

CDS I 2020: General Knowledge Solution

1. Ans. A.

The Government of India has recently constituted a civilian award in the name of Sardar Vallabhbhai Patel in the field of contribution to the Unity and integrity of India. It was to be given in a very rare and highly deserving case. It consists of a medal and a citation. It does not have any monetary rewards associated with it. It can be given only 3 three times in a year it was announced on the birth anniversary of Sardar Patel on October 31st which is declared as the National Unity Day.

2. Ans. C.

BRICS is an acronym for Brazil, Russia, India, China, and South Africa. It was formed in 2009. The Summit was going to be held in Saint Petersburg in mid-July 2020 in Russia.

3. Ans. B.

World Tourism Day is celebrated on 27 September every year. It was hosted by India in 2019. The theme of the event was tourism and job: A better future for all. The main aim of this day is to create awareness on the importance of tourism within the international community and to show how it affects the social, cultural political, and economic values. The color of the World Tourism day is blue.

4. Ans. B.

A. Perfect competition: Many producers selling a similar product. It implies that the number of firms is so large that they are enough so that contribution to the total output of the industry by any firm individually is negligible. No single firm is in a position to influence the price in the market on its own by changing its own output.

The price remains constant. The buyers treat products of all the firms the same i.e, homogeneously. No firm can charge a higher price, because then the price will stop purchasing it from him, and may shift to another seller. The market price remains the same for all the firms.

B. Monopoly: Only 1 producer selling 1 commodity.

A monopoly is a form of a market that has a single seller selling a unique product. This eliminates the difference between firm and industry. The single producer has the complete right to influence the price of his commodity by influencing the supply of the same. This implies that the firm is a price maker. The Monopoly has no close substitutes. So there is

an absence of competition from new or existing companies. For example, there is no close substitute for Railways provided by the government of the country. This allows the producer to discriminate in terms of price. He can charge different prices for his product to different consumers.

C. Monopolistic Competition: Many producers selling differentiated products. Product differentiation refers to the differentiation made in products on the basis of size, color, brand, etc. It exists in monopolistic competition. A monopolistic market has a large number of producers. They produce a product that is slightly different from the others. The producer tries to influence the customers to purchase their own products. The demand curve is negatively sloped. He can sell a higher quantity at a lower price or a lower quantity at a higher price. There is very little chance of price discrimination in the sales of goods in the market due to product differentiation.

D. Oligopoly: Few producers selling similar or almost similar products. The oligopolistic market has firms that are able to influence the price. If a firm reduces its price, the rival firms will also do the same. If a firm raises its prices, the rival firms will not do so. This will lead to a loss of customers.

So, price rigidity exists in the oligopoly form of the market.

5. Ans. A. A. A. A.

6. Ans. B.

Census refers to the procedure of acquiring and recording information about the members of a country in a systematic procedure. It is taken every 10 years in India. The term migrant means a person who moves from one place to other especially in search of livelihood. Internal migration or domestic migration refers to the migration of people from one place to another but within the geographical territory of the country. According to the census 2011, 35% of the internal migrants are now set in a place different from the previous residence.

7. Ans. A.

It is a Ministry of the Indian government. It is currently held by Prakash Javadekar. It has the responsibility of planning, promoting, coordinating the implementation of Environment and Forest related programs in the country. It also monitors the flora and fauna of India along with its conservation. Other important activities include control of pollution, deforestation, and land degradation mitigation. It also has the responsibility of maintaining the national parks of India. It is controlled by the Indian forest services.

8. Ans. C.

Ayush is an acronym of the Medical Systems practiced in India search as Ayurveda, yoga, naturopathy, Unani, and homeopathy. These systems are based on different medical philosophies and represent a way of living which can help in the prevention of diseases and the promotion of health. It is headed by Shripad Yesso Naik in India. It has many Health Care programs in the rural population such as the Ayushman Bharat Yojana. It has also established many professional research institutions and academic facilities such as the National Institute of Ayurved, National Institute of Unani medicine, North Eastern Institute of folk medicine, etc. It also has two semi-autonomous regulatory bodies such as the Central Council of Indian Medicine and the Central Council of Homeopathy.

As of March 2015, there are 8 lakh Ayush practitioners over 90% of whom have tractors Ayurved or homeopathy. the latest addition to the AYUSH group of health care systems is Sowa Rigpa.

9. Ans. C.

Department of industrial policy and promotion was renamed as the Department for the promotion of industry and industrial internal trade in 2019. It is administered by the Ministry of Commerce and industry. Its main function is to formulate and implement growth strategies for the industrial sector along with achieving National goals and social-economic objectives. Intellectual Property Rights means providing property right through patents, copyrights, and trademarks. The department formulates the policy related to IPR in the field of industrial designs, patents and trademarks, and geographical indication of goods. It also rules under the Administration of Industries Act of 1951.

10. Ans. B.

Election Commission: This is a permanent and independent body established by the constitution of India to ensure free and fair elections in the country. It has the responsibility of conducting the Lok Sabha elections. The president appoints the chief election commissioner and other Election Commissioner. He can also appoint the regional commissioner to assist the commission. The duration and tenure of the commission is decided by the president.

Planning Commission: It helps the government of India to formulate India's five-year plans. It reports directly to the Prime Minister of the country. It was established in 1950 with Jawaharlal Nehru as a chairman. The Prime Minister is the chairman of the planning commission which works with the guidance of the National Development Council. The Deputy Chairman is responsible for the formulation and submission of the draft

five-year plan to the Central Cabinet. Some of the central ministers are working as part-time members. The ex-officio members include the finance minister and the planning minister.

Finance Commission: It is a constitutional body which has the responsibility of allocating finance between the central and the state government. It was formed in 1951. The President of India constitutes the finance commission every five years. It constitutes a chairman and four other members.

Investment Commission: It was formed by the government of India in December 2004. It was set up in the ministry of finance. It is a three-member Commission with a Chairman and two members.

11. Ans. D.

The National Water Academy has the responsibility of streaming the water resources personnel. It addresses the training needs of the water resource engineering of Central and state agencies in terms of water resource projects. It includes planning, design, construction, evaluation, operation, and monitoring. Its located at Khadakwasla.

12. Ans. A.

The Black Sea is a water body and marginal sea of the Atlantic Ocean. It lies between Eastern Europe, the Caucasus, and Western Asia. There are many rivers that flow into the Black Sea. These are the Danube, Dnieper, Southern Bug, Dniester, Don, and Rioni. It is 1,68,500 sqm with a depth of 7257 feet and a volume of 5,47,000 km cube. It eventually drains in the mediterranean sea. It has more than 10 Islands.

Volga river is the longest river in Europe with a length of 3530 km. It flows through the western part of the country. It freezes over 3 months every year. It has some of the biggest reservoirs in the world.

13. Ans. A.

The provisions of the Constitution of India pertaining to the institution of Panchayat do not apply to Meghalaya. **Part IX of the Constitution** of India deals with the Panchayati Raj system in the rural areas of the country. It includes terms, composition, selection procedure, duration, etc. Apart from Meghalaya, it also is not applied to the states of Nagaland and Mizoram.

14. Ans. B.

The 11th Schedule of the Constitution of India distributes powers between the State Legislatures and the Panchayat. According to this amendment, the state has to organize the village Panchayat as well as give the required powers to help them to function as self-government. It is compulsory for the state to accept this system. However, the election process in the Panchayati Raj Institutions will be independently held of the state government will.

This act has two parts:

- a. Compulsory provision which must be added to state laws, which include creating a new Panchayati Raj system.
- b. Voluntary provision which is at the discretion of the state government

15. Ans. B.

The Panchayat system is a process that helps to encourage people to participate in their own government. It is a unit of local administration. The seats are filled by the people chosen by direct election from territorial constituencies in the panchayat area. The electorate is called Gram Sabha consisting of people registered in the electoral rolls relating to the territory within the panchayat area.

The panchayat system has two other levels. One is the block level called the Panchayat Samiti which has many gram panchayats under it. Another is the district level called the Zilla Parishad that helps to make development plans at the district level. Each Panchayat has its own laws.

The state legislature has the conferred upon the panchayat to help them to function in a better way. These powers include preparing a plan for the economic development and Social Justice, implementation of plans, and the matters listed in the eleventh schedule.

16. Ans. C.

Hunter was a Commission formed by the then Governor-General of India on 3rd February 1882. It was under the leadership of Sir William Hunter, who was an Indian Civil Service officer and a member of the Executive Council. It was mainly formed to consider the different aspects of education, especially primary education.

The main recommendations of the Hunter Commission on given below:

- a. Primary schools must be set up in backward districts.

- b. Preference must be given to the literate candidates for government jobs in the lower level.
- c. District and Municipal board will be given the responsibility of managing primary education.
- d. Secondary School to be established by a private party and the funding was to be done by the government.
- e. The syllabus of the secondary school was to be revised by incorporating academic and vocational courses.
- f. Missionary schools very discouraged.
- g. Special focus on the education of girls and women.

This Commission was criticized on various points given below:

- a. The commission focused only on the schools following the systems laid down by the British government.
- b. The traditional schools did not have any source of funding and enrollment.
- c. The government schools were overburdened.

17. Ans. A.

The events that led to the merger of Hyderabad with the Union of India are:

1. The ruler of Hyderabad, Nizam had signed a standstill agreement with the government of India for one year.
2. The people of Hyderabad had started a movement against the rule of Nizam.
3. Women also actively participated in it.
4. Nizam was an oppressive ruler and the people suffered under his ruling.
5. Nizam unleashed a paramilitary force called Razakars to target non-Muslims.
6. The Central government ordered the army to tackle the situation.

7. After a few days of fighting, Nizam surrendered. This led to the merger of Hyderabad with the Union of India

18. Ans. A.

Hridayanath Kunzru formed the organisation called Seva Samiti in Allahabad in 1949. He was a member of the servants of Indian society. The main aim of this organisation was to organize social services during natural disasters and epidemics for the promotion of education, sanitation, upliftment of depressed classes, as3 formation of criminal, and promoting the spirit of cooperation among all.

G. K. Gokhale was an Indian social reformer who founded an organisation to work for the relief of the underprivileged of India.

