Test 10 Key and Explanation

1. **Ans: a**
2. **Ans: c**

   It is a tax levied directly on a taxpayer who pays it to the Government and cannot pass it on to someone else. It is a tax levied by the Government on goods and services and not on the income, profit or revenue of an individual and it can be shifted from one taxpayer to another. GST is indirect tax
3. **Ans: b**

   Customs duty is the charge levied when goods are imported into the country, and is paid by the importer or exporter
4. **Ans: a**

   Capital gain stands for profit from sale of a property or investments such as shares, gold, real estate and valuables like paintings, antique items etc. The taxable income in capital gains tax is the difference of price of asset/share when purchased and when sold
5. **Ans: d**

   The finance minister has proposed a flat standard deduction of Rs 40,000 from salaries for salaried people.
6. **Ans: d**

   The tax came into effect from July 1, 2017 through the implementation of One Hundred and First Amendment of the Constitution of India by the Government of India. Goods and services are divided into five tax slabs for collection of tax - 0%, 5%, 12%, 18% and 28%. Petroleum products and alcoholic drinks are taxed separately by the individual state governments.
7. **Ans: b**

   Additional Customs Duty, commonly known as Countervailing Duty (CVD)
8. **Ans: c**
9. **Ans: a**

   An anti-dumping duty is a protectionist tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value. Dumping is a process where a company exports a product at a price lower than the price it normally charges on its own home market. To protect local businesses and markets, many countries impose stiff duties on products they believe are being dumped in their national market.
10. **Ans: b**
11. **Ans: b**

    Tehrik-e-Khilafat, a was Punjab Khilafat deputation comprising Moulana Manzoor Ahmed and Moulana Lutfullah Khan Dankauri took a leading role throughout India, with a particular concentration in the Punjab. The Khilafat movement (1919–22) was a pan-Islamic, political protest campaign launched by Muslims in British India to influence the British government. The movement became the reason for separation from mainland India of an Islamic Pakistan, in the process unleashing tremendous separation-trauma, mainly upon ethnic Punjabis. The movement was a topic in Conference of London (February 1920) however, Arabs saw it as threat of continuation of Turkish dominance of Arab lands.
12. **Ans: a**

    Diarchy was introduced by government of india act - 1919 and Montagu declaration was only the basis of GOI-1919.
13. **Ans: a**

    All parties except Shafi party and Justice Party was against the commission. AIML also boycotted the commission
14. **Ans: b**

    Although Malabari stayed away from the Indian National Congress as an organisation, Malabari attended the Indian National Congress in Bombay in 1885, and "he was a nationalist" and he had a close relationship with Dadabhai Naoroji, one of the founders and leaders of the Congress. It was however to his advantage to not allow his name to be brought in connection with any specific political party or movement, and would have precluded support from British politicians in his campaign for social reform as well as from the Indian princes of Patiala, Gwalior and Bikaner upon whose financial generosity he depended.
15. **Ans: a**

    INC approved 1/3rd representation for Muslims in central government and in provinces. This gave recognition to political activity of Muslim League. Separate electorate for Muslims was also recognized.
16. **Ans: d**

    The Theosophical Society was an organization formed in 1875 to advance Theosophy. Besant was not part of it. Before Besant, many foreigners were presidents.

KERALA STATE CIVIL SERVICE ACADEMY

Test 10 Key and Explanation

17. **Ans: b**

Civil disobedience movement started with Dandi march. Mass strikes were a notable feature of the movement. Nonpayment of revenue and picketing of liquor shops were common.

18. **Ans: b**

Accepting the report of the Repressive Laws Committee, the Government of India repealed the Rowlatt Act, the Press Act, and twenty-two other laws in March 1922.

19. **Ans: d**

Much of the economic backwardness can only be attributed to the land systems of the British going wrong. With Zamindari, Ryotwari and Mahalwari Systems turning out to be an engine of exploitation and oppression, the farmers lost bargaining power and there came to be a creation of Land Aristocracy with absolutely no technological improvements for improving the land or the way of cultivation.

The uncertainty, over-assessment of land, textile woes and almost no provision for an appeal in the Court pushed the farmers on the receiving end of indebtedness and landlessness.

The forcible growth of commercial crop (indigo and cotton) proved to be additionally hazardous along with the land becoming mortgageable and alienable- thereby, deteriorating the land and the soil quality and keeping the viscious cycle of poverty and dependency at its firm place.

20. **Ans: d**

Focus on the word **"not a feature of"**. All of the points are features of Indian Industrial Development Growth of different social classes- Industrial Capitalist Class and Modern Working Class representing new systems of technology, economic and social organisation and a whole new outlook.

21. **Ans: c**

The Hunter commission was also constituted for enquiry into education reforms especially regarding the primary education. The British did not constitute a commission until the Congress did. The commission report did not criticize the imposition of martial law in Punjab whereas it criticized the Satyagraha initiated by Gandhi. Dyer was condemned for his actions and just sent back to England relieving of his command.

The constitutional reforms commissions were Simon Commission, Constitutional Reforms Committee 1917 etc.

Famine Inquiry Commission was constituted to look into the Bengal Famines, 1943 which condemned the government inaction despite availability of food and for general corruption.

22. **Ans: b**

Moderates cannot be considered as a complete failure .Moreover the effect of failure of moderates was not a main reason for the resurgence.

23. **Ans: c**

Government of India Act 1919 had introduced the system of diarchy to govern the provinces of British India. This act had a provision that a commission would be appointed after 10 years to investigate the progress of the governance scheme and suggest new steps for reform. The

Government in England was a conservative Government which was not in very much favour of giving any control to Indians. In March 1927, his majesty's Government announced its decision to appoint the "Statutory Commission" in advance of the prescribed date

Unionists in Punjab and justice party in south decided not to boycott the commission.

24. **Ans: a**

Secretary of state was to be hens forth paid from British exchequer. Franchise was still limited but was extended to the population based on property, tax or education

25. **Ans: b**

They didn't believe in the efficacy of constitutional methods for achieving freedom. For them council entry was only a means of exposing real intention of British and weakness of 1919 act to people.

26. **Ans: c**

The **Congress Socialist Party (CSP)** was founded in 1934 as a socialist caucus within the Indian National Congress. Its members rejected what they saw as the anti-rational mysticism of Mohandas Karamchand Gandhi as well as the sectarian attitude of the Communist Party of India towards the Congress Party.

Influenced by Fabianism as well as Marxism-Leninism, the CSP included advocates of armed struggle or sabotage (such as Yusuf Meherally, Jai Prakash Narayan, Rambriksh Benipuri and Basawon Singh (Sinha) as well as those who insisted upon

KERALA STATE CIVIL SERVICE ACADEMY

ahimsa or nonviolent resistance (such as Acharya Narendra Deva). The CSP advocated decentralized socialism in which co-operatives, trade unions, independent farmers, and local authorities would hold a substantial share of the economic power.

