest energy form of light. When two dark matter particles crash into each other, they might release a gamma ray.

23. A

- Around 10,000 tribals in Jharkhand’s Khunti town are facing sedition charges under IPC section 124A, for participating in Pathalgadi movement. Under Pathalgadi Movement (literally ‘laying stones’), tribals put up stone monoliths with engravings in order to enlighten Adivasi people about their constitutional and other rights.
- The engravings usually highlight the special autonomy granted to Adivasi areas under the Fifth Schedule of the Indian Constitution and key provisions of the PESA (Panchayats Extension to Scheduled Areas) Act,1996 are also carved.

24. C

- Quantum computers are aiming to utilise these capabilities to become highly-efficient, as they use quantum bits or qubits instead of the simple manipulation of ones and zeros. Qubits, or quantum bits, are a unit of quantum information and a two-state quantum-mechanical system.
- Quantum computing is said to be more power efficient than modern computing through the use of quantum tunnelling. They are expected to reduce power consumption from 100 to 1000 times.

- IBM's Deep Blue computer defeated Garry Kasparov, chess champion, in 1997 because it could calculate 200 million potential moves every second. With a quantum computer, these calculations could be one trillion per second.
- Cold temperatures are needed for stable quantum computers. The D-Wave 2000Q system is kept cool at a temperature of 0.015 Kelvin. This represents a temperature that is 180 times colder than interstellar space, and very close to absolute zero or the limit in the thermodynamic temperature scale at 0 Kelvin.
- Quantum computers could speed up the learning process of AI, reducing thousands of years of learning to mere seconds.
- Certain tasks such as emailing aren't as suitable for quantum computers, which is why modern computing isn't set to be replaced by quantum computers. The latter are useful to solve highly complicated problems.

25. C

- Odisha has become the first state to start working on developing a 'Plastic Park', located in Jagatsinghpur district.
- India's domestic production meets only 50% of its demand for plastic, which is increasing with the growth of construction and infrastructure sector.
- Many construction companies are using plastic materials. The components used include everything from plastic screws and hinges to bigger plastic parts that are used in decoration, electric wiring, flooring, wall covering, waterproofing and so on.
- To reduce imports, the Ministry of Chemicals & Fertilizers (MoCF), had formulated a scheme for setting up of four Plastic Parks in Assam (Tinsukia), Madhya Pradesh (Raisen), Odisha (Jagatsinghpur) and Tamil Nadu (Thiruvallur).

26. C

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

480 × 494

27. C

- Better recovery of sugar is dependent upon its being crushed within 24 hours of its harvesting. Sugar factories hence, are located within the cane producing regions.
- In Tamil Nadu, sugar factories are located in Coimbatore, Vellore, Tiruvanamalai, Villupuram and Tiruchchirappalli districts.

28. D

- Phytochemicals are natural compounds found in fruits and vegetables. They are substances that don't fall within any other categories -- they are not vitamins, proteins or minerals.
- They are chemical compounds produced by plants, generally to help them thrive or thwart competitors, predators, or pathogens. Majorly, phytochemicals are grouped into phenolic compounds, terpenoids, lipids etc. Lycopene, the major carotenoid in tomato fruit, is a powerful antioxidant, anti-inflammatory and also has an antimicrobial property

29. A

- Collenchyma, in plants, support tissue of living elongated cells with irregular cell walls. Collenchyma cells have thick deposits of cellulose in their cell walls and appear polygonal in cross section. The strength of the tissue results from these thickened cell walls and the longitudinal interlocking of the cells.
- The tissue helps to support the parts of a plant. Collenchyma cells lack secondary walls, and the hardening agent lignin is absent in their primary walls. Therefore, they provide flexible support without restraining growth.

30. C

- Harmonized System is a six-digit identification code developed by the WCO (World Customs Organization). It allows the participating countries to classify traded goods on a common basis for customs purposes. Customs organizations use this code to clear every commodity that enters or crosses any international border.

31. A

- India is currently water stressed but according to NITI Aayog it will become water scarce by 2030.

32. D

- GES is an annual event established by Department of Commerce, Union Ministry of Commerce and Industry in association with Services Export Promotion Council (SEPC) and Confederation of Indian Industry (CII). This dedicated platform looks to enhance strategic cooperation and develop synergies to strengthen multilateral relationships between all stake holders, tap the potential for services exports and increase FDI (Foreign Direct Investment) inflow.
- During GES 2019, Services Export Promotion Council (SEPC) is looking to promote eSports by organizing Nations Cup (International eSports Championship) in association with Electronic Sports Federation of India (ESFI).
- GES is an attempt towards escalating Indian services bar in global arena by exploring 12 Champion Services Sectors (CSS), encompassing participation from 74 countries and hosting sector specific knowledge sessions

33. D

- Millimeter wave: Millimeter waves are broadcast at frequencies between 30 GHz and 300 GHz, compared with the bands below 6 GHz used for 4G LTE. The new 5G networks will be able to transmit very large amounts of data—but only a few blocks at a time. Although the 5G standard will offer the greatest benefits over these higher frequencies, it will also work in low frequencies as well as unlicensed frequencies that WiFi currently uses, without creating conflicts with existing WiFi networks. For this reason, 5G networks will use small cells to complement traditional cellular towers.
- Small cells: Small cells are low-powered portable base stations that can be placed throughout cities. Carriers can install many small cells to form a dense, multifaceted infrastructure. Small cells' low-profile antennas make them unobtrusive, but their sheer numbers make them difficult to set up in rural areas. As 5G technology matures, consumers should expect to see ubiquitous 5G antennas, even in their own homes.
- Massive MIMO: 5G technology enables base stations to support many more antennas than 4G base stations. With MIMO, both the source (transmitter) and the destination (receiver) have multiple antennas, thus maximizing efficiency and speed. MIMO also introduces interference potential, leading to the necessity of beamforming.
- Beamforming: Beamforming is a 5G technology that finds the most efficient data-delivery route to individual users. Higher-frequency antennas enable the steering of narrower transmission beams. This user-specific beamforming allows transmissions both vertically and horizontally. Beam direction can change several times

per millisecond. Beamforming can help massive MIMO arrays make more efficient use of the spectrum around them.