T. B. Sapru was a member of the governor-general executive Council, he participated in the round table conferences in London on the joint table conferences as well. He worked extensively for the promotion of peace between the different religious groups and helped them to consolidate their differences.

19. Ans. C.

The Government of India Act 1935 was formed due to the increasing demand for constitutional reforms by the Indian leaders. This act was based on the Simon Commission, recommendations on the round table conferences, report of the joint table committee, and the white paper published by the British government. This act had many provisions related to the division of powers, the Indian Council, and the reorganization. It also advocated the setting up of a federal court. A Federal Court was established in Delhi to resolve the disputes between states and also between the centre and the states. It was to have 1 chief justice and not more than 6 judges.

20. Ans. A.

The maiden trilateral naval exercise involving India, Singapore, and Thailand was held at Port Blair. The five-day-long exercise was aimed at improving the maritime interrelationship among the three countries and to contribute to improving the overall maritime security in the regions. It would improve mutual confidence among them and develop a common understanding of procedures. It also involved sports fixtures, professional exchanges, and cross deck familiarisation visits. Many activities were organized related to air and service operations involving both protection measures and communication skills. It would help to learn from the best practices of the other countries.

21. Ans. D.

Rustom 2 was an unmanned aerial vehicle that is used by the Indian armed forces to carry out surveillance. It is a medium altitude and long endurance vehicle. It was designed by the defense research and development organisation for the three services of the Indian Navy, Indian Army, and Indian Air Force. It crashed in the Chitradurga District of Karnataka in an agricultural field at 6 am. The first trial was being conducted. However, it failed and fell in the open field. People were curious to know what it was and gathered at the spot. No injuries were reported.

22. Ans. B.

The Vijaynagar Advanced Landing Ground of the Indian Air Force, which was reopened recently, is located in Arunachal Pradesh. It was first opened in 1962 by the Indian Airforce. It started its operation with Dakota and Otter aircraft. It was the year that the India China war took place. It was operational until 2016. It was then declared unfit for the fixed-wing aircraft such as transport planes. Its runway was damaged. Only military helicopters could land there. It was as difficult to repair it due to the lack of road connectivity which led to a delay in supply to that point. Now it has been reopened completely with the landing of AN-32 aircraft.

23. Ans. C.

Hilsa a species of fish related to Herring. It is a very popular food in the Indian subcontinent. It is the national fish of Bangladesh and the state symbol of West Bengal and Tripura. It contributes to 12% of total fish production and 1.15% of GDP in Bangladesh. On 6th August 2017, the Department of patents, designs, and trademarks under the Ministry of Industry of Bangladesh, the recognition of Hilsa was declared as the product of Bangladesh. 75% of the total produce Hilsa in the world is produced in Bangladesh. It is a marine water fish that is 60 cm in length and 3 kg in weight. It is found in the river in Bangladesh, Myanmar, Pakistan, and the Persian Gulf.

24. Ans. B.

The Chairman of the Economic Advisory Council to the Prime Minister (EAC-PM) is Bibek Debroy. It is nonconstitutional. nonpermanent and independent body. It advises the prime minister on economic issues such as inflation, market prices, foreign exchange, etc. It highlights the concerning issues from a neutral viewpoint. Currently, it was revived on 25 September 2017. It is headed by a chairman and other prominent economists as members. It has 3 main functions:

- a. Analyze any economic issue and give the appropriate advice.
- b. Fulfilling any task assigned to him by the prime minister.
- c. Submitting a periodical report related to the macroeconomic performance of the country.

25. Ans. A.

The power of the Supreme Court to decide in the case of a dispute between two or more States is called Original Jurisdiction. It has been given to the High Courts of Kolkata, Mumbai, and Chennai in criminal and civil cases arising in these cities. They have an exclusive right to hear civil cases which involve a property worth over Rs 20000. They have the power to issue writs to enforce fundamental rights. It is also related to cases of marriage, divorce, will, cases related to State Legislative Assembly, or the ones transferred from another court.

26. Ans. A.

Dr. B.R. Ambedkar was the Chairman of the Drafting Committee set up to frame the Indian constitution. While concluding a debate in the Constituent Assembly on 26th January 1950 he said that India was going to enter a life of contradictions. He said "In politics, we will have equality and in social and economic life we will have inequality. In politics, we will be recognizing the principle of one man one vote and one vote one value. In our social and economic life, we shall, by reason of our social and economic structure, continue to deny the principle of one man one value. How long shall we continue to live this life of contradictions? How long shall we continue to deny equality in our social and economic life? If we continue to deny it for long, we will do so only by putting our political democracy in peril. We must remove this contradiction at the earliest possible moment or else those who suffer from inequality will blow up the structure of political democracy which is Assembly has to laboriously built up."

27. Ans. D.

The First Delimitation Commission in India was constituted in 1952. It is also called a Boundary Commission. It is set up to fix limitations or boundaries in a country or a state with a legislative body. It has been constituted 4 times – in 1952 under the Delimitation Commission Act, 1952, in 1963 under Delimitation Commission Act, 1962, in 1973 under Delimitation Act, 1972 and in 2002 under Delimitation Act, 2002. The action imposed by it cannot be questioned in any court. They come into force on a date advised by the president. The copies of it are given to different ministers but there is no room for any change in it.

28. Ans. D.

Ministry of Heavy Industries and Public Enterprises is an agency of the government of India that administers 48 public sector enterprises. It consists of the Department of Heavy Industry and the Department of Public Enterprises. It helps to improve capacity utilization, increase profits, generate resources, and form strategies to become more efficient. The current Minister is Prakash Javadekar and the Minister of State is Arjun Ram Meghwal. It is responsible for many PSEs such as BBUNL, BHEL CCI, HEC, etc.

29. Ans. C.

Article 32 of the Indian Constitution is related to the remedies for the enforcement of the Fundamental Rights. The aggrieved person can get remedy from another court such as the Supreme Court or High Court if his issues aren't solved. It is called the soul of the Constitution. The Supreme court becomes the defender and guarantor of fundamental rights. The person can also approach the supreme court directly without any way of appeal. It can be invoked only to get a remedy related to fundamental rights and not any other legal right.

30. Ans. C.

Article 356 states that the president's rule can be imposed on any state of India due to the failure of the constitutional machinery. In other words, the state government will cease to function and the central government will directly administer the state. This is done if the President receives a report from the Governor of the state or is convinced that the situation of the state is such that the state government cannot function without the interference of the central government.

Article 352 is related to the proclamation of National Emergency by the President if he/she is convinced that security of the country or any of its part is in grave danger, whether by war, external aggression, or armed rebellion.

Article 359 authorizes the president to suspend the right to move to any court for the enforcement of Fundamental Rights during National Emergency

Article 359 gives the power to the Parliament to amend the Constitution and its procedure. This can be done by addition, repeal, or variation of any provision of the Constitution by the established procedure.

31. Ans. D.

Central Asia consists of 5 countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Most of these countries speak Turkic languages. Turkic language is considered to be part of Altaic language family. Hence, the correct option is D. Almost all of the languages spoken in Europe, Indian Sub-continent, Iranian plateau, etc. consist of Indo European languages. Some of the Indo-European language which are widely spoken in northern part of India are Hindi, Nepali, etc. Example of sino-tibetan languages are Mandarin, Burmese, etc. Austric language covers the geographical area of South East Asia, Madagascar, Pacific Islands etc.

32. Ans. D.

Urdu was the official language of J and K (when it was a state). It's widely spoken there. Koshur or Kashmiri is a widely spoken local language of people in Jammu and Kashmir. More than 50% can speak or understand the Koshur language. Gujari is spoken by the gujari tribes of JnK. Gujars and Bakkarwals are the popular tribes of Jammu and Kashmir. Monpa is a language which is spoken by Monpa people of Arunachal Pradesh. The Monpa are believed to be the only Nomadic tribe in North East India.

33. Ans. B.

A Mediterranean climate is that in which the summers are dry and warm. Winters observe rainfall (uniqueness of this climate). This climate is named after Mediterranean Sea which plays a very important role in controlling the weather of the adjacent areas. The Spanish mainland is bordered to the south and east almost entirely by the Mediterranean Sea. Hence, the central Spain also observes Mediterranean climate.

34. Ans. B.

Coal India Limited (CIL) the state owned coal mining corporate came into being in November 1975. With a modest production of 79 Million Tonnes (MTs) at the year of its inception CIL today is the single largest coal producer in the world and one of the largest corporate employer. Operating through 83 mining areas and spread over eight (8) provincial states of India. CIL has its headquarter at Kolkata.

Note: CIL is a Maharatna company - a privileged status conferred by Government of India to select state owned enterprises in order to empower them to expand their operations and emerge as global giants

35. Ans. D.

There are many specialized army training institutions, such as:

1) College of military engineering in Pune. 2) High altitude warfare school (HAWS) at Gulmarg, Jnk. 3) Counter Insurgency and Jungle Warfare School at vairengte, Mizoram. 4) Army war college at Mhow, Madhya Pradesh.

Note: Indian military academy is at Dehradun. Indian Air force academy is in Dundigal, Telangana. Indian naval academy is in Ezhimala, Kerala

36. Ans. C.

Portuguese were the first one to arrive in Africa as traders which eventually lead to European colonization of Africa. Their voyage to find India led them to reach Africa in the early 15th century. Rest of the European countries such as Spain Dutch etc. followed the path of Portuguese.

37. Ans. A.

Gandhi solar park is located at New York. It was inaugurated by Narendra Modi at UN headquarters, New York City. Along with it a special commemorative event was held to celebrate 150th anniversary of Mahatma Gandhi. A special UN postage stamp on Gandhi 150 years was also released.

38. Ans. A.

The global goalkeeper award is given by Bill and Melinda Gates foundation. This year the prime minister of India Mr Narendra Modi was conferred with this award he received this award for Swachh Bharat Abhiyan. Mr Modi dedicated this award to all the people of this country.

39. Ans. C.

India's entry to 92nd academy awards was Gully Boy. Gully boy I was not able to make it to top 10 films at the academy awards. Parasite a South Korean was awarded the best film. It became the first ever non English movie to win the best film award.

40. Ans. B.

Naropa festival also known as Kumbh of Himalayas began in Ladakh (September, 2019). Very famous Shondol dance is performed by many artists in this festival. Naropa festival usually takes place after 12 years in the Tibetan calendar. This festival celebrates the life of great Buddhist philosopher and scholar Naropa.

