

**HINTS & SOLUTION**

1. (b) Lord Mountbatten was preceded by C Rajgopalachari. Lord Mountbatten was the last Viceroy of India (1947) and the first Governor-General of the independent Dominion of India (1947-48).
2. (a) The partition of Bengal took place on 16 October 1905. The Chauri Chaura incident occurred at Chauri Chaura in the Gorakhpur district of the United Province, British India on 5 February 1922. The first Round table conference was opened officially by King George V on November 12, 1930 in London.
3. (b) Arya Samaj opposed ritualistic practices and idol worship (hence, Statement 1 is incorrect). It also encouraged self-reliance and swadeshi, playing a significant role in the Indian independence movement (statement 2 is correct)
4. (b) Buddha delivered his first sermon at Sarnath. Sarnath is a city located in the north-east of Varanasi near the confluence of the Ganges and the Gomati rivers in Uttar Pradesh.
5. (c) Gandhi ji launched Champaran Satyagrah on the repeated request of a local leader, Raj kumar Shukla, Ambalal Sarabhai was an industrialist of Ahmedabad. He gave both personal and financial support to the freedom struggle in Ahmedabad. Indulal Kanaiyalal Yagnik was an independence activist and a leader of the All India Kisan Sabha. He participated in the Kheda Satyagrah (In 1918,) led by Gandhiji. Vallabhbhai Jhaverbhai Patel was a barrister and leader of Indian Independence. He started Bardoli Satyagrah in Gujarat against the raised tax of 30%..
6. (c) Qutbuddin Bakhtiar Kaki was disciple of Moinuddin Chishti. His most famous disciple was Fariduddin Ganjshakar. He was a renowned Muslim Sufi mystic, saint and scholar of the Chishti Order.
7. (a) Situated in the eastern Deccan, Andhra Pradesh, a different type of art form evolved and flourished for nearly six centuries commencing from 200-100 BC. Patronized first by the Satavahanas and later by the Ikshvakus and also by other groups. The Amaravati School of Art is known for its use of white marble, slender human figures, and an emphasis on royal and courtly themes, such as kings, princesses, and palaces. This art form flourished in the Andhra region and primarily depicted scenes from the life of Buddha, as well as other religious and secular subjects.

8. (d) Rabindranath Tagore was Asia's first Nobel Laureate who won the Nobel Prize for Literature in 1913 for his creation of Gitanjali. The Jallianwala Bagh Massacre happened in Amritsaron 13 April 1919 in which Brigadier-General Reginald Dyer ordered British, Indian Army soldiers to open fire on an unarmed gathering of men, women and children. Thousands of people were killed in this massacre. Tagore renounced the knighthood that he had received in 1915..
9. (d) The proposed conditions of Gandhi-Irwin pact were as follows: Discontinuation of the civil disobedience movement by the Indian National Congress. Participation by the Indian National Congress in the Round Table Conference. Withdrawal of all ordinances issued by the British Government imposing curbs on the activities of the Indian National Congress. Withdrawal of all prosecutions relating to several types of offenses except those involving violence. Release of prisoners arrested for participating in the civil disobedience movement. Removal of the tax on salt..
10. (a) First Battle of Panipat (1526) was fought between two mega-powers- Babur, then ruler of Kabul and Ibrahim Lodhi, king of Delhi Sultanate. It was fought near Panipat (present day Haryana). Babur won the battle and established the Mughal Empire. Second Battle of Panipat (1556) was fought between Akbar (Ruler of Mughal Dynasty) and Muhammad Adil Shah (ruler of Pashtan Suri Dynasty), along with his Prime Minister Hemu. Third Battle of Panipat (1761) was fought between the Afghans and the Marathas. The battle lasted for two months which ultimately resulted in the defeat of Marathas and end of their dominance in India.
11. (c) The success of European trading companies in South India during the 17th century can be attributed to several factors. First, the Mughals had a limited presence in the South compared to the North, which left the region more open to foreign influence. Second, the fall of the Vijayanagara kingdom in the late 16th century created a power vacuum, weakening local resistance to European encroachment. Finally, the region was fragmented into many smaller and weaker states, making it easier for the European powers to establish trade and political influence without facing strong, unified opposition. These conditions collectively facilitated the success of European traders.
12. (a) The important occasion of Chandragupta Maurya's reign was the forecast of a twelve years famine. At that time Acharya Bhadrabahu was the head of the Jain church. According to

the Jain text Rajvaliya Katha, the king saw sixteen dreams. He requested Bhadrabahu to interpret the dreams. The latter explained all the dreams and according to the last one, he predicted a famine of twelve years. Chandragupta, who was a follower of Bhadrabahu, gave up his throne. He finally ended his life following the Jain fashion.