As secularists, they hoped to transcend communal divisions through class solidarity. Some, such as Rambriksh Benipuri, Narendra Deva or Basawon Singh (Sinha), advocated a democratic socialism distinct from both Marxism and reformist social democracy. During the Popular Front period, the communists worked within CSP. Jai Prakash Narayan & Rambriksh Benipuri were among the founder members of Congress Socialist Party from Bihar.

The constitution of the CSP defined that the members of CSP were the members of the Provisional Congress Socialist Parties and that they were all required to be members of the Indian National Congress.

Members of communal organizations or political organizations whose goals were incompatible with the ones of CSP, were barred from CSP membership. The Bombay conference raised the slogan of mobilising the masses for a Constituent Assembly.

The CSP had adopted Marxism in 1936 and their third conference in Faizpur they had formulated a thesis that directed the party to work to transform the Indian National Congress into an anti-imperialist front.

Soon after the Tripuri session, Bose resigned as Congress president and formed the Forward Bloc. The Forward Bloc was intended to function as a unifying force for all leftwing elements. The Forward Bloc held its first conference on 22–23 June 1939, and at the same time a Left Consolidation Committee consisting of the Forward Bloc, CPI, CSP, the Kisan Sabha (Rambriksh Benipuri {Led by him}), League of Radical Congressmen, Labour Party and the Anushilan marxists. At this moment, in October 1939, J.P. Narayan tried to stretch out an olive branch to the Anushilan marxists. He proposed the formation of a 'War Council' consisting of himself, Pratul Ganguly, Jogesh Chandra Chatterjee and Acharya Narendra Deva. But few days later, at a session of the All India Congress Committee, J.P. Narayan and the other CSP leaders pledged not to start any other movements parallel to those initiated by Gandhi. The Left Consolidation Committee soon fell into pieces, as the CPI, the CSP and the Royists deserted it. The Anushilan marxists left the CSP soon thereafter, forming the Revolutionary Socialist Party.

Narayan organized the CSP relief work in Kutch in 1939.

On the occasion of the 1940 Ramgarh Congress Conference CPI released a declaration called Proletarian Path, which sought to utilize the weakened state of the British Empire in the time of war and gave a call for general strike, no-tax, no-rent policies and mobilising for an armed revolution uprising. The National Executive of the CSP assembled at Ramgarh took a decision that all communists were expelled from CSP.

Members of the CSP were particularly active in the Quit India movement of August 1942. Although a socialist, Jawaharlal Nehru did not join the CSP, which created some rancour among CSP members who saw Nehru as unwilling to put his socialist slogans into action.

27. **Ans: c**

    JL Nehru was not a member of the committee

28. **Ans: d**

    Hindustan Republican Association (HRA) was a revolutionary organization of India established in 1924 at village Bhola Change in East Bengal by Sachindra Nath Sanyal, Narendra Mohan Sen and Pratul Ganguly as an offshoot of Anushilan Samiti. Its objective was to establish a "Federated Republic of the United States of India" through an organized and armed revolution, its name was changed into HSRA [Hindustan Socialist Republican Association] by Bhagat Singh.

    Bhagat singh was sentenced to death for Saunders murder trial, which was also known as the **Lahore Conspiracy Case**

29. **Ans: b**
30. **Ans: c**

    All India Khilafat conference decided to boycott British goods

31. **Ans: b**

    Diarchy was introduced only in centre

32. **Ans: b**

    NCM as such was endorsed in the Nagpur session.

33. **Ans: c**
34. **Ans: d**
35. **Ans: b**

    The volunteer corps was associated with the Non-cooperation movement and it was declared illegal by Reading

KERALA STATE CIVIL SERVICE ACADEMY

Test 10 Key and Explanation

36. **Ans: d**

Philosophy of **Determinism** is based upon the interaction between primitive human society and strong forces of nature. This is an older philosophy which persisted till World War II. It says that the strong forces of environment control the course of human action. This implies that the history, culture, mode of life, and the level of development of the societal groups and countries are exclusively or largely controlled by the physical environment. According to Determinism, man is a passive agent, and nature is active agent, which controls and determines the action and decision-making processes of man. As per determinism, the human actions can be explained as a response to the natural environment.

Possibilism is the reaction to determinism and environmental determinism. It is based upon the assumption that environment sets certain constraints or limitations, but culture is otherwise determined by social conditions. This theory says that the true and only geographical problem is that to utilisation of possibilities.

Essence of Possibilism is that-

- Nature provides possibilities and man utilises them according to his culture, traditions, and levels of socioeconomic development.
- People are not just the products of their environment or just pawn of natural environment.
- Nature is never more than an adviser.

37. **Ans: d**

Bhutan is the only country in the world to officially proclaim the **Gross National Happiness (GNH)** as the measure of the country's progress. Material progress and technological developments are approached more cautiously. This simply means **material progress cannot come at the cost of happiness.**

GNH encourages us to think of the **spiritual, non-material** and **qualitative** aspects of development.

38. **Ans: b**

Truck farming is **a horticultural practice** of growing one or more **vegetable crops** on a large scale for shipment to distant markets. It is usually **less intensive and diversified** than market gardening.

39. **Ans: a**

Foot loose industries can be located in a wide variety of places. They are **not dependent on any specific raw material, weight losing or otherwise.**

They largely depend on component parts which can be obtained from anywhere.

The important factor in their location is accessibility by road network.

40. **Ans: d**

Population ageing is the process by which the share of the older population becomes proportionally larger. This is a new phenomenon of the twentieth century. In most of the developed countries of the world, population in higher age groups has increased due to increased life expectancy. With a reduction in birth rates, the proportion of children in the population has declined.

41. **Ans: c**

The population change refers to the change in number of inhabitants of a territory during a specific period of time. This change may be positive as well as negative. It can be expressed either in terms of absolute numbers or in terms of percentage.

Population change in an area is an important indicator of economic development, social upliftment and historical and cultural background of the region.

Growth of Population: Change of population in particular area between two points of time is known as growth of population. For example, if we deduct the population of India 1991 (84.63 crore) from population of 2001 (102.70 crore) then we shall get the growth of population (18.07 crores) in actual numbers.

Growth Rate of Population: This is the change of population **expressed in percentage**.

Natural Growth of Population: This is the population increased by difference between births and deaths in a particular region between two points of time.

Natural Growth = Births – Deaths

Actual Growth of Population: This is Births – Deaths + In Migration – Out Migration

Positive Growth of Population: This happens when the birth rate is more than the death rate between two points of time or when people from other countries migrate permanently to a region.

Negative Growth of Population: If the population decreases between two points of time it is known as negative growth of population. It occurs when the birth rate falls below the death rate or people migrate to other countries.

42. **Ans: a**

There are three distinct crop seasons in the northern and interior parts of country, namely Kharif, Rabi and Zaid.

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The **Kharif** season largely coincides with Southwest Monsoon under which the cultivation of tropical crops such as Rice, Cotton, Jute, Jowar, Bajra, Groundnut and Tur is possible. 80% of groundnut production is in Kharif season while reminaing is in Rabi season

The **Rabi season** begins with the onset of winter in October-November and ends in March-April. The crops are Wheat, Gram, Rapeseeds Rice, Maize, Ragi, and Mustard, Barley Groundnut, Jowar. The low temperature conditions during this season facilitate the cultivation of temperate and subtropical crops such as wheat, gram and mustard.