- Full duplex: Full duplex communication is a way to potentially double the speed of wireless communication. By employing a 5G full duplex scheme on a single channel, only one channel is needed to transmit data to and from the base station, rather than two. A potential drawback of full duplex is that it can create signal interference.
- SDN: SDN and network functions virtualization (NFV) are considered the foundation for how 5G will be deployed.

34. A

- India voted in favour of a cybercrime resolution led by Russia in a committee of the United Nations General Assembly. The resolution seeks to set up new cyber norms considered as counter alternative to the US backed Budapest Accord.
- A final General Assembly vote to adopt the resolution will be held in December, 2019.

Budapest Convention

- The Council of Europe's (CoE) Cybercrime Convention is also known as the Budapest Convention. It was open for signature in 2001 and came into force in 2004.
- The convention is the sole legally binding international multilateral treaty on cybercrime. It coordinates cybercrime investigations between nation-states and criminalizes certain cybercrime conduct.

35. D

- The silver coating on the inner bottle prevents heat transfer by radiation, and the vacuum between its double wall prevents heat moving by convection. The thinness of the glass walls stops heat entering or leaving the flask by conduction. The case surrounding the flask provides additional insulation.

36. D

- Recently Ministry of New and Renewable Energy released a notification such that a solar PV cell will be considered domestically manufactured only if it has been processed and manufactured in India using undiffused silicon wafer or black wafer. The foreign nations also import solar wafer cells in India but they are not calculated as indigenously manufactured solar cells.
- This indigenously manufactured wafer cells are commercially used for solar photovoltaic production.
- Directorate General of Trade Remedies (DGTR) recommended a 25% safeguard duty on solar cell imports from China and Malaysia in 2018. Thus absence of import duty is wrong.

37. B

- Phenyl is used as a floor cleaner not a water purifier.
- Others are used in water purification

38. C

- LIDAR stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. Two types of LIDAR are topographic and bathymetric. Topographic LIDAR typically uses a near-infrared laser to map the land, while bathymetric lidar uses water-penetrating green light to also measure seafloor and riverbed elevations.
- LIDAR systems allow scientists and mapping professionals to examine both natural and manmade environments with accuracy, precision, and flexibility.

39. D

- In Supreme Court of India vs Subhash Chandra Agarwal case a five-judge Constitution Bench of Supreme Court declared that the Office of the Chief Justice of India (CJI) is a 'public authority' under the Right to Information (RTI) Act.
- The Reserve Bank of India is a public authority as defined in the Right to Information Act, 2005. As such, the Reserve Bank of India is obliged to provide information to members of public.
- Central Intelligence and Security agencies specified in the Second Schedule like IB, Directorate General of Income tax (Investigation), RAW, Central Bureau of Investigation (CBI), Directorate of Revenue Intelligence etc. are excluded from providing the information.

40. A
- About 80% of coal deposits in India is of bituminous type and is of non-coking grade. It does not have any caking properties and it is mainly used as thermal coal for power generation. It has a higher ash content and also used in industries like cement, fertilizer, glass, ceramic, paper, chemical and brick manufacturing. Hence statement 1 is correct.
- Brown coal or lignite occur in the coastal areas of Tamil Nadu, Pondicherry, Gujarat and Jammu & Kashmir. Neyveli is a major location of brown coal. Hence statement 2 is correct.
- Tertiary coal fields occur in North Eastern states like Assam, Arunachal Pradesh, Meghalaya and Nagaland while Gondwana coal fields occur in Damodar valley. Jharkhand- Bengal coal belt has Gondwana coal fields. Hence statement 3 is wrong.

41. C
- The only liquid elements at standard temperature and pressure are bromine (Br) and mercury (Hg). Although, elements caesium (Cs), rubidium (Rb), Francium (Fr) and Gallium (Ga) become liquid just above room temperature.

42. C
- Transcription process involves the assembly of a complementary RNA using DNA as a template. It is catalyzed by RNA polymerases mentioned in option A.
- A reverse transcriptase (RT) is an enzyme used to generate complementary DNA (cDNA) from an RNA template, a process termed reverse transcription.
- The transcriptome is the set of all RNA molecules in one cell or a population of cells mentioned in option B

43. A
- Finance Minister Launches two new IT Initiatives -ICEDASH & ATITHI for improved monitoring and pace of Customs clearance of imported goods and facilitating arriving international passengers
- ICEDASH : Ease of Doing Business monitoring dashboard of the Indian Customs helping public see the daily Customs clearance times of import cargo. This dashboard has been developed by Central Board of Indirect Taxes and Customs (CBIC) in collaboration with NIC. ICEDASH can be accessed through the CBIC website.

44. A
- Sonar (originally an acronym for sound navigation ranging) is a technique that uses sound propagation (usually underwater, as in submarine navigation) to navigate, communicate with or detect objects on or under the surface of the water, such as other vessels.

45. A
- As air temperature increases, air can hold more water molecules, and its relative humidity decreases. When temperatures drop, relative humidity increases. High relative humidity of the air occurs when the air

temperature approaches the dew point value. Temperature therefore directly relates to the amount of moisture the atmosphere can hold.

46. C

- A lysosome is a organelle of cell. It is filled with enzymes that can digest things. When a cell is about to die, lysosome bursts to eat up the dead cell leaving space for new cells to come
- A lysosome is basically a specialized vesicle that holds a variety of enzymes. The enzyme proteins are first created in the rough endoplasmic reticulum

47. A

- The energy density of lithium-ion is typically twice that of the standard nickel-cadmium. There is potential for higher energy densities.
- Lithium-ion is a low maintenance battery as well. There is no memory and no scheduled cycling is required to prolong the battery's life. In addition, the self-discharge is less than half compared to nickel-cadmium, making lithium-ion well suited for modern fuel gauge applications.
- A new technology in the market will almost certainly be more expensive compared to the older and conventional products.