41. Ans. C.

Tiger triumph was the first ever tri service military exercise between India and USA. It was a nine day humanitarian assistance and disaster relief (HADR) exercise. The main aim was to develop synergy between both the military in HADR operations. It was a two phase exercise, one at Vishakhapatnam and second at Kakinada.

42. Ans. A.

Tattvabodhini Sabha: the founding member was Debendranath Tagore. The main aim was to reform Hinduism and Indian society. It worked as a sprinter group of Brahmo Samaj. It propagated the ideas of Ram Mohan Roy. They were also known as searching society or truth propagating.

43. Ans. B.

Lord Palmerston was the former prime minister of the Britain. He had dominated the foreign policy of Britain in mid-19th century. Lord Palmerston saw in Russian designs imminent peril to the security and tranquility of the Indian empire and goaded on the British government of India to take effective steps to checkmate them.

44. Ans. C.

The famous book "Siyar ul mutakherin" was written by Ghulam Husain. He had written specifically about Battle of Plassey in this book. Salabat Jung was the 4th Nizam of Hyderabad. Qasim Khan was a Mughal General and a nobleman at Jahangir and Shah Jahan's court. Raja Ram Mohan Roy also known as Father of Bengal Renaissance. He founded Brahmo Samaj and was a man of high intellect. He had written books like The Percepts of Jesus, Gift to Monotheists etc.

45. Ans. A.

Rohri hills (Sindh, Pakistan) are home to many archaeological sites and the abundant presence of limestone there proves the point that it had a factory and from here limestone was sent to various Harappan civilizations in Sindh. No nearby places to Sindh had the presence of limestone. Hence proves that A is correct.

46. Ans. A.

The Stone Age basically refers to a pre historic period where stones were used as tools to derive food from the nature. From early Stone Age to later Stone Age, humans kept on innovating in stone technology by using raw stones to using ivory in the later Stone Age. Hence statement I is correct.

Statement II & III can easily be eliminated by logical reasoning.

47. Ans. A.

A partial protection against double jeopardy is a Fundamental Right guaranteed under Article 20 (2) of the Constitution of India, which states, "No person shall be prosecuted and punished for the same offence more than once". This provision enshrines the concept of *autrefois convict*, that no one convicted of an offence can be tried or punished a second time. However it does not extend to *autrefois acquit*, and so if a person is acquitted of a crime, he can be retried. In India, protection against *autrefois acquit* is a statutory right, not a fundamental one. Such protection is provided by provisions of the Code of Criminal Procedure rather than by the Constitution.

48. Ans. B.

86th Amendment had a direct effect on FR, DPSP AND FD. 86th amendment act inserted a new article 21A, i.e. Right to Education. According to it "The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine". 86th amendment also substituted the article 45 with a new article 45, according to which "The State shall endeavor to provide early childhood care and education for all children until they complete the age of six years". 86th amendment also added another Fundamental Duty which is "who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years".

49. Ans. B.

Human development is basically based on six pillars equity, cooperation, sustainability, empowerment, security and productivity. Equity is how fair we are to others especially w.r.t. health care and education. We must be fair to both men and women with regard to this. Sustainability is nothing but our right to earn and run our livelihood. Productivity means the mass participation of people in income generation. Empowerment gives you choice to take your own decisions and influence development.

50. Ans. D.

Ayushman Bharat is a flagship scheme of Government of India to achieve the vision of Universal Health Coverage (UHC). The main aim is to meet Sustainable Development Goals and its underlining commitment, which is to "leave no one behind. Following are the main points of the scheme: 1) It will provide a cover of 5 lakh per family per year for medical treatment in every empanelled hospitals, both public and private. It is providing

cashless and paperless service to its beneficiaries at the point of service, i.e the hospital. 3) E-cards are being provided to the eligible beneficiaries based on the deprivation and occupational criteria of Socio-Economic Caste Census 2011. 4) There is no restriction on family size, age or gender. 5) All previous medical conditions are covered under the scheme. 6) It also covers 3 days of hospitalization and 15 days of post hospitalization, including diagnostic care and expenses on medicines

51. Ans. A.

An overseas Indian can vote only if he has not given up the citizenship of India. He has to first register himself as overseas voter in his hometown. He has to be physically present to vote in India. There is no provision to vote online in Indian election norms. To vote one has to personally visit a polling booth. Postal ballots and proxy voting are available only for government or armed forces personnel.

52. Ans. B.

Gelisols, Histosols, Spodosols and Vertisols are some of the different types of soils.

Spodosols, also known as coniferous forest soils, lack in humus and are less fertile. They are distributed in North America and Eurasia.

Vertisols are black in colour and during summers it develops cracks due to very dry weather. It contains more than 25% clay. Black Cotton soil is an example of it.

Gelisols are soils which are found in very cold climates. Very less vegetation is supported by it.

Histosols also known as peats are mainly composed of organic materials. Restricted drainage doesn't allow the remains of various plants and animals to decompose and hence act as carbon sink. Hence they have an ecological importance to us.

53. Ans. C.

Hadley cell is an atmospheric circulation in which the air rises near the equator due to intense heating and then it flows poleward and due to coriolis force it descends at the subtropical high pressure belt. Then again the descended air returns equatorward and forms the Hadley cell. This also leads to the creation of trade winds.

54. Ans. D.

In total, there are 3 states and 1 Union territory that share more than two international boundaries. 1) Ladakh shares international boundaries with Pakistan, Afghanistan and China. 2) West Bengal shares international boundaries with Nepal, Bhutan and Bangladesh. 3) Sikkim shares international boundaries with Nepal, Bhutan and China. 4) Arunachal Pradesh shares international boundaries with China, Bhutan and Myanmar.

55. Ans. B.

Kuroshio current of North Pacific Ocean is a warm current whereas California current is a cold current which flows in North Pacific Ocean. North Atlantic current is a warm current which flows in Northern Atlantic Ocean. Brazil current is a warm current which flows southward along the east coast of South America. Canary current is a cold current which flows through the Western coast of North Africa. Benguela current is a cold current which flows through Western coast of South Africa in Southern Atlantic Ocean. Falkland current is a cold current of southern Atlantic Ocean.

56. Ans. D.

Sclerophyllous plants are predominantly found in Chaparral Biomes. They are very prominent in Australia (Perth region, Sydney region and Adelaide region). These are also found in California Chaparral, Chile and Cape Town. Hence option D doesn't have any sclerophyllous vegetation.

57. Ans. D.

Slope angle, slope aspect and relative relief are the most important geomorphic factors that influence plants and animals distribution. Relative relief causes a sudden change in distribution of flora and fauna. Slope plays a vital role in deciding what type of vegetation would occur and what kind of animals would sustain there.

58. Ans. D.

Panchatantra is a compilation of interrelated animal fables in Sanskrit Language. The collection is attributed to Vishnusharma but the original author is unknown. Every Panchatantra story ends with a moral message. The moral messages always distinguish between right and wrong.

59. Ans. D.

Satavahana rulers had been using their mothers' names before their own names. Though very patriarchal in nature but they kept their mothers' names as sign of deep respect and honour for women. Gautamiputra

Satkarni, Vasishthiputra Puluavavi, Haritiputra Sakasena, Madhariputra Satakarni are some of the names of the rulers who had always used their mothers' name first.

60. Ans. A.

Kudappah kar was the name for one of the main seasons for Rice cultivation in Southern India.

Nancai, Puncai and Tottakal are land classifications. Nancai were the wet lands which were always irrigated by the natural streams. Puncai were the dry lands which were always dependent on seasonal rainfalls. Tottakal were the garden lands which were irrigated artificially by the local means such as wells, ponds, etc.

61. Ans. A.

The mansab or rank was designated by the dual representation - one by personal rank (known as zat) and the other by cavalry rank (known as sawar). 'Zat' rank was an indicator of the Mansabdar's position in the imperial hierarchy and also the salary of the Mansabdar whereas 'Sawar' rank indicated the number of horsemen the Mansabdar was required to maintain. Every mansabdar was given the rank of both zat and sawar and a mansabdar was paid rupees two per horse. To elaborate it further, a mansabdar was given rupees one thousand additional allowance if he had received the rank of five hundred sawars. Furthermore, the duties of a mansabdar were not in accordance with the mansab or position he held. For a mansabdar, higher rank did not necessarily mean a higher post. For instance, Raja Man Singh was not a minister and still enjoyed a higher rank than Abul Fazal, who was a minister in the court of Emperor.

Hierarchy within the Mansabdars:

* Amir: Those mansabdars whose rank was 1000 or below were called Amir.

* Great Amir: Those mansabdars above 1,000 were called Amir-al Kabir (Great Amir).

* Amir of Amirs: Some great Amirs whose ranks were above 5,000 were also given the title of Amir-al Umara (Amir of Amirs).

62. Ans. B.

Abu'l Hassan's ancient painting, Jahangir Embracing Shah Abbas (act. 1600-30) is a small composition filled with exquisite detail of opaque watercolor and ink on gold paper.

The scene portrays two men of royalty in very detailed and lavish clothing and jewellery embracing standing on top of a globe with a lamb and a lion at their feet. Encompassing them is a large golden halo that surrounds both of them being held up by two angel heads. In the centre of the halo, there is microscopic scripture that is illegible unless looked at with a magnifying glass. The painting is primarily made up of soft pastel reds, yellows, blues, and greens - the whole piece is alive with color. Framed by a red lavish border with gold branching patterns inside, the scene evokes feelings of peace and reconcile.

63. Ans. B.

The very first recipient of the Dada Saheb Phalke award was Devika Rani who received it in 1969 on the occasion of the 17th National Films Awards.

Recently, Amitabh Bachchan is selected for the 66th Dadasaheb Phalke Award in 2018 while in 2017 this award was given to Vinod Khanna.

* The recipients of the Dada Saheb Phalke award are honoured for their "outstanding contribution to the growth and development of Indian cinema.

* The winner of Phalke award is selected by the committee comprise of eminent personalities from the Indian film industry.

* The award comprises a Swarna Kamal (Golden Lotus) medallion, a shawl, and a cash prize of Rs. 10 Lakh.