13. (b) Statement II is not the correct explanation of statement I. Mahavira was not the founder and author of Jain religion but simply a reformer. This sect of the Nirgranthas was an important sect at the rise of Buddhism. This may be inferred from the fact that they are frequently mentioned in the pitakas as opponents of Buddha and his disciples. This conclusion is further supported by another fact. Makkhali Gosala, a contemporary of Buddha and Mahavira divided mankind into six classes, of these the third class contained the Nirgranthas.
14. (a) In order to keep powerful people happy and to collect better revenue, Lord Cornwallis introduced the Permanent Settlement. As per permanent system, rajas and taluqdars were recognized as zamindars. The zamindars were supposed to collect the land revenue from the peasants.
15. (b) The Civil Disobedience Movement was formed in the year 1930 and was one of the most important phases in the Indian National Movement. The main ideology behind the Civil Disobedience Movement was to defy the laws made by the British. The British government was pressurized by the Indian National Congress to accept the Nehru Report (1928) as it is. The Calcutta Session of the INC held in 1928 warned the British government that it would start a Civil Disobedience Movement if India was not granted the dominion status. 2nd March 1930 is remembered as one of the important days in Indian history as the Civil Disobedience Movement was launched on that day. The launch triggered off with a Dandi Salt March where the British Salt was broken.
16. (a) The Government created commissions and commissions on one another with an undeclared motive of creating mutual apprehensions and mistrusts. It was the time when the top leaders including Gandhi were failed to understand the political implications of his extensions of support to the cause of Khilafat. Practically, the leaders of Khilafat needed support of Gandhiji only for a defined particular purpose.
17. (a) Privy Purse in India was a payment that was made to the royal families of the former princely states of India. The Privy Purse was created as part of the agreements made by them to merge with Union of India in the year 1947.

18. (a) Dadabhai Naoroji was the first man to say that internal factors were not the reasons of poverty in India but poverty was caused by the colonial rule that was draining the wealth and prosperity of India. In 1867, Dadabhai Naoroji put forward the 'drain of wealth' theory in which he stated that the Britain was completely draining India. He mentioned this theory in his book Poverty and Un-British Rule in India.
19. (d) Yavanas were Indo-Greeks. They liked pepper, that is why pepper was known as Yavanapriya.
20. (c) After the 3rd century AD Roman empire came to an end. Indian merchants meanwhile had begun to rely more heavily on the south-east Asian Trade.
21. (c) The marked places are Matsya, Avanti, Vatsa, Anga. .
22. (b) India's largest Buddhist monastery is in Sikkim (not in Arunachal Pradesh). The Hoysaleswara temple located in Halebid, is dedicated to Siva.
23. (a) Mrichchhakatika (The Clay Court) is a Sanskrit play written by Shudraka in 2nd C BC. It is about a young man named Charudatta, and his love for Vasantasena, a rich courtesan.
24. (b) Atharvaveda is a book of magical formula. It contains charms and spells to ward-off evil and disease.
25. (b) Bimbisara belonged to the Haryanka dynasty. Magdha empire came into prominence under him. He was a contemporary of the Buddha. He strengthened his position by marriage alliances. His first wife was the sister of Prasenjit (son of king of Koshala) who was also contemporary of the Buddha..
26. (c) Nagara, Dravida and Vesara are three main styles of Indian temple architecture.
27. (a) Alexander (Greek, 326 B.C.E.); Sakas (90 B.C.E.); Kushanas (45 C.E.).
28. (d) Baba Farid belonged to Chisti order which was founded by Nizam Uddin Auliya.
29. (a) It is specifically designed to operate in the reverse breakdown region. Zener diodes are used for voltage regulation because they maintain a constant output voltage despite variations in the input voltage or load conditions. This makes them ideal for regulated electric supply applications.
30. (a) Total internal reflection happens when light traveling from a denser medium to a rarer medium (e.g., from cooler air to hotter air near the ground)

hits the boundary at an angle greater than the critical angle, causing the light to be reflected back rather than refracted. This reflection gives the illusion of a water surface.