48. D

- Ministry of Rural Development has released the fifth edition of Wastelands Atlas (2019). It has been prepared by the Department of Land Resources (Ministry of Rural Development) in collaboration with the National Remote Sensing Centre (NRSC), Department of Space.
- Unprecedented pressure on the land beyond its carrying capacity is resulting in the degradation of lands in the country. Therefore, robust geospatial information on wastelands will be helpful in rolling back the wastelands for productive use through various land development programmes.
- Key Points
- A reduction in the wasteland area was observed in the categories of land with dense scrub, marshy land, sandy areas, and degraded pastures.
- The wastelands have undergone a positive change in the states of Rajasthan, Bihar, Uttar Pradesh, Andhra Pradesh, Mizoram, Madhya Pradesh, Jammu & Kashmir, and West Bengal.
- The majority of wastelands have been changed into categories of croplands, plantations and industrial areas.

49. B

- Translocation is the movement of materials from leaves to other tissues throughout the plant. Plants produce carbohydrates (sugars) in their leaves by photosynthesis, but non photosynthetic parts of the plant also require carbohydrates and other organic and inorganic materials. For this reason, nutrients are translocated from sources (regions of excess carbohydrates, primarily mature leaves) to sinks (regions where the carbohydrate is needed).
- Transpiration is the process of water movement through a plant and its evaporation from aerial parts, such as leaves, stems and flowers. Water is necessary for plants but only a small amount of water taken up by the roots is used for growth and metabolism.
- Guttation is the exudation of drops of xylem sap on the tips or edges of leaves of some vascular plants, such as grasses, and a number of fungi. Guttation is not to be confused with dew, which condenses from the atmosphere onto the plant surface.

50. C

- Two major mining techniques are used to extract minerals such as underground mining technique and opencast mining technique. The underground mining technique is used predominantly for deeper extraction of minerals. However, opencast mining comes into consideration when minerals are found in shallow depth.

- land deformation is common phenomena in and around the opencast deep mining areas and underground mining activities as well.

51. A

- The oil and gas industry in India dates back to 1889 when the first oil deposits in the country were discovered near the town of Digboi in the state of Assam. The natural gas industry in India began in the 1960s with the discovery of gas fields in Assam and Gujarat. As on 31 March 2018, India had estimated crude oil reserves of 594.49 million tonnes (MT) and natural gas reserves of 1339.57 billion cubic meters (BCM)
- India imports 82% of its oil needs and aims to bring that down to 67% by 2022 by replacing it with local exploration, renewable energy and indigenous ethanol fuel. India was the third top net crude oil (including crude oil products) importer of 205.3 Mt in 2018.

Region	Crude oil reserves (in million metric tonnes)	Share of oil (%)	Natural gas reserves (in BCM)	Share of gas (%)
Arunachal Pradesh	1.52	0.25	0.93	0.07
Andhra Pradesh	8.15	1.35	48.31	3.75
Assam	159.96	26.48	158.57	12.29
Coal Bed Methane	0	0	106.58	8.26
Eastern Offshore[a]	40.67	6.73	507.76	39.37
Gujarat	118.61	19.63	62.28	4.83
Nagaland	2.38	0.39	0.09	0.01
Rajasthan	24.55	4.06	34.86	2.70
Tamil Nadu	9.00	1.49	31.98	2.48
Tripura	0.07	0.01	36.10	2.80
Western Offshore[b]	239.20	39.60	302.35	23.44
Total	**604.10**	**100**	**1,289.81**	**100**

52. B

- Thickness of Blu Ray is 1.2mm and thickness of DVD is 0.6mm
- Statement 1 and 2 is true

53. D

- Gene editing is a process that allows researchers to cut out certain bits of DNA in order to control traits. A common gene editing technology is CRISPR technology which alters the DNA sequences and modify gene function.
- The three processes mentioned in the option **do not involve editing of genes**. Editing of genes are normally observed in the case of GMO crops. The processes like vegetative propagation, budding and tissue culture are not that complex.
- Vegetative propagation is a form of asexual reproduction of a plant. Only one plant is involved and the offspring is the result of one parent. Tissue culture is a part of vegetative propagation which involves the growth of tissues or cells in an artificial medium separate from the organism.

54. C

- The VCs don't have any intrinsic value and are not backed by any kind of assets. The price of Bitcoin and other VCs therefore is entirely a matter of mere speculation resulting in spurt and volatility in their prices. There is a real and heightened risk of investment bubble of the type seen in ponzi schemes which can result in sudden and prolonged crash exposing investors, especially retail consumers losing their hard-earned money.
- VCs are not backed by Government fiat. These are also not legal tender. Hence, VCs are not currencies. These are also being described as 'Coins'. There is however no physical attribute to these coins. Therefore, Virtual 'Currencies' (VCs) are neither currencies nor coins. The Government or Reserve Bank of India has not authorised any VCs as a medium of exchange

55. A

- The most fundamental difference between LTE and VoLTE is of what their full forms are.LTE stands for 'Long Term Evolution' whereas VoLTE stands for 'Voice over Long Term Evolution:The additional 'Vo' in the latter itself points out the differences between the two of them. The original purpose behind LTE was to make it a full IP(internet provider) cellular system built for the sole purpose of data connection and transmission.
- VoLTE is a high definition voice calling service over 4G LTE rather than 3G/2G networks. The 2G network was developed for voice calls only.
- As mentioned before, LTE is a system meant for carrying data. Making a call from LTE network said that the operators would be able to carry the voice either by reverting to a lower network, i.e., 3G or 2G. The consumer gets only data bandwidth on a 4G LTE network whereas you get data bandwidth as well as calling services on a VoLTE network. Video call is a feature that has brought the world closer. You need an external software for video calling like Skype on a 4G LTE network, but you can video call someone directly from your number if you're on a VoLTE network. A consistent data connection is needed while making calls on a 4G LTE network which means you can't turn off your internet connection while making a call or else the call won't connect.
- The bandwidth of both the LTE and VoLTE are same

56. B

- Methane hydrate is a crystalline solid that consists of a methane molecule surrounded by a cage of interlocking water molecules. The natural gas extracted from coal beds is known as coal bed methane. So statement 1 is wrong.
- National Gas Hydrate Program has identified Kerala- Konkan basin as a potential source of methane hydrates. Other potential resources are Krishna- Godavari basin, Mahanadi basin and Andaman islands.