Zaid is a short duration summer cropping season beginning after harvesting of rabi crops. The cultivation of watermelons, cucumbers, vegetables and fodder crops during this season is done on irrigated lands.

43. **Ans: d**

The cereals occupy about 54 per cent of total cropped area in India. The country produces about 11 per cent cereals of the world and ranks third in production after China and U.S.A. India produces a variety of cereals, which are classified as fine grains (rice, wheat) and coarse grains (jowar, bajra, maize, ragi), etc. Maize is a food as well as fodder crop grown under semi-arid climatic conditions and over inferior soils. Pulses are legume crops which increase the natural fertility of soils through nitrogen fixation.

44. **Ans: c**

Thomas Malthus in his theory (1793) stated that the number of people would increase faster than the food supply. Any further increase would result in a population crash caused by famine, disease and war. The preventive checks are better than the physical checks. For the sustainability of our resources, the world will have to control the rapid population increase. Malthus argued that two types of checks hold population within resource limits: positive checks, which raise the death rate and preventive ones, which lower the birth rate. The positive checks include hunger, disease and war the preventive checks, abortion, birth control, prostitution, postponement of marriage and celibacy.

45. **Ans: b**

Demographic transition theory can be used to describe and predict the future population of any area. The theory tells us that population of any region changes from high births and high deaths to low births and low deaths as society progresses from rural agrarian and illiterate to urban industrial and literate society. These changes occur in stages which are collectively known as the **Demographic Cycle**.

The **first stage** has **high fertility and high mortality** because people reproduce more to compensate for the deaths due to epidemics and variable food supply. The population growth is slow and most of the people are engaged in agriculture where large families are an asset. Life expectancy is low, people are mostly illiterate and have low levels of technology. Two hundred years ago all the countries of the world were in this stage.

Fertility remains high in the beginning of **second stage** but it **declines with time**. This is **accompanied by reduced mortality** rate. Improvements in sanitation and health conditions lead to decline in mortality. Because of this gap the net addition to population is high.

In the **last stage**, both **fertility and mortality decline** considerably. The population is either stable or grows slowly. The population becomes urbanised, literate and has high technical know-how and deliberately controls the family size. This shows that human beings are extremely flexible and are able to adjust their fertility. In the present day, different countries are at different stages of demographic transition

46. **Ans: b**

<u>Types of Urban Settlements</u>

Depending on the size and the services available and functions rendered, urban centres are designated as town, city, million city, conurbation, megalopolis.

- **Town**

Functional contrasts between towns and villages may not always be clear cut, but specific functions such as, manufacturing, retail and wholesale trade, and professional services exist in towns.

- **City**

A city may be regarded as a leading town, which has outstripped its local or regional rivals. Cities are much larger than towns and have a greater number of economic functions. They tend to have transport terminals, major financial institutions and regional administrative offices.

- **Million city**

When the population of a city crosses the one million mark it is designated as a million city.

- **Conurbation**

A large area of urban development resulted from the merging of originally separate towns or cities.

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Test 10 Key and Explanation

- **Megalopolis**
  It signifies 'super- metropolitan' region extending, as union of conurbations.

47. **Ans: b**
    'Double village' is a **Rural** settlement pattern extend on both sides of a river where there is a bridge or a ferry.
    Major Rural settlement patterns-Linear pattern, Rectangular pattern, Circular pattern, Star like pattern, T-shaped/ Y-shaped/Cross-shaped /cruciform settlements, Double village etc.
48. **Ans: c**
    Organization of the Petroleum Exporting Countries (OPEC)
    14 nations- OPEC's members are Algeria, Angola, Ecuador, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia (the de facto leader), United Arab Emirates, and Venezuela, Indonesia is a former member.
    Only 2 nations from south America-Ecuador and Venezuela
49. **Ans: b**
    Types of port on the **basis of specialized functions:**
    Oil Ports: These ports deal in the processing and shipping of oil. Eg-Maracaibo in Venezuela
    Ports of Call: These are the ports which originally developed as calling points on main sea routes where ships used to anchor for refueling, watering and taking food items. Later on, they developed into commercial ports. Singapore is a good example.
    Packet Station: These are also known as **ferry ports**.
    These packet stations are exclusively concerned with the transportation of passengers and mail across water bodies covering short distances. These stations occur in pairs located in such a way that they face each other across the water body, e.g. Dover in England and Calais in France across the English Channel.
    Entrepot Ports: These are collection centres where the goods are brought from different countries for export. Singapore is an entrepot for Asia.
    Naval Ports: These are ports which have only strategic importance. Kochi and Karwar are examples
50. **Ans: a**
    Every year **Jon Beel Mela** takes place in near Guwahati and here barter system is still alive. A big market is organised during this fair and people from various tribes and communities exchange their products.
    Pipelines can also be used to transport liquefied coal. Coal liquefaction is not converting coal into liquid but converting coal into other hydrocarbons, i.e. liquid fuels and petrochemicals. This process is often called as 'Coal to X', where X can be different hydrocarbon based products. In New Zealand, milk is being supplied through pipelines from farms to factories.
51. **Ans: b**
    Underground railways are important in London and Paris. The Channel Tunnel is a 50.45-kilometre **rail tunnel** connects **London with Paris**, beneath the **English Channel** at the **Strait of Dover**.

52. **Ans: b**
    A lock is a device used for raising and lowering boats, ships and other watercraft between stretches of water of different levels on river and canal waterways. Locks are used to make a river more easily navigable, or to allow a canal to cross land that is not level.
    The Suez Canal has no locks because the Mediterranean Sea and the Red Sea's Gulf of Suez have approximately the same water level.
    Panama Canal has a total of six steps (three up, three down) for a ship's passage.

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Test 10 Key and Explanation

53. **Ans: b**

Foot Loose Industries

Foot loose industries can be located in a wide variety of places. They are not dependent on any specific raw material, weight losing or otherwise.

The important factor in their location is accessibility by road network.

54. **Ans: c**

Quinary activities are often referred to as 'gold collar' professions - Not quaternary activities.

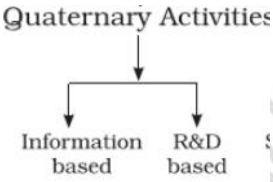
Slash and burn agriculture is

- Jhuming - North east India
- Milpa - central America and Mexico and
- Ladang - Indonesia and Malaysia.
- Conuco - Venezuela
- Roca - Brazil

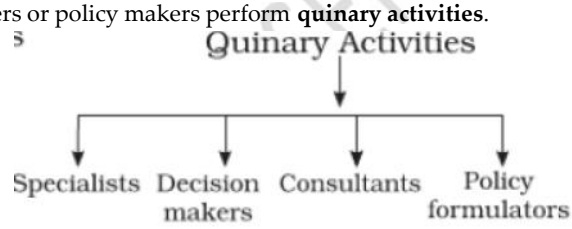
55. **Ans: c**

Knowledge oriented service sector can be divided into **quaternary** and **quinary activities.**

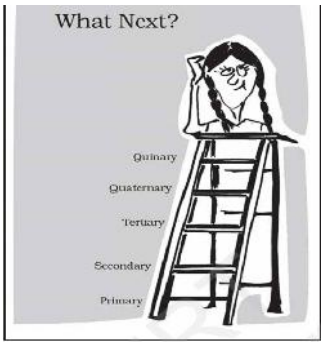
Quaternary activities involve some of the following: the collection, production and dissemination of information or even the production of information.