31. (b) Pressure is normal force per unit area, therefore, for lesser value of area pressure is greatest.
32. (b) The work done on any object goes into changing the kinetic energy of that object. Since the work done by the car engine is equal to the change in kinetic energy of the car we can say that kinetic energy is being used in performing work. The kinetic energy of an object is the energy which it possesses due to its motion. It is defined as the work needed to accelerate a body of a given mass from rest to its stated velocity. Having gained this energy during its acceleration, the body maintains this kinetic energy unless its speed changes. The same amount of work is done by the body in decelerating from its current speed to a state of rest.
33. (a) A parsec is a unit of astronomical distance used to measure vast separations beyond our solar system, like distances to stars and galaxies. It is defined as the distance at which one astronomical unit subtends an angle of one arcsecond and equals approximately 3.26 light-years (or about  $3.086 \times 10^{13}$  kilo meters).
34. (d) A NOT gate, also known as an inverter, outputs the opposite (inverted) logic level of its input. This can be implemented using a single transistor. In a basic configuration, the transistor is connected with a resistor. When the input is high, the transistor conducts, causing the output to be low, and when the input is low, the transistor does not conduct, making the output high. This inverts the input signal, achieving the NOT function.
35. (c) Statement 1 is true but statement 2 is false. Specific gravity is the ratio of the density (mass of a unit volume) of a substance to the density (mass of the same unit volume) of a reference substance. Mercury has a specific gravity of 13.56 whereas specific gravity of iron is 7.21. Thus, iron ball floats on mercury.
36. (a) For ordinary water and glass it is about  $8^\circ$  (acute angle) and for mercury and glass it is about  $135^\circ$  (obtuse angle).
37. (b) Distance = Half of Circumference  
 $= \pi r = 3.14 \times 28 = 88$  m. Displacement  
 $=$  Diameter  $= 2 \times 28 = 56$  m.
38. (b) The pressure exerted by a liquid on the bottom of a vessel depends on the height of the liquid column and the density of the liquid, not on the cross-sectional area of the vessel. This means if you pour the same liquid to the same height in a container with a

different-sized bottom, the pressure at the bottom stays the same. So, even if you switch to a container with half the bottom area, the pressure remains unaffected because the liquid height hasn't changed.

39. (a) If frequency is doubled, then according to the formula  $\lambda = v/f$ , the wavelength is halved.
40. (c) When water is added to a solution of hydrochloric acid (HCl), the concentration of hydrogen ions (H<sup>+</sup>) in the solution decreases, which increases the pH slightly (making it less acidic). Therefore, the statement is true that dilution does not decrease the pH.
41. (c) Vinegar, which contains acetic acid, is indeed used for food preservation due to its antibacterial properties. Ethylene glycol is commonly used as an antifreeze agent in vehicle engines due to its low freezing point.
42. (a) Water is not effective for putting out petrol fires because it is heavier than petrol and sinks below it. This leaves the petrol on top, still exposed to air, allowing it to keep burning.
43. (a) An electric fuse is typically made from an alloy of tin and lead. This combination has a low melting point, allowing the fuse to melt and break the circuit when the current is too high, thus protecting electrical devices from damage.
44. (a) In the upper layer of the atmosphere (stratosphere), ozone is formed when ultraviolet (UV) rays from the Sun interact with oxygen molecules. The UV rays split oxygen molecules into individual oxygen atoms, which then combine with other oxygen molecules to form ozone. This ozone layer helps absorb harmful UV radiation, protecting life on Earth.
45. (d) In nuclear reactors, a moderator is used to slow down fast-moving neutrons, making it easier for them to cause fission in fuel atoms like uranium-235. Heavy water (D<sub>2</sub>O) and graphite are commonly used as moderators because they effectively slow down neutrons without absorbing them, facilitating a sustained nuclear chain reaction.
46. (b) In redox reactions, oxidation involves the loss of electrons, resulting in an increase in oxidation state, while reduction involves the gain of electrons, resulting in a decrease in oxidation state.
47. (d) As the number of shared electron pairs increases (single in ethane, double in ethene, and triple in ethyne), bond strength increases and bond length decreases, making ethene's C=C bond stronger and shorter than ethane's C-C bond.