57. C

- The Reserve Bank of India (RBI) has formed a committee headed by Tapan Ray to review regulatory guidelines and supervisory framework applicable to core investment companies.
- The terms of reference include suggestion of measures to strengthen corporate governance and disclosure requirements for CICs.

58. C

- Gravity exists in all part of space. There is less gravity in the outer space. However, we cannot say that there is zero gravity in outer space. Infact it is the force of gravity which causes Earth to orbit the sun. It keeps the sun in place in the Milky Way galaxy. Gravity, however, does become weaker with distance.
- Object lying in space orbits are weightless and they tend to float because they are in free fall. In a vacuum, gravity causes all objects to fall at the same rate. The mass of the object does not matter and they tend to experience weightlessness

59. A

- Polar orbit is one in which a satellite passes above or nearly above both poles of the body being orbited. It has an inclination of 90 degrees to the body's equator. They travel from pole to pole.
- For effective tele education programmes and weather forecasting pattern , we ideally need a geostationary satellites because the satellites should not have a very high rotating speed.
- For remote sensing and resource explorations, polar satellites are good to use because it sends so much data of different parts.

60. A

- The water stays in the bucket because of inertia. The water wants to fly off from the circle, but the bucket gets in the way and keeps it in place. This is the same effect you feel when you go around a tight corner in the car and get squished against the door

61. A

- Fordow Fuel Enrichment Plant (FFEP) is Iran's second pilot enrichment plant (the first is the Pilot Fuel Enrichment Plant at Natanz). The site was originally a tunnel facility associated with Iran's paramilitary organization, the Islamic Revolutionary Guards Corps (IRGC) and is located buried in a mountain near the city of Qom.
- The recent move of Iran is a step away from the agreement it signed in 2015 with a group of world powers to limit its nuclear activity in exchange for sanctions relief. In 2015, Iran, with the P5+1 group of world powers - the US, UK, France, China, Russia and Germany agreed on a long-term deal on its nuclear programme.
- The deal was named as Joint Comprehensive Plan of Action (JCPOA), also known as Iran Nuclear Deal. Under the JCPOA, Iran agreed to limit its nuclear activities by stopping uranium enrichment and allowing the international agencies to inspect its nuclear facilities in return for the lifting of economic sanctions.
- In May 2018, the US pulled out of Iran Nuclear Deal and it imposed sanctions on Iran and nations doing the significant amount of trade with Iran.

62. D

- Nuclear fusion reaction is a process in which lighter nuclei combine to form heavier nuclei. Eg: solar nuclear fusion where hydrogen combine to form helium
- Nuclear fusion develop less harmful byproducts than the nuclear fission

63. C

- Drip irrigation is a type of micro-irrigation system that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface.
- Drip irrigation applies water to the spot of the plant crops required to be grown. Therefore soil weeds will not get water and slowly reduces in growth. Similarly, unlike the flood irrigation soil erosion can be reduced because per unit water usage and application is lesser.
- From the given options, C is the best one. Reduction in soil salinity is not a necessity because salts may get accumulated over the plant roots and soil-air interface.

64. D

- Bt cotton remains the only GM crop allowed to be cultivated in the country. Developed by US giant Bayer-Monsanto, it involves insertion of two genes viz 'Cry1Ab' and 'Cry2Bc' from the soil bacterium Bacillus thuringiensis into cotton seeds.
- The farmers in Akola, Maharashtra planted a herbicide-tolerant variety of Bt cotton. This variety (HtBt) involves the addition of another gene, 'Cp4-Epsps' from another soil bacterium, Agrobacterium tumefaciens. It is not cleared by GEAC.

65. B

- Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves

66. C

- Fly ash is produced by coal-fired electric and steam generating plants. Typically, coal is pulverized and blown with air into the boiler's combustion chamber where it immediately ignites, generating heat and producing a molten mineral residue.
- ASH TRACK Mobile App has been launched by the Ministry of Power for better management of fly ash produced by thermal power plants by providing an interface between fly ash producers (Thermal Power Plants) and potential ash users such as – road contractors, cement plants etc.

67. C

- Adding gypsum to the soil reduces erosion by increasing the ability of soil to soak up water after precipitation, thus reducing runoff. Gypsum application also improves soil aeration and water percolation through the soil profile.
- Alkali Soils are the soil with high pH value, greater than 7. It has a poor soil structure and low infiltration capacity. These types of soil have dominated presence of minerals such as Sodium Carbonate which causes the soil to swell.
- Adding gypsum helps to reduce alkalinity of the soil by permitting leaching of the excess sodium by percolation of rain and /or irrigation water through the soil profile.

68. B

- Agreement on Reciprocal Logistics Support is an arrangement that will allow access to India and Russia, to each other's military facilities for supplies and fuel, expanding the logistics support and operational turnaround of the Indian military.
- Benefits and mutual significance:
- This will be beneficial for the Indian Navy, which has a large number of Russian origin ships, that will get access to Russian ports for supplies and refueling. It would be crucial for joint exercises.
- The air force too will benefit by finding it easier to deploy aircraft for the same purpose.

- This access will also be for ports in the Russian part of the Arctic, allowing access to energy resources there. Russia, on the other hand, will be able to access Indian ports and air bases. Russia has also assured India access to energy resources in the vast Arctic region.