The highest level of decision makers or policy makers perform **quinary activities**.



New trends in quinary services include knowledge processing outsourcing (KPO) and 'home shoring', the latter as an alternative to outsourcing. KPO enables companies to create additional business opportunities. Examples of KPOs include research and development (R and D) activities, e-learning, business research, intellectual property (IP) research, legal profession and the banking sector.



56. **Ans: d**

The phenomenon of 'killer rip tides' is being studied by ISRO in collaboration with a private lifeguard agency appointed by the Goa government to safeguard its beaches.

The study is known as **Ripex 2017.**

A rip tide is a strong sea current which pulls the water away from the shore, often catching unawares swimmers and people enjoying the sea in the shallows and can drag them into the sea.

Rip tides are one of the most common causes for drowning in the shallow waters off Goa's popular coastline.

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Test 10 Key and Explanation

57. **Ans: A**

In 2016 an extra leap second was added at the end of the year, making it slightly longer than 2015.

The Earth's rotation around its own axis is not regular, as sometimes it speeds up and sometimes it slows down, due to various factors including the moon's gravitational forces. As a result, Astronomical Time (UT1) gradually falls out of synch with Atomic time (UTC).

As and when the difference between UTC and UT1 approaches 0.9 seconds, a "Leap Second" is added to UTC through Atomic clocks worldwide.

Since 1972, 36 "Leap Seconds" have been added at intervals varying from six months to seven years.

The "Leap Second" adjustment is not so relevant for normal everyday life however this shift is critical for applications requiring of time accuracies in the nanosecond e.g. astronomy, satellite navigation, communication networks etc.

CarbFix is a unique experiment, scientists turned carbon dioxide into a stone by pumping it with water underground in Iceland.

In this method, CO2 is dissolved with water and the mixture is pumped into volcanic rocks called basalts. Once that happens, the CO2 turns into a solid mineral (calcite), which can then be stored.

58. **Ans: c**

The Fast Breeder Programme is in the technology demonstration stage.

Electricity generated by FBR would be a source of green energy as the waste from the first stage nuclear programme is reprocessed and used as fuel in FBR. The spent fuel from this reactor can be fed back into the reactor core several times, till the spent fuel contains only short lived fission products. This is the concept of FBR with closed fuel cycle. Hence, there is no need of large quantity of fuel materials for the annual external feed and thus eliminates the need for large capacity waste storage spaces with complex construction features.

Indira Gandhi Centre for Atomic Research (IGCAR) has been carrying out a comprehensive R&D on sodium cooled fast breeder reactor technology for the past 30 years. A test reactor, called Fast Breeder Test Reactors (FBTR), is in operation from 1985 onwards which has provided valuable feedback. Based on this experience and also taking into account the international experience, design of a 500MWe Prototype Fast Breeder Reactor (PFBR) has been done.

Indigenously produced **Mixed Uranium & Plutonium Oxide** will be used as the fuel in the Prototype Fast Breeder Reactor at Kalpakkam.

A new public sector undertaking **Bharatiya Nabhikiya Vidyut Nigam (BHAVINI)** of DAE is implementing this project (The Nuclear Power Corporation of India Ltd. (NPCIL), which is also a public sector undertaking of DAE, is usually responsible for the design, construction and operation of nuclear power reactors)

World's only commercially operating fast breeder reactor is situated in the Ural Mountains of **Russia**. The Russians today are the global leaders in fast-breeder reactors having operated a fast-breeder reactor called **BN 600** since 1980.

In 2016, the Russian nuclear agency Rosatom commercially commissioned its big brother -- the **BN 800.**

China has started a test reactor of 65 MWt capacity in 2010. Other two reactors JOYO, MONJU in Japan are under shutdown currently. New power reactor of 1200 MWe capacity is planned to be constructed in Russia for which design is in progress.

59. **Ans: a**

Three-Parent Technique

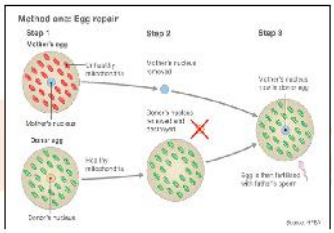
The world's first three-parent baby boy was born in Mexico.

The 'three-parent' technique also known as **mitochondrial donation (Mitochondrial Replacement Therapy)** allows parents with rare genetic mutations to have healthy babies.

MRT or Mitochondrial donation is a medical technique in which defective mitochondria carried by a woman is replaced with the healthy mitochondria of a donor.

Through invitro fertilization technique (IVF), the egg is then fertilised with the partner's sperm.

Thus this medical technique prevents the transmission of mitochondrial (genetic) disease from one generation to the next. MRT proposes to give parents chance of having a child that is over 99% genetically matched to them and most importantly free of the mitochondrial disease.



KERALA STATE CIVIL SERVICE ACADEMY

Test 10 Key and Explanation

60. **Ans: c**

CRISPR–Cas9

CRISPR, short for **clustered regularly interspaced short palindromic repeats**.

It allows scientists to selectively edit genome parts and replace them with new DNA stretches.

Cas9 is an enzyme that can edit DNA, allowing the alteration of genetic patterns by genome modification.

PARAM-ISHAN

PARAM-ISHAN supercomputing facility at IIT, Guwahati.

PARAM-ISHAN has power of 250 Teraflops and three hundred tera bites capacity.

61. **Ans: a**

TanSat

China has launched a 620-kg TanSat satellite which is a global carbon dioxide monitoring satellite to understand climate change.

China is the third country after Japan and the US to monitor greenhouse gases through its own satellite.

Mission Lucy is the **NASA mission** to explore Jupiter's mysterious **Trojan asteroids**.

Lucy, a robotic spacecraft, is scheduled for October 2021 launch.

62. **Ans: b**

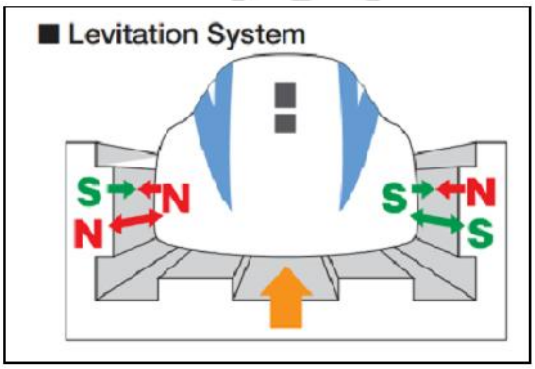
Maglev trains

The Indian Railways plans to introduce Maglev trains that can run at a top speed of 500 km an hour, in a bid to lure passengers from airlines.