* The Phalke Award is India's highest award in cinema. The Award is given annually during the National Film Awards ceremony by the Directorate of Film Festivals, an organisation established by the Ministry of Information and Broadcasting.

64. Ans. C.

Recently, the RBI (Reserve Bank of India) has imposed limitations on the Mumbai-based Punjab & Maharashtra Cooperative Bank (PMC Bank) from carrying out a majority of its routine business transactions for a time period of six months.

As per the RBI Directions, depositors will be allowed to withdraw a sum not exceeding ₹1,000 of the total balance in every savings bank account or current account or any other deposit account by whatever name recognized, subject to conditions stipulated in the RBI directions. The central bank notice even mentioned that the bank would also not be able to renew or grant any loans and advances.

RBI imposed restrictions on the bank under the Sub-section (1) of Section 35A of the Banking Regulation Act, 1949 read with Section 56 of this Act. However, RBI also clarified that the restrictions are not to be "construed as a cancellation of the banking license."

65. Ans. A.

Greta Thunberg is a Swedish environmental activist who has gained international recognition for promoting the view that humanity is facing an existential crisis arising from climate change. She is recognized for her work against climate change, a popular example of youth activism. She started protesting on 20th August 2018, outside of the Swedish parliament in Stockholm. Thunberg is also recognized for her straightforward and clear speaking manner, both in public and to political leaders and assemblies, in which she criticizes world leaders for their failure to take sufficient action to address the climate crisis.

66. Ans. D.

Thomas Cook, the 178-year-old British travel giant, has declared bankruptcy, leaving 150000 British citizens stranded abroad, triggering the largest-ever peacetime emergency rescue operation in British history. Brexit and Bankruptcy are the reasons for its collapse.

67. Ans. C.

The 2019 FIFA FIFPro Men's and Women's Players of the Year were announced at a gala celebration held at the Teatro alla Scala in Milan.

Lionel Messi won the Best Men's Player Award of FIFA Football Awards, 2019. He beat off competition from Juventus' Cristiano Ronaldo and Liverpool's Virgil van Dijk to take the Men's award. The FIFA Awards became a stand-alone event in the year 2016, and Cristiano Ronaldo took home the first two trophies. Last year the winner as Real Madrid and Croatia midfielder Luka Modric.

Messi won the World's Player of the Year award in the years 2009, 2010, 2011, 2012, and 2015 when it was presented jointly as the FIFA/Ballon d'Or.

68. Ans. B.

If in a diagram has a line passing through the origin and has 45° angle with either axis and also it is asserted that along the line X equals to Y , then it is assumed that both variables X and Y are in the same unit.

69. Ans. A.

Cash reserve Ratio (CRR) is the share of Net Demand and Time Liabilities that the banks have to hold as liquid assets.

Cash Reserve Ratio (CRR) is a specific portion of the total deposit that is held as a reserve by the commercial banks and is mandated by the RBI (Reserve Bank of India). This particular amount is held as a reserve in the form of cash or as a cash equivalent which is stored in the bank's vault or is sent to the RBI.

Cash Reserve Ratio in the case of India is decided by the MPC (Monetary Policy Committee) under the periodic Monetary and Credit Policy. Whenever the CRR is low, the liquidity with the bank increases, which in turn goes into investment and lending and vice-versa. Higher the CRR creates a negative impact on the economy and also lowers the availability of loanable funds. As a result, it results in slowing down investment and reduces the supply of money in the economy. The CRR of India as on 4th October 2016 is 4%.

70. Ans. A.

Repo rate is that rate at which the central bank of the country (in case of India, it is RBI) lends money to the commercial banks in the event of any shortfall of funds. Repo rate is used by the monetary authorities to control inflation. It is a cost of collateral security. It is the interest rate which is paid by the commercial banks on overnight borrowing.

Repo Rate is the most significant rate for the common man too. Everything from interest rates on loans to returns on deposits is influenced by this crucial rate set by the RBI, which is why interest rates on home loans, car loans and other kinds of borrowings go up and down based on the direction of Repo Rate change. Similarly, banks adjust savings account, fixed deposit returns based on this benchmark.

In the event of inflation, central banks increase repo rate as this acts as a disincentive for banks to borrow from the central bank. This ultimately results in reducing the money supply in the economy and thus helps in arresting inflation. The central bank holds the contrary position in the event of a fall in the inflationary pressures. Repo and reverse repo rates both form a part of the liquidity adjustment facility.

71. Ans. C.

Marriage is the biggest reason because of which women migrate from one place to another. The findings from the 2011 Census, which were

published recently show that marriage made up for 46 percent of the total migrations in India, of which 97 percent are women.

Approximately around 20.58 crore women in India migrated for marriage, according to the census data. The total population of married women is 29.3 crores which signifies that around 70 percent women have to migrate because of marriage.

Marriage is perceived by plenty of us as something that impedes one's individual growth. This is so because a number of girls have to drop out of the workforce following their marriage and are also not allowed to continue with their studies, especially in the rural areas. Though we are witnessing an appreciable rise in the number of literate women, being a girl in the rural areas still means that one has to indulge in the household works.

72. Ans. A.

The Basel Convention on the Control of the Trans-boundary Movements of the Hazardous Wastes and their Disposal was adopted in the year 1989, and it came into force in 1992.

This convention is the most comprehensive global environmental agreement on hazardous wastes and other wastes. The Convention target to protect human health and the environment against the adverse effects resulting from the generation, transboundary movements and management of the hazardous wastes and other wastes.

The Basel Convention controls the transboundary movements of hazardous wastes and other wastes and obliges its Parties to make sure that such wastes are managed and disposed of in an environmentally sound manner. The Convention covers toxic, corrosive, poisonous, explosive, flammable, ecotoxic and infectious wastes. The Parties also have an obligation to minimize the quantities that are transported, to treat and dispose of wastes as close as possible to their place of generation and to prevent or minimize the generation of wastes at the source.

73. Ans. A.

With a goal to provide last mile electrical connectivity and ensure universal household electrification of all the willing rural and the urban households, the Prime Minister launched the Pradhan Mantri Sahaj Bijli Har Ghar Yojana, also called as Saubhagya Scheme. The funds will be provided majorly by the central government to all the States and the Union Territories.

It mandates that the states and union territories complete all household electrification. This scheme is in line with the Government's agenda to provide 24/7 power for all by the year 2019.

- * Socio-Economic Caste Census (SECC) data of 2011 will be used as the basis to determine the beneficiaries for the free electricity connections. The rest un-electrified households are needed to bear a charge of Rs. 500 in order to acquire an electricity connection, which the electricity distribution companies of India (DISCOMS) would recover in ten instalments as a part of their electricity bill.
- * The nodal agency for the implementation of the scheme across the country would be the REC (Rural Electrification Corporation Limited).
- * Transformers, meters, wires and other such kinds of equipment will be made available at the subsidized prices.
- * A mobile application also used for the survey of the households. It provides for on-spot registration of the identified beneficiaries by obtaining their application for electricity connection with the identity proof and photograph.
- * The Gram Panchayats/Public Institutions in rural areas are required to take care of the application documentation and process. They shall, in consultation with the Panchayat Raj Institutions and Urban Local Bodies be authorized to distribute bills and collect revenue.

74. Ans. A.

The Local Area Development Scheme called as MPLADS is a government scheme launched on 23rd December 1993. This was a central sector scheme and was developed as an initiative to enable the parliament members to recommend the developmental work in their constituencies based on locally felt needs. These developmental works majorly focused on the areas of national priorities like drinking water, education, sanitation, public health, roads, etc.

Here are some key features of the Members of Parliament Local Area Development Scheme (MPLADS) are:

- * This scheme is fully government-funded scheme where the annual fund provided to every MP constituency is Rs. 5 crores.
- * The initial assistance under the MPLAD scheme was Rs. 5 lakh per MP. From 1998-99 onwards, this amount has been raised to Rs. 2 crores per MP and the amount currently available under this scheme has been increased to Rs. 5 crore rupees.

* Recommendation by the MPs must be made annually with works costing at least 15 per cent of the MPLADS entitlement for the areas inhabited by the Scheduled Caste population and 7.5 per cent for the areas inhabited by the Scheduled Tribe population.

* A total of Rs. 75 lakhs is provided for building assets by the trusts and societies as per the scheme guidelines to encourage the societies and trusts for the betterment of the tribal people.

* Lok Sabha Members can recommend works within their Constituencies, and Elected Members of Rajya Sabha can recommend works within the State of Election. Nominated Members of both the Rajya Sabha and Lok Sabha can recommend works anywhere in the country.

75. Ans. B.

Deendayal Antyodaya Yojana: The initial scheme Swarnajayanti Gram Swarozgar Yojana (SGSY) was launched in the year 1999. It was renamed as the National Rural Livelihood Mission in 2011. Finally, they were merged into DDU-AY. Because of this, the scheme will be made universal, more focussed and time-bound for the poverty alleviation by 2014. Deen Dayal Antyodaya Yojana (DAY) is a Government of India scheme for helping the poor by providing them with the skill training. It replaces the Aajeevika. In rural areas, the goal is to train one million people by 2017. Further, in urban areas, services such as SHG promotion, vendors markets, training centres and permanent shelters for homeless. The goal of the scheme is skill development of both rural and urban India as per requisite international standards

Pradhan Mantri Gram Sadak Yojana: The PMGSY is under the authority of the Ministry of Rural Development and was begun on 25th December 2000. It is completely funded by the central government. During the period of November 2015, following the recommendations of the 14th Finance Commission, the Sub-Group of the Chief Ministers on Rationalization of Centrally Sponsored Schemes, it was announced that the project would be funded by both the central government (60%) and states (40%). In the 2000 government was announced.

Saansad Adarsh Gram Yojana: Sansad Adarsh Gram Yojana is a rural development programme broadly focusing upon the development in the villages which includes social development, cultural development and spread motivation among the people on social mobilization of the village community. The programme was launched by the current Prime Minister of India, Narendra Modi on the birth anniversary of Jayaprakash Narayan, on 11th October 2014.