69. B

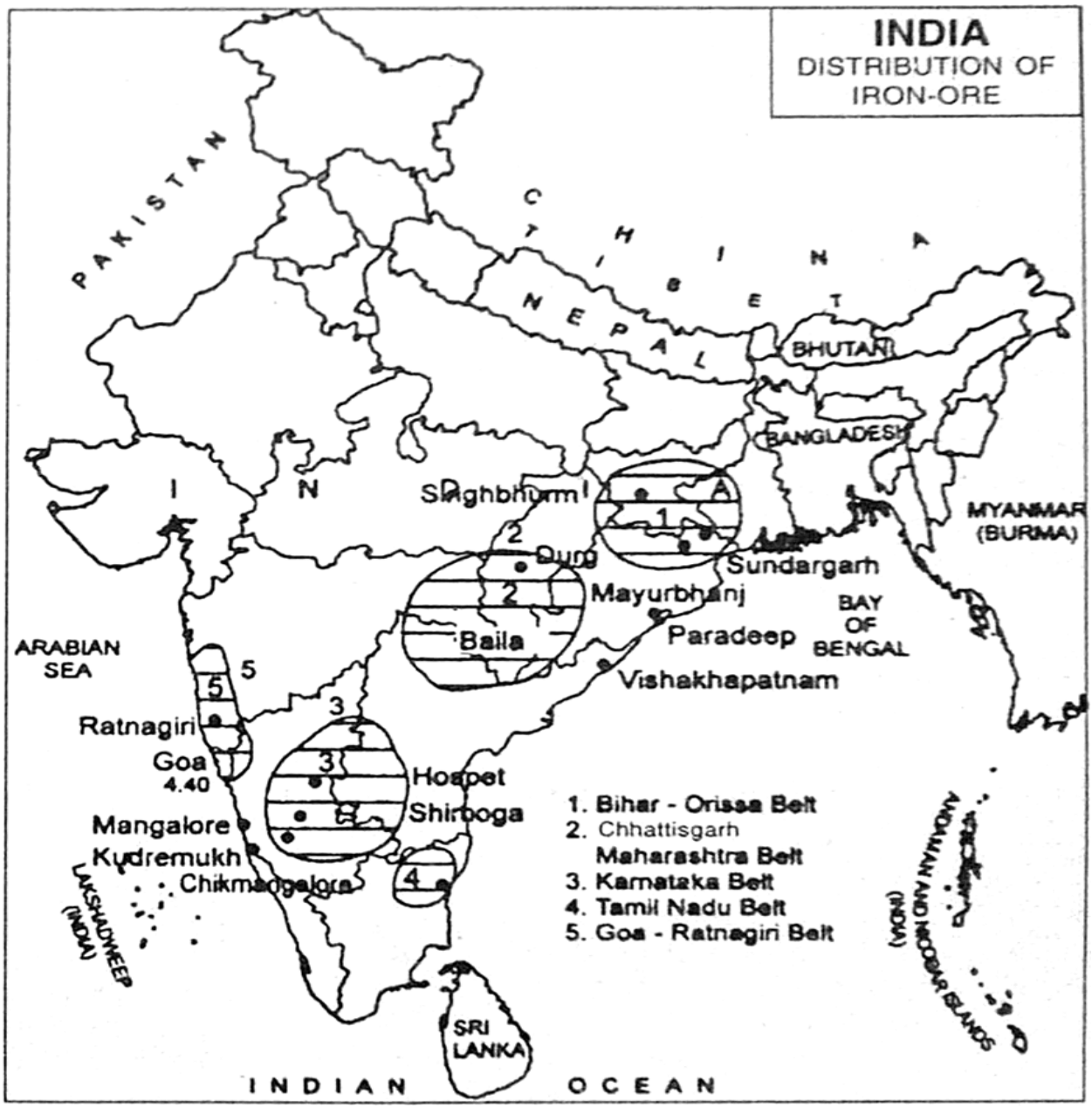
- Statement 1: It requires physical and digital infrastructure for managing the content and it will spread throughout a geographical region instead of a single location.
- Statement 2 is correct anybody can access a cloud based document with the help of an active internet
- Statement 3 is false because we have initiated several schemes like Digilocker.

70. A

- Bitcoin is a digital asset and a payment system. It is commonly called a decentralized digital currency. It was invented by Satoshi Nakamoto in 2009. It is an open source software. This means, that no person, company or country owns this network just like no one owns the Internet.
- The system is peer-to-peer, that is, users can transact directly without an intermediary like a bank, a credit card company or a clearing house. Transactions are verified by network nodes and recorded in a public distributed ledger called the blockchain
- Following Risks are associated with Bitcoins:
- Regulatory Risk: Bitcoins are a rival to government currency and may be used for black market transactions, money laundering, illegal activities or tax evasion. As a result, governments may seek to regulate, restrict or ban the use and sale of bitcoins,
- Security Risk: Bitcoin exchanges are entirely digital and, as with any virtual system, are at risk from hackers, malware and operational glitches.
- Insurance Risk: Bitcoin exchanges and Bitcoin accounts are not insured by any type of federal or government program.
- Fraud Risk : While Bitcoin uses private key encryption to verify owners and register transactions, fraudsters and scammers may attempt to sell false bitcoins. For instance, in July 2013, the SEC brought legal action against an operator of a Bitcoin-related Ponzi scheme.
- Market Risk: Like with any investment, Bitcoin values can fluctuate. Indeed, the value of the currency has seen wild swings in price over its short existence. Subject to high volume buying and selling on exchanges,

71. D

- The iron ore is found in the following four types:
- Magnetite: It is the most important and best kind of iron ore. It contains about 72 percent metallic iron in it. It is black in colour.
- Hematite: It is also an important source. It contains about 60-70 percent metallic iron in it. It is red and brown in colour.
- Limonite: It contains about 30 to 40 percent metallic iron in it. It is mostly yellow in colour. It is a low-grade iron ore.
- Siderite: It has more impurities. It contains about 48 percent metallic iron content in it. It is brown in colour. It contains a mixture of iron and carbon. It is a low-grade iron ore.
- Hematite and magnetite are the two most important iron ores in India
- According to the latest Indian Year Book, 95 percent of the hematite resources are distributed in Odisha, Jharkhand, Karnataka and Goa. Magnetite resources are estimated at around 10,619 million tons out of which only 59 million tons is situated mainly in Goa, Rajasthan and Jharkhand. The rest 10,560 million tons or 99 percent of the magnetite resource is in 'Remaining Resources' category which is mainly found in Karnataka (74 percent) and Andhra Pradesh (14 percent).