48. (c) Non-metals usually have a higher effective nuclear charge, attracting electrons more strongly and thus exhibiting higher electronegativity compared to metals.
49. (d) Alloys can also be formed by combining metals with non-metals (e.g., steel is an alloy of iron and carbon).
50. (a) Ammonium sulphate is an inorganic salt with the formula  $(\text{NH}_4)_2\text{SO}_4$ , composed of two ammonium ions and one sulphate ion.
51. (d) Milk of magnesia is chemically known as magnesium hydroxide  $(\text{Mg}(\text{OH})_2)$ . It is commonly used as an antacid to neutralize stomach acid and relieve indigestion, as well as a laxative.
52. (c) Starch and cellulose are both polysaccharides and are composed of glucose molecules. Both are of plant origin and are polymers. However, only starch reacts with iodine to give a blue-black colour. Cellulose does not react with iodine, so this statement is incorrect.
53. (c) Grafting is a most common method of vegetative propagation. In this method, parts of two plants are joined in such a way that they grow as a one plant. Sweet orange plant is propagated by grafting technique. Layering is another type of vegetative propagation. In this method, roots are artificially induced on the stem branches before they are detached from the plant for propagation. Jasmine plant is propagated by this technique.
54. (d) Diphtheria, Leprosy, Plague are Bacterial diseases. AIDS, Polio, Pneumonia, Gonorrhoea, Syphilis-Viral disease. Japanese B encephalitis – Protozoan disease. Colour blindness and Haemophilia – Sex linked disease. Sickle cell anaemia is a genetic disease in which RBC became sickle shaped.
55. (b) Besides proteins and carbohydrates, approximately 67% of calcium, 35% of magnesium and 44% of the phosphorus found in milk.
56. (b) The glucose level in blood is commonly expressed as milligram per decilitre..
57. (c) Testes of man produce hormone testosterone and progesterone hormone is secreted by ovary of woman. Adrenal hormone releases the hormone less amount of cortisol for avoid stress..
58. (d) Blood has more platelets than corpuscles. A microlitre of blood contains 5,000-10,000 of White blood cells (WBC) and 150,000-500,000 platelets.

59. (b) Dengue viruses are transmitted to humans through the bites of infective female *Aedes* mosquito. The symptoms of disease is characterized by high fever, severe muscle pain, joint pain and rashes in body.
60. (d) A type of trans fat occurs naturally in the milk and body fat of ruminants (such as cattle and sheep) at a level of 2–5% of total fat. Natural trans fats, which include conjugated linoleic acid (CLA) and vaccenic acid, originate in the rumen of these animals..
61. (a) Asthma is a chronic lung disease. It inflames and narrows the air ways. Tuberculosis is a lung disease created by *Mycobacterium tuberculosis*. Workers in textile factories and carpet manufacturing units are the common suffers of asthma and tuberculosis.
62. (c) Homeostatic regulation includes sweating. It is the main process through which the body gets coolness.
63. (a) Plasmodesmata are microscopic channels that traverse the cell walls of plant cells, allowing transport and communication between neighbouring cells. These channels enable the passage of ions, small molecules, and some proteins, facilitating coordinated cellular functions across plant tissues.
64. (c) The combustible gas produced during gasification process includes carbon monoxide hydrogen, carbon dioxide and possibly hydrocarbons like methane ( $\text{CH}_4$ ).
65. (a) Diatoms are autotrophs which prepare their own food. Crustaceans are herbivorous animals which feed on diatoms. Herrings are carnivorous animals which feed on Crustaceans. This completes the food chain. Diatoms are autotrophs, prepare their own food. Crustaceans eats diatoms. Crustaceons members of zoo plants and are eaten by Herring fish when small.
66. (d) The International Treaty on Plant Genetic Resources for Food and Agriculture aims at guaranteeing food security through the conservation, exchange and sustainable use of the world's plant genetic resources for food and agriculture. The United Nations Convention to Combat Desertification is a Convention to combat desertification and mitigate the effects of drought. The World Heritage Convention is concerned with the protection of the world cultural and natural heritage. All three of them have a bearing on the biodiversity.
67. (a) Coral reefs are diverse underwater ecosystems held together by calcium carbonate structures secreted by corals. Andaman and Nicobar, Gulf of Kachchh and Gulf of Mannar have coral reefs. However Sunderbans do not have coral.