Deendayal Upadhyaya Grameen Kaushalya Yojana: DDU-GKY was launched on 25th September 2014 by Union Ministers Nitin Gadkari and Venkaiah Naidu on the occasion of 98th birth anniversary of Pandit Deendayal Upadhyaya. It aims to target the youth in the age group of 15 to 35 years. DDU-GKY is a part of the National Rural Livelihood Mission (NRLM), tasked with the dual objectives of adding diversity to the incomes of rural poor families and cater to the career aspirations of rural youth.

76. Ans. B.

Functions of Panchayat:

All Panchayati Raj Institutions perform such functions which are specified in state laws relating to Panchayati raj. Some States distinguish between compulsory and optional functions of Gram Panchayats while other States don't make this distinction.

* The civic functions of the panchayats relating to sanitation, cleaning of public roads, public toilets and lavatories, primary health care, minor irrigation, vaccination, the supply of drinking water, constructing public wells, rural electrification, social health and primary and adult education, etc. are obligatory functions of village panchayats.

* To consider levy of taxes, rates, rents & fees & enhancement of rates thereof.

* Every Panchayat shall ordinarily continue for a period of five years from the date of its first meeting.

* The optional functions depend on the resources of the panchayats. They may or may not perform such kind of functions as tree plantation on the roadsides, setting up of breeding centres for the cattle, organizing child and maternity welfare, promotion of agriculture, etc.

* A Panchayat reconstituted after premature dissolution may continue only for the remainder of the full period.

* After the 73rd Amendment, the width of functions of Gram Panchayat was widened. Such important functions like the preparation of annual development plan of panchayat area, annual budget, relief in natural calamities, removal of encroachment on public lands and implementation and monitoring of poverty alleviation programmes are now expected to be performed by panchayats.

* Selection of the beneficiaries through Gram Sabhas, non-conventional energy source, public distribution system, improved Chullahs, biogas plants have also been given to Gram Panchayats in some states.

A person will not be qualified for chosen to fill a seat in a panchayat at any level until :

- * his name appears in the electoral roll of any constituency in the Panchayat;
- * he has completed his not 25 but 21 years of age (on the date of filing of the nomination);
- * in the matter of a seat reserved for the Scheduled Castes or for the Scheduled Tribes, he is a member of any of those castes or for those tribes, as the case may be;
- * in the matter of a seat reserved for the women, such person is a woman;
- * he subscribes and makes before the returning officer or any other person authorised by the State Election Commission an oath or affirmation according to the form set out for the purpose in the first schedule.
- * He has not been disqualified under any kind of other provisions of this Act.

77. Ans. A.

Mahatma Gandhi Employment Guarantee Act of 2005 (later renamed as the "Mahatma Gandhi National Rural Employment Guarantee Act", MGNREGA), is Indian labour law and social security measure that aims to guarantee the 'right to work'. This act was passed in September 2005.

The goal of implementing MGNREGA are as follows.

- * Its main aim is to provide employment to the unemployed. It provides social protection to the most vulnerable people living in rural India by giving them employment opportunities. (i.e. the main objective of MNREGA is to enhance livelihood security.)
- * The MGNREGA began with the objective of "enhancing livelihood security in rural areas by providing at least 100 days of the guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work".

* Another target of MGNREGA is to create durable assets (such as roads, ponds, canals and wells). Employment is to be given within 5 km of an applicant's residence than minimum wages are to be given. If work is not provided inside 15 days of applying, applicants are entitled to an unemployment allowance. It means that if the government fails to provide employment, it has to provide certain unemployment allowances to those people. Therefore, employment under MGNREGA is a legal entitlement.

* It also enhances the creation of productive assets and ensures empowerment to women.

This act is known as the largest and most ambitious social security and public works programme in the world. MGNREGA Is a powerful instrument for ensuring inclusive growth in rural India.

78. Ans. D.

Barren and wasteland is not a land-use category land.

Barren and wasteland: The land which may be classified as a wasteland such as barren hilly terrains, desert lands, ravines, etc. normally cannot be brought under cultivation with the available technology.

Marginal land: It is a kind of land that has little or no agricultural or industrial value. Marginal land has very little potential for-profit and often has poor soil or other undesirable characteristics. This type of land is often located at the edge of deserts or other desolate areas. Land that is a prohibitive distance from roads and other means of transportation is often labelled marginal. Marginal land can suffer from physical isolation (like being far from any available road), no water, severe slope. Or industrial pollution.

Forestland: Those ecosystems that have a tree crown density (i.e. crown closure percentage) of 10% or more and are stocked with trees capable of producing timber or other wood products. This consists of land from which trees have been removed to less than 10%, but which have not been developed for other uses.

Pasture lands: It is a type of land which in the narrow sense are enclosed tracts of farmland, grazed by domesticated livestock, such as horses, sheep, cattle, or swine. The vegetation of tended pasture, forage, comprise mainly of grasses, with an interspersed of legumes and other forbs (non-grass herbaceous plants). Pasture is generally grazed throughout the summer, in contrast to a meadow which is ungrazed or used for grazing purpose only after being mown to make hay for animal fodder.

79. Ans. D.

The type of farming in which crops are grown especially for commercial use only is known as commercial farming/agriculture. It is produced for the selling purposes only for which a large amount of labour is required. Commercial agriculture is a large-scale production of crops for sale, intended for widespread distribution to the wholesalers or retail outlets. In this farming, crops such as wheat, maize, tea, sugarcane, cashew, coffee, rubber, banana, cotton are harvested and sold in the world markets. Commercial agriculture differs significantly from the Subsistence agriculture, as the main aim of the Commercial agriculture is achieving higher profits through economies of scale, specialization, the introduction of the capital-intensive farming techniques, labour-saving technologies, and maximization of the crop yields per hectare via synthetic and natural resources.

There are mainly seven types of commercial agriculture:

- * Mixed Crop and Livestock
- * Dairy Farming
- * Mediterranean Agriculture
- * Commercial Gardening
- * Grain Farming
- * Livestock Ranching
- * Plantation Farming

So, clearly, Intensive subsistence agriculture is not the type of commercial agriculture.

80. Ans. B.

Son river joins Ganga directly while Chambal, Betwa and Ken are tributaries of Yamuna. Chambal, Ken and Betwa rivers do not join the Ganga river. They are tributaries of Yamuna which in turn is a tributary of Ganga and joins Ganga at Prayagraj, U.P.

The Son originates near Amarkantak in Madhya Pradesh, and it meets the Ganges near Patna in Bihar. The name India is presumed to be driven from the word Sindhu or Indus. Son river is an important right-bank tributary of river Ganga. In Indian Myths Son, Sindhu and Brahmaputra are male rivers while rest of the rivers are female, i.e. goddess. Most of

the times, female rivers are considered to wash away an individual sins. Sone also called Sonebhadra is brother of its sister Narmada river. Because they are not at good terms with each others, they are flowing in opposite directions originating from the same place called Amarkantak, M.P. The stone aggregate and sand of Sone river is best from the point of quality as well as the distribution of various stone size which can be almost directly used in concrete work.

81. Ans. C.

The total number of people per unit area of arable land is known as Physiological density.

A higher the physiological density suggests that the available agricultural land is being used by more and may reach its output limit sooner than a country that has a lower physiological density.

Population density is often measured in three different ways. They are Arithmetic density, physiological density, and Agricultural density.

* The first method used to calculate population density is the Arithmetic density, which is the total number of people in any given particular area as compared to one square unit of land. The total number of people is splited by, for instance, one kilometre, to determine the average density on that acre.

* Agricultural density calculates the number of farmers, specifically on every unit of farmland. This signifies people who work the earth on the specific plots of land that are used for this. It can still measure by kilometre, but it only measures kilometres of farmable land.

* Physiological density calculates the total number of people and divides them among the total amount of farmable land. So the proportion of land to be used is much smaller than for the arithmetic density, but the amount of people is much larger than what is used in the agricultural density.

82. Ans. C.

The Karnataka government commenced on an ambitious plan 'One State Many Worlds' to make the State one of the most preferred tourist destinations in India and the world at large.

Karnataka offers a range of tourism spots that cover everything from dense forests to lush green grasslands, from beautiful beaches to historic monuments, grand palaces to centuries-old religious temples. It has one of the most majestic waterfalls in the world like Jog Falls, a UNESCO

World Heritage Site such as Hampi, beautiful hill stations such as Coorg and Chikmagalur, forest reserves such as Nagarhole, stunning beaches such as at Gokarna and Murudeshwar, magnificent palaces such as at Mysore and Bangalore and age-old temples such as Dharmasthala, Gokarna and Nanjangud. With a variety this wide, it is practically a microcosm of India as a whole.

The Karnataka Tourism Policy, 2015 to 2020 states that the government "will follow a non-discriminatory approach to promote balanced regional development by attracting investments from the private sector and local entrepreneurs". The government shall strive to create an enabling environment for safe and sustainable tourism in Karnataka and also lay emphasis on providing a quality experience to the tourists.

83. Ans. B.

The Nyishi community are the largest ethnic group in Arunachal Pradesh in north-eastern India. In Nyishi, their traditional language, 'Nyi' signifies to "a human" and the word 'shi' denotes "a being", which united together refers to a human being. They are spread across eight districts of Arunachal Pradesh: Kra Daadi, East Kameng, West Kameng, Kurung Kumey, Papum Pare, parts of Lower Subansiri, Kamle and Pakke Kesang district. The most famous being the Akang and Leil community of Papum Pare districts. They also live in the Sonitpur and North Lakhimpur districts of Assam.

Their population of around 300,000 makes them the most populous tribe of Arunachal Pradesh, closely followed by the tribes of the Adi according to 2001 census. The Nyishi language belongs to the Sino-Tibetan family; however, the origin is disputed.

The Nyishi support themselves with slash-and-burn agriculture and with hunting and fishing. They live at elevations of 3,000-6,000 feet (i.e. 900 to 1,800 m) in houses built on pilings. Descent is traced along paternal lines; a single lineage, which may number as many as 60 or 70 persons, lives together in a longhouse without partitions but with a separate fireplace for each conjugal family. Aside from this patrilineal household, there is no formal social organization or village government. Their religion involves belief in spirits associated with nature.

84. Ans. B.

Bora winds are cold and dry north-easterly winds that blow from the mountains towards the eastern shore of the Adriatic Sea.

* Bora is more effective in North Italy as here the wind get descends the southern slopes of the Alps, although due to descend it gets adiabatically

heated still its temperature is very low in comparison to the coastal area, and these are the typical instance of fall winds.