72. C

- Standard Model of particle physics gives a framework for our current understanding of the fundamental particles and forces of nature. It includes the electromagnetic, weak and strong interactions of force. Higgs Boson particles are associated with weak forces and as a result, is included under the Standard model.
- Physicists show that detectors at CERN's Large Hadron Collider managed to observe Higgs bosons break down into pairs of tiny particles called bottom quarks.
- On 4 July 2012, the ATLAS and CMS experiments at CERN's Large Hadron Collider announced they had each observed a new particle in the mass region around 125 GeV (negligible mass of 125 GigaelectronVolt) which are believed to be the Higgs Boson particles.

73. A

- Coronaviruses are a specific family of viruses, with some of them causing less severe damage, such as the common cold, and others causing respiratory and intestinal diseases.
- A coronavirus has many regularly arranged protrusions on its surface, because of which the entire virus particle looks like an emperor's crown, hence the name 'Coronavirus'.
- Apart from human beings, coronaviruses can affect mammals including pigs, cattle, cats, dogs, martens, camels, hedgehogs and some birds.
- So far, there are four known disease causing coronaviruses, among which the best known are SARS coronavirus and the Middle East Respiratory Syndrome (MERS), both of which can cause severe respiratory diseases.

74. C

- The Magnetospheric Multiscale mission (MMS) recently made the first precise measurements of an interplanetary shock using high-resolution instruments. These interplanetary shocks provide ideal test beds for learning about larger universal phenomena.
- NASA's MMS investigates how the Sun's and Earth's magnetic fields connect and disconnect, explosively transferring energy from one to the other in a process that is important at the Sun, other planets, and everywhere in the universe, known as magnetic reconnection.

75. B

- Government has already executed the DIN system in the direct tax administration. This step is to further the Government's objectives of bringing transparency and accountability in the indirect tax administration also through widespread use of information technology.
- From now onwards, any communication from GST or Custom or Central Excise department without a computer generated DIN, would be treated as invalid. It would also provide the taxpayer a digital facility to verify any communications.
- CBIC has specified that any communication issued manually under exceptional circumstances, ie without DIN, would have to be regularised on the system within 15 working days of its issuance.

76. D

- Third Generation of biofuels is based on improvements in the production of biomass. It takes advantage of specially engineered energy crops such as algae as its energy source. The algae are cultured to act as a low-cost, high-energy and entirely renewable feedstock. Several variety of fuels like biodiesel, ethanol, vegetable oil etc. can be obtained from them.
- Second generation biofuels use non-food feedstock to create biofuels. When compared with the second generation biofuels, the productivity of algae are higher. With less land, more amount of biofuel raw materials can be produced.

77. C

- National Association of Software and Services Companies (NASSCOM) has launched an all women technologists exclusive Women Wizards Rule Tech (W2RT) program. It seeks to increase the number of women at senior levels with the ability to take leadership roles, and enable their retention in their chosen domains.
- The programme was announced at the NASSCOM D&I Summit held earlier in March this year at Chennai. It is a joint initiative of NASSCOM Sector Skills Council (SSC) and the Data Security Council of India (DSCI).

78. C

- Directorate of Marketing & Inspection (DMI) in the Department of Agriculture, Cooperation and Farmers Welfare, is implementing the provisions of Agricultural Produce (Grading & Marking) Act, 1937. Standards

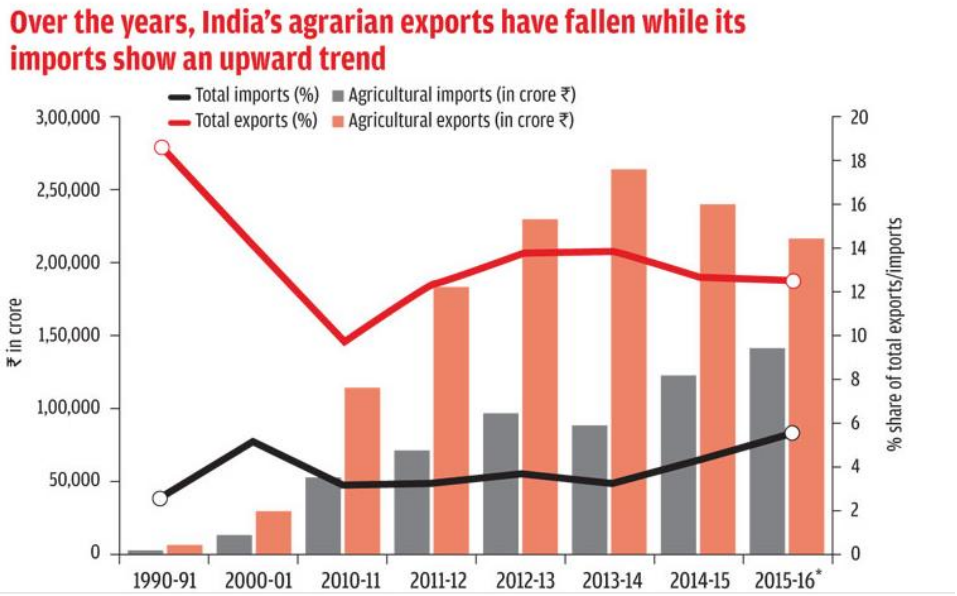
notified as per the provisions of the Act are popularly called AGMARK Standards. These standards differentiate between quality and 2-3 grades are prescribed for each commodity

- The DMI is implementing the scheme of certification of agricultural commodities for domestic trade and export. The Scheme is voluntary. For Blended Edible Vegetable Oils and Fat Spread certification under AGMARK is mandatory as per provisions in The Food Safety and Standards Act and regulations, 2006.