68. (b) Kacchativu is a small, uninhabited island located in the Palk Strait between India and Sri Lanka. In 1974, India ceded Kacchativu to Sri Lanka as part of a maritime boundary agreement to settle the territorial claims in this region. This decision aimed to resolve longstanding disputes and establish clear boundaries between the two nations. The Tin Bigha corridor, on the other hand, is a narrow strip of land located in the Indian state of West Bengal, which connects the Bangladeshi enclave of Dahagram–Angarpota with the rest of Bangladesh. In 1992, the Indian government provided Bangladesh with access to this corridor under a lease arrangement, allowing Bangladeshi citizens to travel between the enclave and mainland Bangladesh. This arrangement was intended to address the issues faced by residents of the enclave, who were otherwise isolated due to being surrounded by Indian territory.
69. (a) Bolivia is a land locked country, the surrounding countries are Peru, Chile, Argentina, Brazil and Paraguay. Other than Bolivia Peru, Uruguay, Surinam are the countries which one side any ocean or sea is present.
70. (a) Statement 1 is correct as the UNFCCC was indeed established at the 1992 Rio Earth Summit. Statement 2 is incorrect; the UNFCCC itself does not impose legally binding emission reduction targets on all its member countries. Legally binding targets are specifically set under the Kyoto Protocol for developed countries. Statement 3 is correct; the Paris Agreement is an agreement within the UNFCCC.
71. (d) The theme of the Summit is "Strengthening Multilateralism for Just Global Development and Security," highlighting its focus on fostering cooperation to address development and security on a global scale.
72. (a) Mount Kilimanjaro is located in Tanzania, not Kenya. It is the highest mountain in Africa and a popular destination for trekkers and climbers.
73. (a) The Canary Islands are an archipelago in the Atlantic Ocean, about 1300 km south of mainland Spain and 115 km west of Morocco. They consist of two Spanish provinces: Las Palmas and Santa Cruz de Tenerife. Formed by volcanic eruptions millions of years ago, the islands have rich volcanic soil. The climate is subtropical with warm temperatures and little seasonal variation. An archipelago refers to a group of islands formed by volcanic activity, tectonic movements, or sediment accumulation.
74. (b) Amnesty International is a non-governmental organisation focused on human rights. It was founded in

- London in 1961 by the lawyer Peter Benenson. It draws attention to human rights abuses and campaigns for compliance with international laws and standards.
75. (c) Statement 1 is correct; the CBD is legally binding, focusing on biodiversity conservation, sustainable use, and equitable sharing. Statement 2 is correct; the Cartagena Protocol specifically addresses the safety of LMOs (or GMOs). Statement 3 is incorrect; India is a party to the Nagoya Protocol, which aims at fair and equitable sharing of benefits from genetic resources.
76. (a) The theme for World Ozone Day 2024, "Ozone for Life: 35 Years of Global Cooperation," highlights the long-term importance of protecting the ozone layer for the survival of all living organisms.
77. (d) The Hozagiri dance is performed by the Reang (or Bru) tribe, primarily residing in Tripura. This dance is a part of the Hozagiri festival, celebrating agricultural success.
78. (b) The Naga tribes, predominantly residing in Nagaland and parts of the Northeast, traditionally practice "jhum" or shifting cultivation, an agricultural technique involving clearing patches of forest for temporary farming.
79. (c) The Strategic Forces Command (SFC) is responsible for the control and management of India's nuclear arsenal as part of the Nuclear Command Authority.
80. (d) The United Nations declared 2024 the International Year of Camelids (IYC 2024). The Year will highlight how camelids are key to the livelihoods of millions of households across over 90 countries.
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82. (b) First phase: Rise of Cotton mill, Second phase: Rise of steel, chemicals, electricity industries, Third phase: Rise of steam engine. Fourth phase: Rise of petrochemicals, jet aircraft, computers.
83. (c) A sinking fund is a fund created by the government and gradually accumulated every year by setting aside a part of current public revenue in such a way that it would be sufficient to pay off the funded debt at the time of maturity. Under this method, the aggregate burden of public debt is least felt, as the burden of taxing the people to repay the debt is spread evenly over the period of the accumulation of the fund. The preferable alternative for the