* These winds blow with strong gusts with velocities in the range of 128 to 200 km per hour.

* Bora has frequently associated with the passage of a temperate Cyclone, and at times the Bora winds themselves attain the hurricane force at the foot of the mountain and may cause disastrous impacts on properties.

* There are two primary weather patterns which are associated with the bora, and both are locally classified as being a white bora and a black bora.

85. Ans. A.

Chenghiz Khan/Genghiz Khan did not cross the Indus to attack India while rest other Mongol leaders like Tair Bahadur, Abdullah and Qutlugh Khwaja crossed the Indus to attack India.

Genghiz Khan was at the bank of Indus in the year 1221 chasing Jalal ud-Din of Samarkhand, but he had a formidable ruler of Iltutmish to face in India if he attempted to go into Delhi. Few Indian towns on the periphery such as Multan and Lahore were attacked. The great Khan probably reasoned that he had a lot of lesser hanging fruits to take. So he pulled back his troops from the Indus valley.

Mongol leader Genghis Khan rose from humble beginnings to establish the largest land empire in history. He was the founder and first Great Khan of the Mongol Empire. The Mongol Empire launched several invasions into the Indian subcontinent from 1221 to 1327.

86. Ans. B.

Ghias-ud-Oin Balban (AD 1266-1287): He was an Ilbari-turk. Bahauddin was his original name. He was the slave of the Iltutmish and gradually with time he occupied the throne of sultan. He destroyed the power of Turkan-i-Chihalgani.

In order to crash the power of the Turk-e- Chihalgani and to raise the prestige and power of the monarchy, he propounded a new theory of kingship.

He rejected to appoint the low-born Muslim Kamal Amaya on the post of the Khwaja. He administered justice with extreme impartiality and also

poisoned his cousin Sher Khan to break his power. An official Amir-e-Hajib was designated to regularise the proceedings of the court.

His theory of kingship was established on power, prestige and justice. According to him the three pillars of kingship were army, treasury and nobles and the means of success was justice, beneficence, pomp and show.

87. Ans. B.

Gaganendranath Tagore, along with his brother Abanindranath, is known for founding the Indian Society of Oriental Art in the year 1907. This ISOA, sponsored by Europeans, much popularized Tagore's Bengal School, as well as art and crafts of other Asian nations. It held regular exhibitions in India and abroad, and came out with exquisite colour reproductions of original paintings by Abanindranath Tagore, Surendranath Ganguly, Nandalal Bose and other old masters of Mughal and Rajput art. This society later brought out a journal known as Rupam.

Abanindranath Tagore was the main artist and creator of the "Indian Society of Oriental Art". He was also the first major exponent of the Swadeshi values in Indian art, thereby founding the influential Bengal school of art, which led to the development of the modern Indian painting. He was also a noted writer, particularly for the children. Popularly known as 'Aban Thakur', his books Rajkahini, Nalak, Budo Angla and Khirer Putul are landmarks in Bengali language children's literature.

88. Ans. B.

The All India Depressed Classes Leader's Conference held at Bombay in 1931 backed by Dr. Ambedkar's demand for separate electorates, rejecting compromises proposed by others. Before the Round Table Conference of the year 1930-31 Ambedkar emerged as the main leader of the depressed classes. He took a separatist stand and demanded constitutional safeguards for the depressed classes. The untouchables demanded separate electorates in the 1930s, which led to a conflict between Ambedkar and Gandhiji, with the former feeling cheated by the Poona Pact.

In the year 1932, Gandhi, in Yerawada jail, started a fast to the death against the separate electorates granted to the Depressed Classes by Ramsay MacDonald's Communal Award. By 23rd September, a very reluctant Dr. Ambedkar was obliged by the pressure of this moral blackmail to accept representation through joint electorates instead. The result was the Poona Pact. In 1933, Gandhi replaced his journal "Young India" with a new one called 'The Harijan,' and undertook a 21-day "self-purification fast" against untouchability.

89. Ans. C.

Despite various limitations, the Government Of India Act 1919 had some merits. The GOI Act 1919 resulted at the end of the policy of benevolent despotism, and thus began the genesis of the responsible government in India. This was the first time that elections to the legislatures were known to the people and this resulted in political consciousness among the masses. Although, those people who had property, taxable income & paid land revenue of Rs. 3000 were entitled to vote. The number of the Indian raised to 3 in the Governor-General in Council of 8. These Indian members were entrusted to some portfolios like labour, health and industry.

It was the GOI Act 1919, whereby, the Indians came in direct contact with the administration for the first time. This was a very useful experience. It was also for the first time that a number of Indian women got the right to franchise for the first time.

Now, under the Indian ministers, some of the far-reaching measures were taken such as the enactment of Madras State Aid to Industries Act, 1923, the Bombay Primary Education Act, the Bombay local boards act, 1923, the Bihar and Orissa village administration Act etc.

90. Ans. C.

The Indian National Congress, on 19th December 1929, passed the historic 'Purna Swaraj' – (i.e. total independence) resolution – at its Lahore session. A public declaration was made on 26th January 1930 – a day which the Congress Party urged Indians to celebrate as 'Independence Day'. The declaration was passed due to the breakdown of negotiations between the leaders of the freedom movement and the British over the question of the dominion status for India.

The Purna Swaraj declaration, or Declaration of the Independence of India, was promulgated by the Indian National Congress on 19th December 1929, resolving the Congress and Indian nationalists to fight for the Purna Swaraj. The flag of India had been hoisted by the Congress President Jawaharlal Nehru on 31st December 1929. The Congress call on the people of India to observe 26th January as the Independence Day. The flag of India was hoisted publicly across India by the Congress volunteers, nationalists and the public.

The Irwin Declaration in the year 1929 triggered a backlash in England: politicians and the general public were not in favour of India obtaining the dominion status. Under pressure, Lord Irwin, at a meeting with the Jinnah, Nehru, Gandhi and Sapru, told Indian leaders that he was not able to promise dominion status anytime soon. The Indian National Congress

irked and changed its stance: it gave up demands for dominion status and instead, at its Lahore Session in the year 1929, passed the 'Purna Swaraj' resolution that aimed for complete independence. The resolution marked the beginning of a large-scale political movement against the colonial rule.

91. Ans. A.

Edward Jenner is a well known around the world for his innovative contribution to the immunization concept and the ultimate eradication of the smallpox. Jenner's work is broadly regarded as the foundation of the immunology—despite the fact that he was neither the first one to suggest that infection with cowpox conferred specific immunity to smallpox nor the first one to attempt cowpox inoculation for this purpose.

The history of the smallpox holds a unique place in the medicine. It was one of the deadliest diseases came to be known by humans, the only human disease to have been eradicated by the vaccination. The smallpox vaccine, introduced by Edward Jenner in the year 1796, was the first successful vaccine to be developed. He observed that the milkmaids who previously had caught cowpox didn't catch smallpox and showed that the inoculated vaccinia protected against the inoculated variola virus.

92. Ans. B.

Beside nucleus, Mitochondria is another cell organelle which has its own self-replicating DNA. It is known as mitochondrial DNA and thus called as a semi-autonomous organelle. Mitochondrial is an oval-shaped semi-autonomous organelle as it contains circular DNA.

Lysosomes are known as garbage disposal as it contains a hydrolytic enzyme that digests wastes material, cell debris, foreign particles and dead or weak organelles and excretes out from the cells.

Golgi apparatus, a membrane-bound organelle of eukaryotic cells (cells possess clearly defined nuclei) that is formed of a series of flattened, stacked pouches known as cisternae. The Golgi apparatus is responsible for modifying, transporting and packaging proteins and lipids inside the vesicles for the delivery to targeted destinations. It is situated in the cytoplasm next to the endoplasmic reticulum and near the cell nucleus. While many types of cells comprise only one or many Golgi apparatus, plant cells can contain hundreds.

The endoplasmic reticulum has a central role in lipid and protein biosynthesis. Its membrane is the site of production of all the transmembrane proteins and lipids for most of the cell's organelles, including the ER itself, the Golgi apparatus, lysosomes, secretory vesicles

and the plasma membrane. Almost all of the proteins that will be secreted to the cell exterior plus those destined for the lumen of the ER, Golgi apparatus or lysosomes are initially delivered to the ER lumen.

93. Ans. B.

^Adrenal glands are located on each kidney and secrete adrenaline and nor-adrenaline.

^The parathyroid gland is situated in the form of four pouches, with two each on the posterior side of each thyroid lobe.

^Gonads are the reproductive organs that result in the production of gametes. They are a pair of testis in males and a pair of ovaries in females.

^The gland which is the master gland is the Pituitary gland that controls the activity of other endocrine glands. The pituitary gland is linked to the base of the brain. It secretes growth hormone.

Hence, the pituitary gland does not exist in pairs.

94. Ans. A.

The correct sequence is: Kidney, ureter, urinary bladder, urethra

^The organs, muscles, tubes and nerves that work together to form, store, and carry urine are considered as the urinary system, which is likewise named for the renal system. The renal system filters the plasma of the blood and regulates blood volume by excreting the excess water in the form of urine. Urine transport observes a path through the kidneys, ureters, bladder, and urethra, which are combinedly known as the urinary tract.

^Urine is significant water, ions, and secreted molecules that quit the collecting duct of the several nephrons of the kidney and flow inside the ureters. The ureters are two tubes which drain urine from the kidneys to the bladder. Every ureter is a muscular tube that gets drains into the bladder. Smooth muscle gets contractions in the walls of the ureters, with time, transfer the urine in small spurts into the bladder, the organ where urine gets stored before it can be removed.

^The Urinary bladder is a hollow muscular organ shaped like that of a balloon. It gets to sit in the pelvis and is held in the place by ligaments attached to the other organs and the pelvic bones. The bladder stores the urine until enough of it get collected for removal from the body. It swells into a round shape when it is full and gets smaller when vacant.

^Nerves in the bladder are restoring as the bladder fills with urine and becomes larger, which in turn stimulates the need to urinate. When an individual urinate, the brain directs the bladder muscles to tighten, and squeezing urine out of the bladder. Simultaneously, the brain signals the sphincter muscles to relax. As these muscles relax, urine exits the bladder through the urethra and leaves the body through an opening in the genital region that contains the urethra. The time when all the signals occur in the correct order, normal urination occurs, removing urine from the body.