Maglev (derived from **magnetic levitation**) is a transport method that uses magnetic levitation to move vehicles without touching the ground.

With maglev, a vehicle travels along a guideway using magnets to create both lift and propulsion, thereby reducing friction by a great extent and allowing very high speeds.

Maglev trains are in operation in China, Japan, Germany and South Korea.



63. **Ans: b**

TRI-NETRA

TRI-NETRA stands for – Terrain imaging for diesel drivers Infra-red, Enhanced optical & Radar Assisted system.

Ministry of Railways has initiated a proposal to install TRINETRA systems on locomotives for enhancing the vision of Locomotive Pilots in inclement weather.

TRI-NETRA system is made up of high-resolution optical video camera, high sensitivity infra-red video camera and additionally a radar-based terrain mapping system.

These **three components** of the system act as three eyes (Tri-Netra) of the Locomotive Pilot.

TRI-NETRA is designed to "see" the terrain ahead of the running locomotive during inclement weather (abnormal climatic conditions) by combining the images captured by the three sub-systems and to create a composite video image which shall be displayed in front of the Loco Pilot on a computer monitor.

Avian Influenza (or "bird flu") is also known as H5N1.

Swine Flu (H1N1) is a respiratory disease caused by viruses (influenza viruses) that infect the respiratory tract of pigs.

Food irradiation is a technology in which food products are subjected to a low dosage of radiation to treat them for germs and insects, increasing their longevity and shelf life.

The radiation can be emitted by a radioactive substance or generated electrically.

The irradiated food does not become radioactive.

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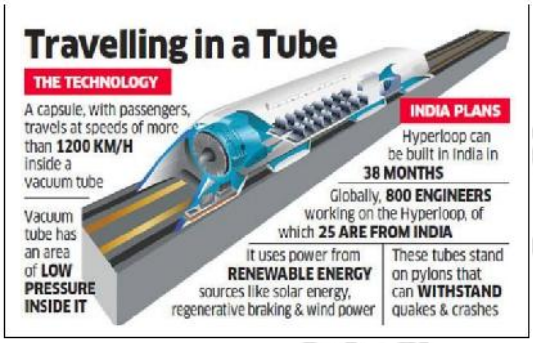
International Atomic Energy Agency (IAEA) recommends the irradiation doses for Food irradiation.
It does not reduce the nutritional value of food products and does not change their organoleptic properties and appearance.
The irradiation treatment delay/eliminate ripening or sprouting and reduce the risk of food borne illness.
Irradiation is **equivalent to pasteurization for solid foods**, but it is not the same as sterilization.
India and Russia have signed an agreement for cooperation in the development of a network of 25 integrated infrastructure Agro irradiation centres.

Thubber

Scientists have developed a novel rubber material with high thermal conductivity and elasticity.
The material, nicknamed 'thubber', is **an electrically insulating composite** that exhibits a combination of metal-**like thermal conductivity**, **elasticity** similar to soft, biological tissue, and can stretch over six times its initial length.

64. **Ans: b**

The hyperloop concept is a brainchild of Tesla founder Elon Musk.



65. **Ans: b**

Researchers from Imperial College London in the UK discovered that the melting point of **hafnium carbide** is the highest ever recorded for a material. Tantalum carbide (TaC) and hafnium carbide (HfC) are refractory ceramics, meaning they are extraordinarily resistant to heat.
China had successfully launched the world's first quantum satellite in August, 2016, dubbed as Quantum Experiments at Space Scaler **(QUESS) satellite**.
It was nicknamed as **Micius** after a 5th century BC Chinese philosopher and scientist.
Also China has launched a 712-km world's first quantum communication network.
3D printing, also known as **Additive Manufacturing (AM)**, refers to processes used to create a three-dimensional object in which layers of material are formed under computer control to create an object.
Objects can be of almost any shape or geometry and are produced using digital model data.

66. **Ans: d**

CHARGE syndrome is a disorder that affects many areas of the body.
CHARGE stands for **C**oloboma, **H**eart defect, **A**tresia choanae (also known as choanal atresia), **R**etardation in growth, **G**enital abnormalities, and **E**ar abnormalities.
(Choanal atresia is a congenital disorder where the back of the nasal passage (choana) is blocked, usually by abnormal bony or soft tissue (membranous)).
It causes multiple life-threatening problems such as deafness and blindness, heart defects, genital problems and growth retardation and facial bone and nerve defects that cause breathing and swallowing difficulties and the multiple health problems can be life-threatening in infancy.

Test 10 Key and Explanation

67. **Ans: a**

Mission Lucy is the NASA mission to explore Jupiter's mysterious **Trojan asteroids**.

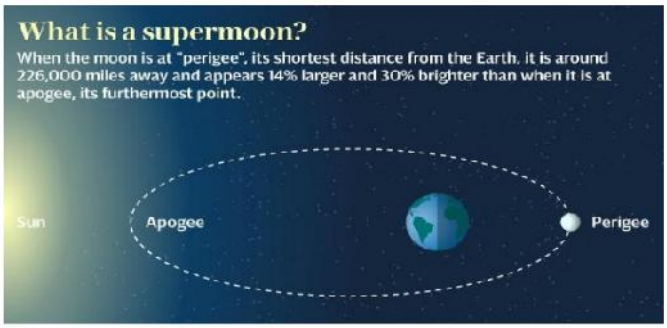
Lucy, a robotic spacecraft, is scheduled for October 2021 launch.

Trojans are remnants of the primordial material that formed the outer planets they hold vital clues to deciphering the history of the solar system.

NASA's **'Europa Clipper'** set to launch in the 2020s will probe the habitability of Jupiter's icy moon Europa.

Supermoon is a phenomenon that occurs when a full moon coincides with the moon being the closest to the Earth on its orbit.

The technical name is the **perigee-syzygy** of the Earth–Moon–Sun system.



NAVIC also known as the **Indian Regional Navigation Satellite System (IRNSS)** consists of seven satellites in orbit i.e, **three Geostationary Earth Orbit (GEO)** satellites and **four Geosynchronous orbit (GCO)** satellites.

IRNSS is similar to the GPS (Global Positioning System) of the US, Glonass of Russia and Galileo of Europe as well as China's Beidou.

While GPS and Glonass are fully functional global systems, the Chinese and the Japanese systems offer regional coverage and Europe's Galileo is yet to be operational.

68. **Ans: a**

Meteoroid: A small particle from a comet or asteroid orbiting the Sun.

Meteor: The light phenomena which results when a meteoroid enters the Earth's atmosphere and vaporizes a shooting star.

Meteorite: A meteoroid that survives its passage through the Earth's atmosphere and lands upon the Earth's surface.

An **Einstein ring** is a distorted image of a very distant galaxy, which is termed "the source".