79. C

- Temporary protected status (also called "TPS") is a temporary status given to eligible nationals of designated countries who are present in the United States. The status, afforded to nationals from some countries affected by armed conflict or natural disaster, allows persons to live and work in the United States for limited times.
- Currently, persons from ten countries—Haiti, El Salvador, Syria, Nepal, Honduras, Yemen, Somalia, Sudan, Nicaragua and South Sudan—have temporary protected status

80. D

- The Government has made imports through private parties. In 2018-19, India imported 2.527 million metric tonnes (MT). 50 per cent of pulses were imported into India from Myanmar and Canada. Around 700,000 tonnes were imported from Myanmar, followed by Canada with 520,000 tonnes.
- 

81. B

- Trans fats, or trans-fatty acids, are a form of unsaturated fat. They come in both natural and artificial forms. Natural, or ruminant, trans fats occur in the meat and dairy from ruminant animals, such as cattle, sheep, and goats. They form naturally when bacteria in these animals' stomachs digest grass.
- However, artificial trans fats — otherwise known as industrial trans fats or partially hydrogenated fats — are hazardous to your health. These fats occur when vegetable oils are chemically altered to stay solid at room temperature, which gives them a much longer shelf life

82. C

- Total internal reflection is the complete reflection of a ray of light within a medium such as water or glass from the surrounding surfaces back into the medium instead of passing through to another medium. This happens when the incident angle of the light is higher than the critical angle. If the incident angle is lesser than the critical angle, then it will only refract into another medium.

- In an optical fibre cable, light is kept in the core by the phenomenon of total internal reflection which causes the fiber to act as a waveguide. The entire signal passes through the cable itself and does not refract due to the angle of incidence.Mirage is caused by the total internal reflection of light at layers of air belonging to different densities.
- A white light is a mixture of all colors of light. This mixture can be split into different colors using a transparent block called a prism. This process is the dispersion of light.

83. C

- Antibiotics, also called antibacterials, are a type of antimicrobial drug used in the treatment and prevention of bacterial infections.They may either kill or inhibit the growth of bacteria. A limited number of antibiotics also possess antiprotozoal activity. Antibiotics are not effective against viruses such as the common cold or influenza, and their inappropriate use allows the emergence of resistant organisms. Drugs which inhibit viruses are termed antiviral drugs or antivirals rather than antibiotics.

84. B

- Bioaerosols are airborne particles that are biological in origin. Bioaerosols include fungi, bacteria, viruses, and pollen. Bioaerosols can be formed from nearly any process that involves biological materials and generates enough energy to separate small particles from the larger substance, such as wind, water, air, or mechanical movement.
- Bacterial cells when they become airborne normally rapidly die, within a few seconds, due to evaporation of water associated with the particle. Thus with higher humidity, higher bioaerosol levels can prevail.

85. C

- Anthracite: It is the highest grade of coal containing a high percentage of fixed carbon. It is hard, brittle, black and lustrous. It is found in smaller quantity in regions of Jammu and Kashmir.
- Bituminous: It is a medium grade of coal having high heating capacity. It is the most commonly used type of coal for electricity generation in India. Most of bituminous coal is found in Jharkhand, Odisha, West Bengal, Chhattisgarh, and Madhya Pradesh.
- Subbituminous: It is black in colour, dull (not shiny) and has a higher heating value than lignite.
- Lignite: It is the lowest grade coal with the least carbon content. It is found in the regions of Rajasthan, Tamil Nadu, and Jammu & Kashmir.
- Bituminous coal are present in highest quantity in India. About 70% of coal found in India belong to this category.

86. D

- Nearly 17,000 migratory birds have died so far at the country's largest inland water saltwater lake near Jaipur due to botulism, a serious and fatal illness that affects the nerves..
- https://www.indiatoday.in/india/story/avian-botulism-migratory-birds-death-sambhar-lake-rajasthan-1621433-2019-11-22

87. B

- Statements 1 is correct and 2 is not correct: The gasification of coal is a method that can produce power, liquid fuels, chemicals and hydrogen. It is a clean coal technology and involves the process of converting coal into synthesis gas (also called syngas). Syngas is a mixture of hydrogen, carbon monoxide and carbon dioxide
- Statement 3 is correct: India's first coal gasification based fertiliser plant is to be set up in Talcher, Odisha. Carbon dioxide and ammonia produced from syngas are further reacted to produce urea.

88. D

- The Central Bureau of Investigation (CBI) has set up an Online Child Sexual Abuse and Exploitation (OCSAE) Prevention/Investigation Unit.
- It will also probe such offences covered under various provisions of the IPC, the Protection of Children from Sexual Offences Act and the Information Technology Act, apart from other relevant laws.
- The unit will function under the agency's Special Crime Zone in Delhi. It will collect and disseminate information on online child sexual abuse and exploitation.

89. C

- Reverse osmosis works when solvent passes through a porous membrane in the direction opposite to that for natural osmosis when subjected to a hydrostatic pressure greater than the osmotic pressure.
- Reverse osmosis is a water purification process that uses a partially permeable membrane to remove ions, unwanted molecules and larger particles from drinking water. Reverse osmosis occurs when the water is moved across the membrane against the concentration gradient, from lower concentration to higher concentration.
- Osmosis occurs naturally, however reverse osmosis does not occur naturally and external pressure needs to be applied to kickstart it.