95. Ans. C.

Radio frequencies allow information to be transmitted over large distances by radio waves. The essential element to high-quality satellite communications is the assignment of radio-frequency spectrum to various types of services. Only a limited amount of such spectra is assigned to Earth-space radio links, and thus the available bandwidth must be used with a high degree of efficiency. There are many technical elements associated with the efficient use of RF spectra for satellite communications and navigation.

Hence, option C is correct.

96. Ans. C.

Resistance R (in Ohm), of a wire of length L (in cm) is directly proportional to its length, and inversely proportional to its area of cross-section a (in cm^2). Then

$$R = \text{resistivity} \times \text{length} / \text{area}.$$

In terms of units in CGS system, we have,

$$\text{Ohm} = \text{resistivity} \times \text{cm} / \text{cm}^2 = \text{resistivity} / \text{cm}.$$

Unit of resistivity = Ohm-cm (in CGS system of units)

= Ohm-meter (in SI units).

Definition of resistivity: It is the resistance between the ends of a conductor 1 cm apart, when the ends have an area of cross section 1 cm^2 .

Hence, option C is correct.

97. Ans. B.

Both the Celsius and Kelvin are the units of temperature. If you add 273 with the value of temperature in Celsius, you will get the value of temperature in Kelvin.

Hence, option B is correct.

98. Ans. C.

Silver articles, when exposed to air become black after some time. This is because the silver metal reacts with sulphur present in the atmosphere and forms silver sulphide. Thus, a layer of silver sulphide is formed on the surface of silver articles, because of which they appear dull and black.

Hence, option C is correct.

99. Ans. C.

The copper sulphate crystals contain 5 molecules of water of crystallization. $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ which are blue in colour.

Hence, option C is correct.

100. Ans. A.

- Washing soda is sodium carbonate ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$), a strong alkali.
- While baking soda is sodium bicarbonate : sodium hydrogen carbonate (NaHCO_3), a mild alkali.
- Calcium hypochlorite is an inorganic compound with formula CaOCl_2 . It is the main active ingredient of commercial products called bleaching powder, chlorine powder, or chlorinated lime, used for water treatment and as a bleaching agent.
- Calcium hydroxide (traditionally called slaked lime) is an inorganic compound with the chemical formula $\text{Ca}(\text{OH})_2$. It is a colorless crystal or white powder and is produced when quicklime (calcium oxide) is mixed, or slaked with water.

Hence, option A is correct.

101. Ans. B.

ÂMahatma Gandhi's Dandi March, a great event in India's freedom struggle, was associated with Sodium chloride. The Salt March also called as the Salt Satyagraha, Dandi March and the Dandi Satyagraha, was an act of non-violent civil disobedience in colonial India led by Mahatma Gandhi.

One of the major significant events in India's struggle for independence took place when Mahatma Gandhi launched the Civil Disobedience Movement with his famous Dandi March, which began on 12th March 1930 and ended on 6th April 1930. Salt Satyagraha or Dandi March was a non-violent method of protest led by Mahatma Gandhi which garnered huge public support and worldwide attention. Gandhiji then walked from his ashram in Sabarmati in today's Gujarat to small town of Dandi near coastal Surat to protest against the repressive salt tax imposed by the colonial government. British Raj had a monopoly over the sale and production of salt in India. The salt laws prohibited the Indians from producing or selling salt without prior permission from the Government. Dandi March provided the opportunity to unite the nation together for the cause that affected everyone. The aim of the Salt March was not only to act in defiance of the salt laws enacted by the government but also to unite the people for the larger goal of 'Swaraj'.

102. Ans. D.

An enzyme is a biological catalyst which speeds up chemical reactions. During digestion, food is broken down to release nutrients which are absorbed. Salivary Amylase is the first enzyme that helps in the digestive process. Amylase gets mixed with food in the oral cavity during the process of mastication and bolus formation. Salivary Amylase is secreted in the saliva inside our mouth, and its first acts on the carbohydrates found in the food that we chew. It breaks the complex compounds like bread and rice into simpler forms such as glucose. The digestive enzyme salivary amylase hydrolyzes starch into maltose, maltotriose, dextrin and a small amount of glucose.

Another digestive enzyme called lingual lipase is also present in saliva in the oral cavity, but this digestive enzyme has no significant role in digestion.

103. Ans. B.

ATP: Adenosine triphosphate is known as the energy currency of the cell.

ATP is the organic compound composed of the phosphate groups, adenine, and the sugar ribose. These molecules give energy for various biochemical processes in the body. Hence, it is known as the "Energy Currency of the Cell". These ATP molecules are then synthesized by the Mitochondria; therefore, it is known as the powerhouse of the cell.

The ATP molecule was discovered in 1929 by German chemist Karl Lohmann. Later in the year 1948, Scottish biochemist Alexander Todd was the first person to synthesize the ATP molecule.

ATP is the energy-carrying molecules found in the cells of all living things. These organic molecules function by capturing the chemical energy obtained from the digested food molecules and are later released for different cellular processes.

104. Ans. C.

Carbon dioxide gas turns lime water milky. We exhale carbon dioxide, so when air is blown from the mouth, i.e., carbon dioxide, into a test tube that contains lime water, the lime water turns milky due to presence of carbon dioxide. This is due to the formation of calcium carbonate when carbon dioxide combines with calcium hydroxide (limewater). Lime water is a calcium hydroxide solution. On reacting with carbon dioxide, it forms insoluble calcium carbonate which remains in water as a suspension rendering a milky white colour to it.

105. Ans. C.

The sequence of the events of sexual reproduction in flowers are:

ÂPollination: transfer of pollen to the stigma.

ÂFertilization: fusion of male gamete and egg cell produce zygote and fusion of polar nuclei with male gamete produce triploid endosperm.

ÂDivision of zygote: The zygote divides through a process known as mitosis, in which each cell doubles by dividing into two cells. Because each cell comprises half of the genetic material, each cell is known as a haploid cell.

ÂEmbryo formation: zygote divides much time by mitosis and produces embryo.

ÂSeedling: embryo differentiates and than becomes plumule, radicle and one or two cotyledons. Endosperm splits by mitosis to produce endosperm tissue which is a food store. Integuments surrounding embryo sac forms testa (seed coat).

106. Ans. B.

ÂSalamander being an amphibian, has a three-chambered heart. Also, Lizard has a three-chambered heart. Except for crocodilians, all the reptiles have a three-chambered heart. Crocodiles have a four-chambered heart. Three-chambered consists of two atria and one ventricle.

ÂBirds and mammals have four-chambered heart, i.e. two atria and two ventricles. So, Pigeons have a four-chambered heart.

ÂScoliodon is a cartilaginous fish, which has a two-chambered heart. The two-chambered heart consists of one atria and one ventricle, mixing of oxygenated and deoxygenated blood takes place.

ÂThe human heart has a four-chambered heart: two upper chambers (the atria) and two lower ones (the ventricles). The right atrium and the right ventricle combinedly make up the 'right heart' and the left atrium and left ventricle to make up the 'left heart.' A wall of muscle known as the septum separates the two sides of the heart.

107. Ans. D.

ÂAn epidemic refers to an increase, often sudden, in the number of cases of an infectious disease above what is normally expected in a given population in a specific area. Examples of major epidemics include cholera and diarrhoeal diseases, measles, malaria, smallpox and dengue fever. Epidemics can be prevented and mitigated through a range of household and community measures, such as good hygiene and sanitation, access to clean water, handwashing, vaccination, use of antiviral medications, social distancing, good clinical practice, proactive surveillance, early warning systems, vector control, access to safe food.

ÂElephantiasis describes as a parasitic infection that causes extreme swelling in the arms and legs. The disease is caused because of the filarial worm, which is transmitted from human to human via the female mosquito when it takes a blood meal. The parasite results into an adult worm that lives in the lymphatic system of humans.

108. Ans. B.

We know that,

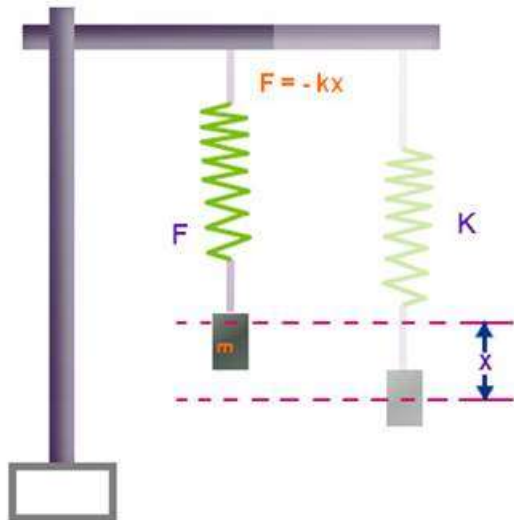
$$F = -kx$$

$$\text{Therefore, } k = F/x$$

$$\text{Dimension of } F = [MLT^{-2}]$$

$$\text{Dimension of } x = [L]$$

$$\text{Therefore, dimension of } k = [MLT^{-2}]/[L] = [MT^{-2}]$$



The Spring Constant Formula is given as, $k = F/x$ where,

F = Force applied,

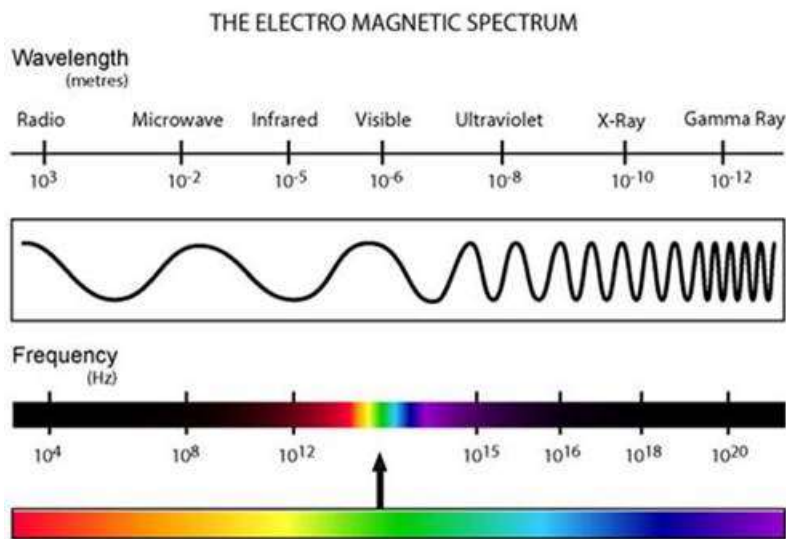
x = displacement by the spring

The negative sign shows that the restoring force is opposite to the displacement

It is expressed in Newton per meter (N/m).