The distortion is produced by the bending of the light rays from the source due to a massive galaxy, termed "the lens", lying between it and the observer.

When the two galaxies are exactly aligned, the image of the more distant galaxy is converted into an almost perfect circle which surrounds the lens galaxy.

The irregularities in the circle are due to asymmetries in the source galaxy.

These phenomena, predicted by Einstein's theory of General Relativity, are quite rare but scientifically interesting.

TeamIndus, a **Bengaluru-based private aerospace company**, is all set to send a spacecraft to the moon in December, 2017, aboard an Indian Space Research Organisation (ISRO) rocket.

69. **Ans: b**

Cassini–Huygens is an unmanned spacecraft sent to the planet Saturn. Cassini is the fourth space probe to visit Saturn and the first to enter orbit. Its design includes a Saturn orbiter and a lander for the moon Titan.

Tiangong 2 is a space station launched by China recently. It is part of China's plan to establish a manned space station around 2022.

Scientists have detected the presence of water on **Psyche**, the **largest metallic asteroid in our solar system** and the target of a proposed NASA mission.

Psyche is about 300 kilometres across and is made of **almost pure nickel-iron metal.**

Located in the asteroid belt, it is thought to be the remnant core of a budding planet that was mostly destroyed by impacts billions of years ago.

70. **Ans: d**

Test 10 Key and Explanation

71. **Ans: a**

Dihang Dibang biosphere reserve is located in Arunachal Pradesh, whereas cold desert biosphere reserve is located in Himachal Pradesh, not the Jammu and Kashmir. Cold desert Biosphere reserve is area around pin valley, and covering chandratal and Sarchu & Kibber wildlife sanctuary.

72. **Ans: a**

Cadmium pollution causes Itai-Itai and lead pollution causes Displexia

73. **Ans: b**

The three types of UV radiation are classified according to their wavelength. They differ in their biological activity and the extent to which they can penetrate the skin. The shorter the wavelength, the more harmful the UV radiation. However, shorter wavelength UV radiation is less able to penetrate the skin.

- Short-wavelength UVC is the most damaging type of UV radiation. However, it is completely filtered by the atmosphere and does not reach the earth's surface.
- Medium-wavelength UVB is very biologically active but cannot penetrate beyond the superficial skin layers. It is responsible for delayed tanning and burning in addition to these short-term effects it enhances skin ageing and significantly promotes the development of skin cancer. Most solar UVB is filtered by the atmosphere.
- The relatively long-wavelength UVA accounts for approximately 95 per cent of the UV radiation reaching the Earth's surface. It can penetrate into the deeper layers of the skin and is responsible for the immediate tanning effect. Furthermore, it also contributes to skin ageing and wrinkling. For a long time it was thought that UVA could not cause any lasting damage. Recent studies strongly suggest that it may also enhance the development of skin cancers.

74. **Ans: a**

Atmospheric gases like carbon dioxide, methane, nitrous oxide, water vapour, and Chlorofluorocarbons are capable of trapping the out-going infrared radiation from the earth.

75. **Ans: c**

Organism is the basic unit of study in an ecosystem

76. **Ans: a**

Most aerosols are cooling — that is to say, they reflect the sun's energy back out into space. There is only one aerosol — **soot, also known as black carbon** — that actually contributes to global warming.

Just think like this, Nitrogen containing aerosols cools atmosphere, while carbon containing aerosols contribute to global warming. The trick of the question is the **key word 'All'.**

77. **Ans: c**

Sea grasses are found in shallow salty and brackish waters in many parts of the world, from the tropics to the Arctic Circle. Sea grasses are so-named because most species have long green, grass-like leaves.

They are often confused with seaweeds, but are actually more closely related to the flowering plants that you see on land. Sea grasses have roots, stems and leaves, and **produce flowers and seeds**.

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Sea grasses can form dense underwater meadows, some of which are **large enough to be seen from space**.

Sea grasses provide shelter and food to an incredibly diverse community of animals, from tiny invertebrates to large fish, crabs, turtles, marine mammals and birds.

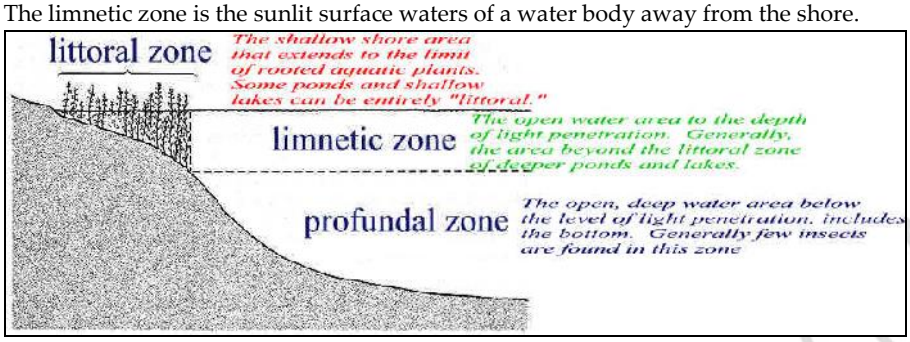
Sea grasses provide many important services to people as well, but many sea grasses meadows have been lost because of human activities.

They are flowering plants and are the only group of higher plants adapted to life in the salt water. Sea-grass beds help in reducing wave and current energy and filter suspended sediments in water.

78. **Ans: b**

They are found in abundance in limnetic zone that is **open water zone** beyond rooted vegetation.

The limnetic zone is the sunlit surface waters of a water body away from the shore.



79. **Ans: c**

The **green** gross domestic product (**green GDP** or GGDP) is an index of economic growth with the environmental consequences of that growth factored into a country's **conventional GDP**.

Ecosystem services and resources such as mineral deposits, soil nutrients, and fossil fuels are capital assets but traditional national accounts do not include measures of the depletion of these resources. This means a country could cut its forests and deplete its fisheries, and this would show only as a positive gain in GDP (gross national product) without registering the corresponding decline in assets (wealth). This is where Green GDP comes into play. The green GDP is the measurement of GDP growth with the environmental consequences of that growth factored in.

Green GDP is conventional gross domestic product figures adjusted for the environmental costs of economic activities. It's a measure of how a country is prepared for sustainable economic development.

Green GDP Means
1 monetization of the loss of biodiversity
2 accounting for costs caused by climate change
3 substracting resource depletion, environmental degradation from traditional GDP figures
4 helping to manage both economies as well as resources
Green GDP Does not mean
1 Monetary value of the Forests etc.
2 Growth of Green Investments.

80. **Ans: b**

The forest of the region is Moist Deciduous, Montane Forest, Grasslands and sholas.

3 wildlife sanctuaries in the region include - Shenduruny, Peppara, Neyyar.

81. **Ans: b**

The Bondas are an ancient tribe of people numbering approximately 12,000 (2011 census) who live in the isolated hill regions of the Malkangiri district of southwestern Odisha, India, near the junction of the three states of Odisha, Chhattisgarh, and Andhra Pradesh. They are considered as scheduled tribes and are divided into two groups- Upper Bonda and Lower Bonda.