- government is to raise a new loan and credit the proceeds of sinking fund. It is a separate fund established by a government..
84. (c) Price rigidity occurs in oligopolies as firms avoid changing prices frequently to prevent price wars or loss of market share.
85. (a) Phillips Curve: Inflation and unemployment. Laffer Curve: Tax rates and tax revenue. Kuznets Curve: Economic growth and income inequality. Lorenz Curve: Income distribution.
86. (d) In monopolistic competition, products have close substitutes, but they are differentiated, unlike a monopoly where there are no close substitutes.
87. (b) Stagflation refers to a situation where an economy experiences high inflation, high unemployment, and stagnant economic growth simultaneously, making it difficult to address with policy measures.
88. (d) Credit rationing is a qualitative tool used by banks to limit or direct the flow of credit to certain sectors or borrowers, unlike quantitative tools like CRR and bank rates.
89. (c) In a socialist economy, the government or the state owns the means of production, and the focus is on equality and social welfare rather than profit.
90. (b) Demand-pull inflation occurs when aggregate demand in an economy exceeds aggregate supply, leading to upward pressure on prices.
91. (a) When marginal cost is less than average cost, average cost must be falling. When marginal cost exceeds average cost must be rising. The marginal cost and average cost curves are related to each other.
92. (c) IDA is focused on the world's poorest countries, offering concessional loans with long repayment periods and little to no interest. It does not prioritize middle-income countries, which are supported by IBRD.
93. (a) Palghat Gap is a low mountain pass in the Western Ghats between Coimbatore in Tamil Nadu and Palakkad in Kerala. It allows inland communication from Madurai to Thiruvananthapuram.
94. (a) The correct sequence is Alwar (Rajasthan) - Gorakhpur (Uttar Pradesh) - Ranchi (Jharkhand) - Bhagalpur (Bihar).
95. (a) Planimeters are used to measure areas on maps of any kind. They are often used by surveyors, foresters,

- geologists, geographers, engineers and architects.
96. (c) The southeast trade winds in the southern hemisphere and the northeast trade winds in the northern hemisphere meet each other near the equator. The meeting place of these winds is known as the Inter-Tropical Convergence Zone (ITCZ). In the month of July, the ITCZ shifts to 20°- 25° N latitude and is located in the Indo-Gangetic Plain and the South-West monsoons blow from the Arabian Sea and the Bay of Bengal. ITCZ is the zone of clouds and heavy rainfall..
97. (d) Radio waves are reflected back to earth from the Ionosphere. The ionosphere is a shell of electrons and electrically charged atoms and molecules that surrounds the Earth. It is a region of Earth's upper atmosphere, from about 60 km to 600 km altitude.
98. (c) Himalayas contain three mountain ranges the Himadri (greater Himalaya), Himachal (lesser Himalaya) and the Shiwaliks (outer Himalaya)..
99. (a) If a planet has no atmosphere, all of the sunlight which strikes it reaches the surface, and usually 90% or more of that is absorbed and 10% or less is reflected back into space. Thus the temperature will increase.
100. (b) Punjab, Jammu and Kashmir, Rajasthan and Gujarat have common borders with Pakistan.
101. (b) Tropical easterly jet stream occurs near the tropopause over Southeast Asia, India and Africa during summer. This jet is closely connected to the Indian and African summer monsoons. The existence of this jet implies that there is a deep layer of warm air to the north of the jet and colder air to the south over the Indian Ocean. This warm air is of course associated with the maximum heating taking place over India in summer, while the colder air is over the ocean. The difference in heating and cooling and the ensuing pressure gradient is what drives this jet..
102. (c) The idealized global wind pattern from the Equator to the poles is driven by the Earth's rotation and uneven solar heating. Near the equator, the Doldrums (Equatorial Low Pressure Zone) are regions of calm winds caused by intense heating and rising air. Moving away from the equator, the Trade Winds blow from subtropical high-pressure zones toward the equator (northeast in the Northern Hemisphere and southeast in the Southern Hemisphere). Beyond the tropics, the Westerlies dominate in the mid-latitudes, flowing from subtropical high-pressure zones toward higher latitudes. Finally, near the poles, the Easterlies blow from