90. A

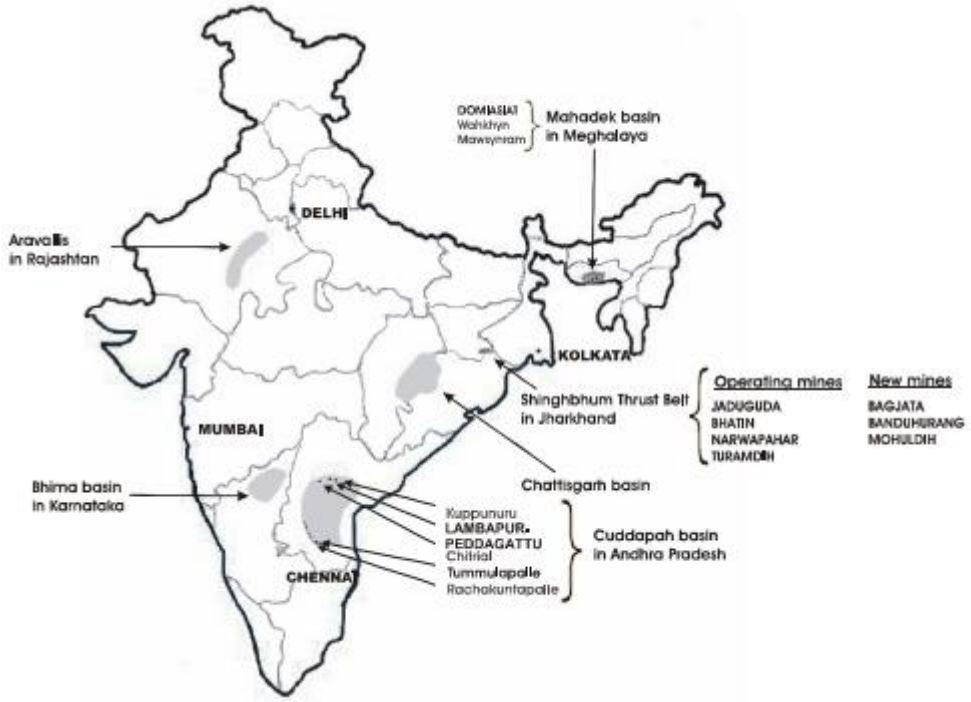
- Ashram School is under the Special Central Assistance to Tribal Sub-Plan (SCA to TSS). The scheme provides for 100% central financing for the construction of ashram schools for girls and for ashram schools for boys in naxal areas. The Standing Committee on Social Justice and Empowerment recommended providing 100% central financing for all ashram schools.
- The State government has the responsibility for running and overall maintenance of the schools, including appointment of teachers.

91. D

- Central Government amended the Mines and Minerals (Development and Regulation) Act, 1957, to empower the State Governments to take action against illegal mining by giving them powers to enter and inspect any mine, penalize transportation and storage of illegally mined minerals.
- Among non-coal minerals, pollution standards have only been developed for iron-ore mining under Environment Protection Rules, 2010 to be added under the EPA Act,1986.

92. D

- Jaduguda in Singhbhum Thrust Belt (in the state of Jharkhand, formerly part of Bihar) is the first uranium deposit to be discovered in the country in 1951.



93. D

- Greenhouse Gas Bulletin is published by World Meteorological Organization (WMO), a the weather agency of the United Nations, and it publishes the Greenhouse Gas Bulletin each year. It measures the atmospheric concentration of the gases responsible for global warming, rather than emissions.

94. C

- Glutens are naturally occuring proteins found in wheat, barley etc. However they are allergic to some humans causing issues in digestion and nutrient absorption.
- A gluten-free diet is essential for managing signs and symptoms of celiac disease and other medical conditions associated with gluten. A gluten-free diet is also popular among people who haven't been diagnosed with a gluten-related medical condition.

95. A

- The Ministry of Health and Family Welfare has launched a campaign in Gujarat named Social Awareness and Action to Neutralise Pneumonia Successfully (SAANS).
- The aim is to reduce child mortality due to pneumonia, which contributes to around 15% of deaths of children under the age of five annually.
- It aims to mobilise people to protect children from pneumonia, and train health personnel and other stakeholders to provide prioritised treatment to control the disease. A child suffering from pneumonia will be treated with a pre-referral dose of antibiotic amoxicillin by Accredited Social Health Activist (ASHA) workers.
- Pulse Oximeter (device to monitor oxygen saturation) will be used at the Health and Wellness Centre for identification of low oxygen levels in the blood of child and if required, the child can be treated by the use of oxygen cylinders.
- A mass awareness campaign will be launched about the effective solutions for pneumonia prevention like breastfeeding, age-appropriate complementary feeding and immunization etc.

96. B

- Facial recognition does not use the retinal scan as it is not conducted on a close proximity.
- Also, fingerprint is not used for facial recognition technology.
- It uses muscular pattern and geometric arrangement of various features of the face

97. C

- Ministry of Health and Family Welfare is all set to launch a special campaign in Delhi to sensitize and mobilise the community on measures for prevention and control of Vector Borne Diseases (VBDs) like Malaria, Dengue and Chikungunya.

98. B

- The shale gas boom in recent years has been due to modern advancement in technology in hydraulic fracturing (fracking) to create extensive artificial fractures around well bores. It cannot be commercially exploited through open cast mining.
- It may be noted that under the Oil Field Regulation and Development Act, 1948 and Petroleum and Natural Gas Rules, 1959 the definition of natural gas includes all 'naturally' occurring gas. It was due to this statutory interpretation that coal bed methane, which is a naturally occurring gas, came in the domain of MoPNG and not Ministry of Coal.

99. D

- There are two main types of RFID tags: battery-operated and passive. As the name suggests, battery-operated RFID tags contain an onboard battery as a power supply, whereas a passive RFID tag does not, instead working by using electromagnetic energy transmitted from an RFID reader. Unlike Barcode, RFID does not need line of sight

100. C

- Recombinant DNA technology comprises altering genetic material outside an organism to obtain enhanced and desired characteristics in living organisms or as their products. This technology involves the insertion of DNA fragments from a variety of sources, having a desirable gene sequence.
- The advent of recombinant DNA technology revolutionized the development in biology. The recombinant drugs developed initially in the USA has the potential to cure diseases which includes anemia, AIDS, cancers, hereditary disorders, diabetic foot ulcers, diphtheria, genital warts, hepatitis B, hepatitis C etc.