Modern civilization has not changed the Bondas. They still maintain their primitive social customs and tradition.

Bondas have a unique marriage tradition showing **matriarchal dominance**. Older women marry much younger men.

Remo, the Bonda language belongs to the Mundari branch of the Austro-Asiatic language family.

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Test 10 Key and Explanation

82. **Ans: d**

In order to safeguard and support the world's agri-cultural heritage systems, in 2002 FAO started an initiative for identification and the dynamic conservation of Globally Important Agricultural Heritage systems (GIAHS).

This GIAHS Initiative which is now GIAHS Programme promotes public understanding, awareness, national and international recognition of Agricultural Heritage systems. Looking to safeguard the social, cultural, economic and environmental goods and services these provide to family farmers, small holders, indigenous peoples and local communities, the programme fosters an integrated approach combining sustainable agriculture and rural development.

Saffron Heritage of Kashmir, **Koraput Traditional Agriculture**, **Kuttanad below Sea Level Farming** System are the 3 GIAHS sites in India

83. **Ans: d**

Pradhan Mantri Matritva Vandana Yojana (PMMVY), previously Indira Gandhi Matritva Sahyog Yojana (IGMSY), is a maternity benefit program run by the government of India. It is a **conditional cash transfer scheme** for pregnant and lactating women of 19 years of age or above for first two live births.

It provides a partial wage compensation to women for wage-loss during childbirth and childcare and to provide conditions for safe delivery and good nutrition and feeding practices.

In 2013, the scheme was brought under the National Food Security Act, 2013 to implement the provision of cash maternity benefit of ₹6,000 stated in the Act.

It is implemented by the Ministry of Women and Child Development.

It is Centrally Sponsored Scheme under which the cost sharing ratio between the Centre and the States & UTs with Legislature is 60:40, for North-Eastern States & three Himalayan States, it is 90:10 and 100% Central assistance for Union Territories without Legislature.

84. **Ans: b**

PENCIL (Platform for Effective Enforcement for No Child Labour) — an electronic platform for no child labour in the country is being **developed by the Labour Ministry**. PENCIL portal has five components — Child Tracking System, Complaint Corner, State Government, National Child Labour Project and Convergence.

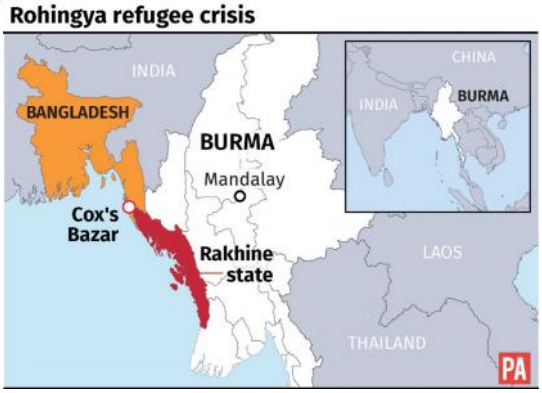
85. **Ans: d**

Rakhine State occupies the western coastline of Myanmar up to the border with Bangladesh and corresponds to the historical Kingdom of Arakan.

The history of Rakhine is divided into 7 parts - the independent kingdoms of Dhanyawadi, Waithali, Lemro, Mrauk U, Burmese occupation from 1784 to 1826, British rule from 1826 to 1948 and as a part of independent Burma from 1948.

In 1948, Rakhine (Arakan) became a division within the Union of Burma.

Shortly after, violence broke out along religious lines between Buddhists and Muslims. Later there were calls for secession by the Rakhine (Arakan), but such attempts were subdued. In 1974, the Ne Win government's new constitution granted Rakhine (Arakan) Division "state" status but the gesture was largely seen as meaningless since the military junta held power in the country and in Rakhine (Arakan). In 1989, the name of Arakan State was changed to "Rakhine" by the military junta.



86. **Ans: c**

The Asia-Africa Growth Corridor or AAGC is a joint initiative of **India and Japan**.

The basic endeavor of this project is to rediscover ancient sea routes and creating new sea corridors which link African continent with India and countries of South Asia and South-East Asia.

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The project was planned by India and Japan with the active support of the **African Development Bank** and several African countries including South Africa who wish **to reduce their dependence on Beijing**. The idea is to "create a 'free and open Indo-Pacific region' by rediscovering ancient sea-routes and creating new sea corridors" by integrating the economies of South, Southeast, and East Asia with Oceania and Africa.

It primarily focuses on Development Cooperation Projects, Quality Infrastructure and Institutional Connectivity, Enhancing Skills, and People-to-People Partnership.

87. **Ans: d**

Central Adoption Resource Authority (CARA) is **a statutory body** of **Ministry of Women & Child Development,** Government of India.

It functions as the nodal body for adoption of Indian children and is mandated to monitor and **regulate in-country and inter-country adoptions**.

CARA is designated as the Central Authority to deal with inter-country adoptions in accordance with the provisions of the Hague Convention on Inter-country Adoption, 1993, ratified by Government of India in 2003.

The Hague Convention on Protection of Children and Co-operation in Respect of Inter country Adoption (or **Hague Adoption Convention**) is drafted in 1993 and **entered into force on 1 May 1995.**

CARA primarily deals with adoption of orphan, abandoned and surrendered children through its associated /recognised adoption agencies.

88. **Ans: c**

It was established under Agricultural and Processed Food Products Export Development Authority Act, 1985.

It functions under **Ministry of Commerce and Industry**.

APEDA has developed an android app named **Farmer Connect**. APEDA has developed this mobile app to allow farmers to apply on-line to facilitate their farm registration, tracking the status of application & approvals by State Government and Lab sampling by authorized Laboratories. This mobile app initiative is expected to increase the accessibility and reach of the Traceability software system (Hortinet) among the farmers and other stakeholders.

APEDA has taken up a programme for the promotion of north eastern products in Bangladesh and Myanmar.

89. **Ans: b**

The Astra is an active radar homing beyond-visual-range air-to-air missile (BVRAAM) developed by the Defence Research and Development Organisation (DRDO), India. Astra is designed to be capable of engaging targets at varying range and altitudes allowing for engagement of both short-range targets (up to 20 km) and long-range targets (up to 80–110 km) using alternative propulsion modes. Except for a failure in one test, the missile has successfully completed all its tests.

The Integrated Guided Missile Development Programme (IGMDP) was conceived by renowned scientist Dr. A P J Abdul Kalam to enable India attain self-sufficiency in the field of missile technology. Dr. Kalam, the then Director of Defence Research & Development Laboratory (DRDL), headed a Missile Study Team to weigh the feasibility of the programme.

Keeping in mind the requirements of various types of missiles by the defence forces, the team recommended development of five missile systems. They are

- Short-range surface-to-surface ballistic missile **Prithvi**
- Intermediate-range surface-to-surface ballistic missile **Agni**
- Short-range low-level surface-to-air missile **Trishul**
- Medium-range surface-to-air missile **Akash**
- Third generation anti-tank missile **Nag**

90. **Ans: a**

With an aim to provide electricity to over four crore families in rural and urban areas by December 2018, Prime Minister has launched **Pradhan Mantri Sahaj Bijli Har Ghar Yojana 'Saubhagya'**.