polar high-pressure zones toward subpolar regions. This global wind circulation forms a systematic pattern essential for weather and climate.

- 103.** (c) Both the statements are true.
- 104.** (a) During summer season (May, June, and July) the northern hemisphere is exposed to more direct sunlight because the hemisphere faces the sun.
- 105.** (c) The horse latitudes are regions located at about 30 degrees north and south of the equator. These latitudes are characterized by calm winds and little precipitation.
- 106.** (a) Chinook wind- Rocky Mountains; Foehn- Northern slopes of the Alps; Sirocco- North African desert; Mistral - Southern slopes of Alps.
- 107.** (a) Duncan Passage is a strait in the Indian Ocean. It separates South and Little Andaman.
- 108.** (c) Global dimming is defined as the decrease in the amounts of solar radiation reaching the surface of the Earth. The Global dimming has devastating effects on the earth's environment and living beings. The pollutants causing global dimming also leads to acid rain, smog and respiratory diseases in humans.
- 109.** (b) Spring tides occur twice each lunar month all year long without regard to the season. Neap tides, which also occur twice a month happen when the sun and moon are at right angles to each other. During full or new moons- which occur when the earth, sun, and moon are nearly in alignment-average tidal ranges are slightly larger.
- 110.** (b) Australia is the largest producer of bauxite, followed by Guinea, Brazil, and China.
- 111.** (d) The Savanna biome is characterized by grasslands with scattered trees, typically found in regions like Africa, Brazil, and Australia.
- 112.** (a) The Gulf Stream carries warm water from the Gulf of Mexico to Europe. The Kuroshio Current is warm, the Labrador Current is cold and flows near Canada, and the Peru Current is cold.
- 113.** (b) The Mid-Atlantic Ridge is a divergent boundary where the Eurasian and North American plates are moving apart.
- 114.** (d) The Amazon rainforest is called the "lungs of the Earth" due to its role in producing oxygen and sequestering carbon.
- 115.** (a) The IDL is not a straight line and deviates to avoid political and

territorial conflicts. Crossing it from west to east results in losing a day, not gaining one.

- 116.** (b) Capillary water is retained on the soil particles by surface forces. It is held so strongly that gravity cannot remove it from the soil particles. The molecules of capillary water are free and mobile and are present in a liquid state. Plant roots are able to absorb it. Capillary water is, therefore, also known as available water.
- 117.** (a) The albedo effect refers to the reflection of solar radiation by a surface. It is higher when the angle of the sun's rays is low, such as during early morning and late evening, because the sunlight strikes the surface at a shallower angle. This increases the
- scattering and reflection of light compared to noon when the sun's rays hit the surface directly, minimizing reflection.
- 118.** (d) Saline and alkaline soils are typical in regions with poor drainage like arid and semi-arid areas. Over-irrigation increases soil salinity due to water evaporation leaving salts behind. Gypsum is effective in reclaiming saline soils, and green manure helps improve organic content and structure.
- 119.** (a) The Pampas are temperate grasslands found in South America, primarily in Argentina and Uruguay.
- 120.** (a) Oceanic plates are denser and usually subduct beneath lighter continental plates during convergence.