Hence, option B is correct.

109. Ans. D.



Hence, option D is correct.

110. Ans. A.

We know that speed of light in any medium is inversely proportional to the refractive index of that medium.

Then, $v_1 = 3 \times 10^8$ m/s and $n_1 = 1$ for air & $n_2 = 3/2 = 1.5$ for the medium

$$\frac{v_2}{v_1} = \frac{n_1}{n_2}$$

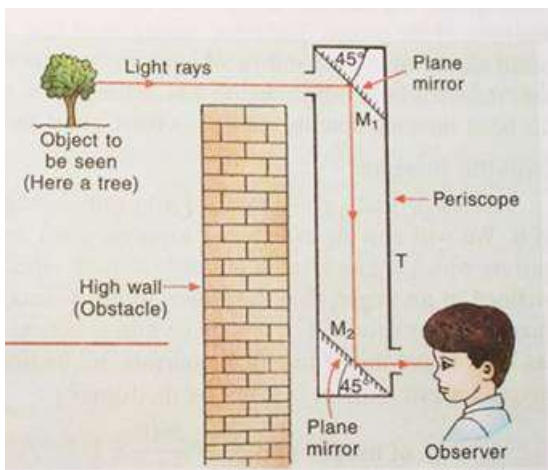
$$\begin{aligned} v_2 &= v_1 \cdot \frac{n_1}{n_2} \\ &= 3 \times 10^8 \cdot \frac{1}{\frac{3}{2}} \\ &= 2 \times 10^8 \end{aligned}$$

$$V_2 = 2 \times 10^8 \text{ m/s}$$

Hence, option A is correct.

111. Ans. A.

The plane mirrors in a periscope are parallel with each other, which helps to reflect the light rays from the upper end of the periscope to the lower end of the periscope. The plane mirrors in a Periscope incline at 45° angle with the surface of the periscope



Hence, option A is correct.

112. Ans. C.

Plane mirrors are the only type of mirror for which a real object always produces an image that is virtual, erect and of the same size as the object.

Hence, option C is correct.

113. Ans. A.

X-rays aren't deflected by electric and magnetic fields because x-rays do not carry and charge. They are electro-magnetic radiations and therefore cannot be deflected by electronic or any magnetic fields.

Hence, option A is correct.

114. Ans. A.

Pitch describes how high or low a tone is and depends upon the rapidity with which a sounding body vibrates, i.e., upon the frequency of vibration. The higher the frequency of vibration, the higher the tone or pitch.

The frequency of a sound wave is what your ear understands as pitch. A higher frequency sound has a higher pitch, and a lower frequency sound has a lower pitch.

Hence, option A is correct.

115. Ans. A.

ÂBoric acid: Boric acid is often used as an antiseptic, insecticide, flame retardant, neutron absorber, or precursor to other chemical compounds.

ÂCitric acid: Citric acid is used in food as a flavouring agent and preservative. It is used in processed food products like beverages, soft drinks etc. Due to its sour taste, it is used in making certain candies.

ÂMagnesium hydroxide: It is used as a laxative to relieve occasional constipation. Magnesium hydroxide is even used as an antacid to relieve indigestion, sour stomach, and heartburn.

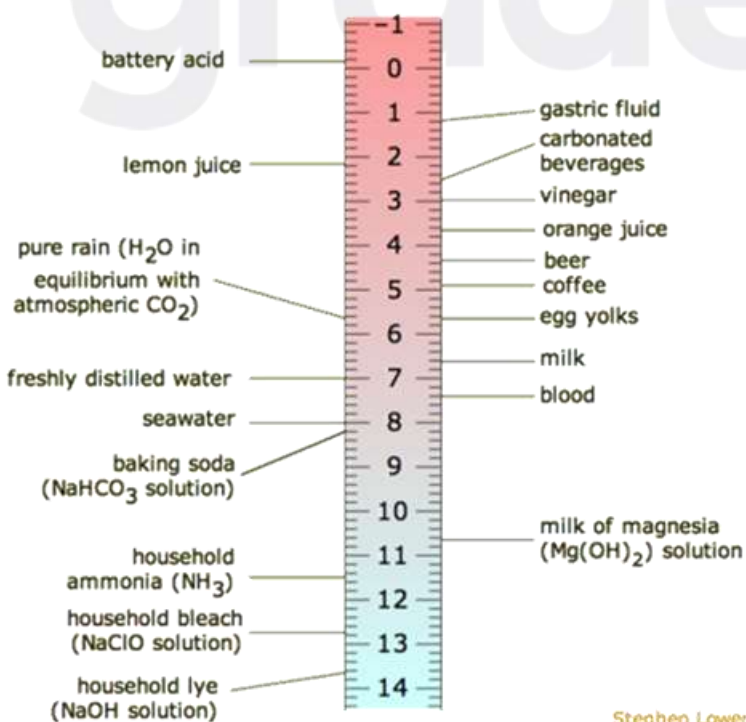
ÂAcetic acid: Acetic acid is used in many industrial processes for the production of substrates, and it is often used as a chemical reagent for the production of a number of chemical compounds like acetic anhydride, ester, vinyl acetate monomer, pickle, vinegar, and many other polymeric materials.

116. Ans. D.

^The major constituent of gastric acid is hydrochloric acid produced by parietal cells in the gastric glands in the stomach. Its secretion is a quite complex and relatively energetically expensive process. Parietal cells comprise an extensive secretory network (known as canaliculi) from which the hydrochloric acid is secreted into the lumen of the stomach. The pH of the gastric acid is 1.5-3.5 in the human stomach. The parietal cell releases bicarbonate within the bloodstream in the process, which results in a temporary rise of pH in the blood, known as an alkaline tide.

^Gastric acid, stomach acid or gastric juice is a digestive fluid formed inside the stomach lining, composed of hydrochloric acid, sodium chloride and potassium chloride. Gastric acid plays a significant role in the digestion of proteins by activating the digestive enzymes, which together break down the long chains of the amino acids of proteins. Gastric acid is regulated in the feedback systems to increase the production when needed, like after a meal. Other cells in the stomach release bicarbonate, a base, to buffer the fluid, which makes ensuring a regulated pH. These cells even produce mucus – a viscous barrier to prevent gastric acid from damaging the stomach. The pancreas additionally produces large amounts of bicarbonate and secretes bicarbonate through the pancreatic duct to the duodenum to neutralize gastric acid passing into the digestive tract.

117. Ans. B.



- At pH 7, the substance or solution is at neutral and means that the concentration of H⁺ and OH⁻ ion is the same.

- If $\text{pH} < 7$, the solution is acidic. There are more H^+ than OH^- in an acidic solution.
- If $\text{pH} > 7$, the solution is basic.

So, option B is correct.

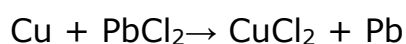
118. Ans. C.

These are the displacement reactions.

A single-displacement reaction, also known as a single-replacement reaction, is a reaction by which one element replaces an/other element in a compound. It can be represented generically as: $\text{A} + \text{B-C} \rightarrow \text{A-C} + \text{B}$
This will most often occur if A is more reactive than B, thus giving a more stable product

potassium	most reactive	K
sodium		Na
calcium		Ca
magnesium		Mg
aluminium		Al
carbon		C
zinc		Zn
iron		Fe
tin		Sn
lead		Pb
hydrogen		H
copper		Cu
silver		Ag
gold		Au
platinum	least reactive	Pt

gradeup



The following reaction is not possible because in the metal reactivity series, copper being below hydrogen and it is unable to displace lead from its solution.

So, option C is correct.

119. Ans. D.

40 40

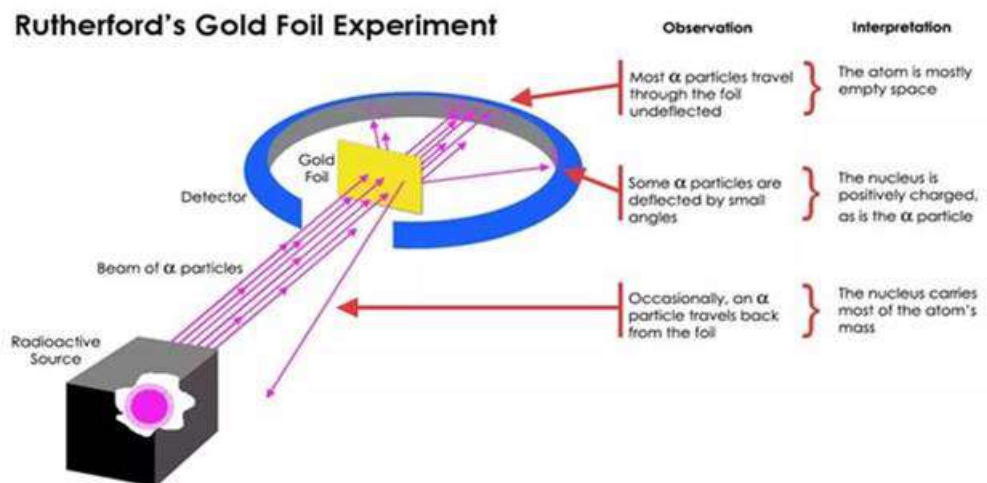
^{18}Ar and ^{20}Ca are isobars as they have same mass number 40 but different atomic number.

Hence, option D is correct.

120. Ans. C.

In 1909, Ernest Rutherford's student reported some unexpected results from an experiment Rutherford had assigned him. Rutherford called this news the most incredible event of his life.

In the now well-known experiment, alpha particles were observed to scatter backwards from a gold foil. Rutherford's explanation, which he published in May 1911, was that the scattering was caused by a hard, dense core at the center of the atom—the nucleus.



Hence, option C is correct.