The government will use **Socio Economic and Caste Census (SECC) 2011** data to identify the beneficiaries for free electricity connections.

Un-electrified households not covered under the SECC data would also be provided electricity connections under the scheme on payment of Rs 500 which will be recovered by DISCOMs in 10 installments through electricity bill.

The Rural Electrification Corporation Limited will remain the nodal agency for the operationalisation of the scheme throughout the country.

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For those household where the national electricity grid can't reach, households will be provided with solar power packs along with battery banks. Remote hamlets will be powered with solar panels along with five LED lamps, a DC fan, and a plug point along with repair and maintenance for five years.

There will be no subsidy component for monthly electricity consumption and the Gram Panchayat and public institutions in the rural areas will be authorised to carry out billing and collection tasks which have been pain points for the discoms.

91. **Ans: a**

Konkani is the **official language of the state of Goa** and it is one of 22 scheduled languages mentioned in the 8th schedule of the Constitution.

It is spoken all along the Konkan and Malabar coasts. Konkani speakers are an influential minority in Karnataka and Kerala too.

One of the first firm evidence of this language was through the verses of Marathi poet Namdev (1270-1350).

Printing operations began in Goa in 1556 with the first printing press being established at the Jesuit Saint Paul's College in Old Goa.

Konkani is the only Indian language that is written in five different scripts – **Roman, Devanagri, Kannada, Persian Arabic and Malayalam.**

Also note that there are three orthographical systems used to write the **Kashmiri language:** the **Sharada** script (used rarely today), the **Devanagari** script and the **Perso-Arabic** script.

Punjabi, spoken in Punjab region of Indian sub-continent is written in two different scripts: **Gurmukhi** and **Shahmukhi.**

92. **Ans: d**

Scientists have traced the source of a re-emerging disease, **Kyasanur Forest Disease (KFD)** or "**monkey fever**", to **cashew plantations in Goa**.

It is caused by Kyasanur forest disease virus (KFDV), a member of the virus family Flaviviridae, which also causes yellow fever and dengue.

The **Hard ticks** (Hemaphysalis spinigera) are the reservoir of KFDV. These ticks are known to thrive in the Western Ghats and transmit the disease to humans.

Symptoms include high fever with headache, followed by hemorrhagic symptoms such as bleeding from the nose, throat and gums, Gastrointestinal bleeding, Muscle stiffness, tremors, absent reflexes and mental disturbances.

93. **Ans: a**

Al-Nagah is with Oman

94. **Ans: b**

Global Financial Development Report is a series of annual reports by **World Bank** on key developments in financial world.

The latest in the series "Global Financial Development Report 2017-18: Bankers without Borders" was released in the second week of November 2017.

95. **Ans: c**

Priority Sector refers to those sectors of the economy which may not get timely and adequate credit.

Priority Sector Lending is an important role given by the Reserve Bank of India (RBI) to the banks for providing a specified portion of the bank lending to few specific sectors.

This is essentially meant for an all-round development of the economy as opposed to focusing only on the financial sector.

As per the RBI circular released in 2016, there are eight broad categories of the Priority Sector Lending. They are:

(1) Agriculture
(2) Micro, Small and Medium Enterprises
(3) Export Credit
(4) Education
(5) Housing
(6) Social Infrastructure
(7) Renewable Energy
(8) Others.

The others category includes personal loans to weaker section, loans to distressed persons, loans to state sponsored organisations for SC/ST.

96. **Ans: c**

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The primary objective is to collectively work for efficient exploitation of solar energy to reduce dependence on fossil based fuels. This initiative was proposed by our Prime Minister of India first during his speech at Wembley Stadium, London.

This initiative was launched at the India Africa Summit and a meeting was held among them before the conclave of 2015 **United Nations Climate Change Conference in Paris on November 2015.**

This is a treaty-based inter-governmental organization. The alliance will take the shape of an international treaty once its rules are worked out.

The Headquarters is in India with its Interim Secretariat being setup in **Gurgaon**.

The agreement will become operational after at least 15 countries have ratified it. The framework agreement says that the members of ISA would take coordinated actions through programmes and activities that will aggregate the demands for solar finance, solar technologies, innovation, research and development, and capacity building. The ISA aims to develop cost-efficient solar technologies and applications.

97. **Ans: c**

Recently RBI listed HDFC as Domestic – Systematically Important Bank (DSIB).

DSIBs are also referred to as "Too Big To Fail" (TBTF) because of their size, cross-jurisdictional activities, complexity and lack of substitute and interconnection.

Banks whose assets cross 2% of the GDP are considered DSIBs. If these banks fail, they can have a disruptive effect on the economy.

D-SIBs are categorised under five buckets. According to these buckets the banks have to keep aside the Additional Common Equity Tier 1 as a percentage of Risk Weighted Assets (RWAs). At present State Bank of India is placed under Bucket 3, mandating to maintain an additional 0.45% of RWAs from the start of fiscal year 2018 which will rise to 0.6% from April 2019. HDFC and ICICI are under Bucket 1 according to which they have to maintain 0.15% from April 2018 which will rise to 0.2% by next fiscal year.

D-SIBs are mandated under special provisions and are closely monitored by the central bank to ensure their better functioning and prevent the indulgence of such banks in any grey areas such as money laundering etc.

The Systematically Important Banks domestically are identified by Central Banks of a country and **globally by BASEL committee** on banking supervision.

98. **Ans: c**

Alang is a census town in Bhavnagar district in the Indian state of **Gujarat.**

In the past three decades, its beaches have become a major worldwide centre for ship breaking.

The longest ship ever built, Seawise Giant, was sailed to and beached here for demolition in December 2009.

Alang became the centre of an international controversy when the Supreme Court of India temporarily prohibited the French aircraft carrier Clemenceau from entering the port in January 2006. Attempts to reach a settlement were unsuccessful, and Clemenceau was sent to a ship-breaking harbor in England instead.

99. **Ans: c**

RCEP is between the **ten** member states of the Association of Southeast Asian Nations (ASEAN) (Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos (Lao People's Democratic Republic), Malaysia, the Philippines, Singapore, Thailand, Vietnam) and the **six** states with which ASEAN has existing FTAs (Australia, China, India, Japan, South Korea and New Zealand).

100. **Ans: c**

Launched in 1997, the Cassini mission — a cooperation between NASA, the European Space Agency and the Italian Space Agency — has sent back thousands of stunning images and made numerous discoveries about the ringed planet and its moons.

Cassini–Huygens is an unmanned spacecraft sent to the planet Saturn.

Cassini is the fourth space probe to visit Saturn and the first to enter orbit.

Its design includes a Saturn orbiter and a lander for the moon Titan. The lander, called Huygens, landed on Titan in 2005. The spacecraft was launched on October 15, 1997. This was the first landing ever accomplished in the outer Solar System.

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