Prelims Refresher Programme: Day 37 (Test-11)

QUESTION 1:

The project 'Kan Sikul, Kan Huan', sometimes mentioned in the news is related to

(a) Fight malnutrition among children
(b) Pollution Control
(c) Biodiversity Conservation
(d) Rain Water Harvesting

Answer: (a)

Explanation

- **Kan Sikul, Kan Huan** (My School, My Home)' is a project of **Mizoram's Lawngtlai district administration** for turning schools into nutrition gardens. The project is the brainchild of the district's Deputy Commissioner Shaskanka Ala, that seeks to fight malnutrition among children by letting them grow their own fruits and vegetables in their schools with the help of teachers, parents and community members. **Hence, option A is correct.**

QUESTION 2:

Consider the following statements about Indian Renewable Energy Development Agency (IREDA):

1. IREDA is a Non-Banking Financial Company (NFBC) engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy.
2. It works under the administrative control of the Ministry of New and Renewable Energy.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

- **Indian Renewable Energy Development Agency Limited (IREDA)** is a Mini Ratna (Category – I) Government of India Enterprise under the administrative control of the Ministry of New and Renewable Energy (MNRE). **Hence, statement 2 is correct.**
- IREDA is a Public Limited Government Company established as a **Non-Banking Financial Institution in 1987** engaged in promoting, developing and extending financial assistance for setting up projects relating to new and renewable sources of energy and energy efficiency/conservation with the motto: "ENERGY FOR EVER".
- IREDA has been notified as a **"Public Financial Institution"** under section 4 'A' of the Companies Act, 1956 and registered as a Non-Banking Financial Company (NFBC) with the Reserve Bank of India (RBI). **Hence, statements 1 is correct.**

QUESTION 3:

With reference to ocean acidification, consider the following statements:

1. In ocean acidification, carbon dioxide reacts with seawater and changes the pH of the ocean.
2. It helps in the growth of coral reefs.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- Absorbed carbon dioxide reacts with seawater and changes the pH of the ocean. This process is known as ocean acidification. **Hence, statement 1 is correct.**
- The rising acidity of the oceans threatens coral reefs by making it harder for corals to build their skeletons. **Hence, statement 2 is not correct.**

QUESTION 4:

Which of the following species have been classified as Endangered (EN) in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species?

1. Hangul
2. Lion-tailed Macaque
3. Indian Wild Ass
4. Red Panda

Select the correct answer using the code given below:

(a) 2 and 4 only
(b) 2, 3 and 4 only
(c) 1 and 3 only
(d) 3 and 4 only

Answer: (a)

Explanation

Hangul

- Hangul or the Kashmiri Red Stag is the state animal of Jammu and Kashmir and is currently confined to Dachigam National Park in Jammu and Kashmir.
- **It has been classified as Critically Endangered in the International Union for Conservation of Nature's Red List of Threatened Species.**
- It is the only surviving subspecies of the red deer family in the Indian subcontinent.
- The Hanguls were present in thousands towards the beginning of the 20th century in many parts of Kashmir.
- The number dropped drastically by the 1970s as hunting permits were misused to poach the Hangul in large numbers.
- The census of 2015 had estimated that there were only 186 Hangul deer left in Dachigam, the last habitat of the animal.

Lion-tailed Macaque

- The lion-tailed macaque gets its name from the black tuft of fur at the end of its tail (much like a lion's).
- They are endemic to the Western Ghats.
- Habitat loss is the primary threat to the lion-tailed macaque.
- **It has been classified as Endangered in the International Union for Conservation of Nature's Red List of Threatened Species.**

Red panda

- It is slightly larger than a domestic cat with a bear-like body and thick russet fur.
- Red pandas are very skillful and acrobatic animals that predominantly stay in trees. Almost 50% of the red panda's habitat is in the Eastern Himalayas.
- They use their long, bushy tails for balance and to cover themselves in winter, presumably for warmth.
- Primarily an herbivore, the name panda is said to come from the Nepali word 'ponya,' which means bamboo or plant eating animal
- It has been classified as Endangered in the International Union for Conservation of Nature's Red List of Threatened Species.

Indian wild ass

- The Indian Wild Ass or Khur is a subspecies of the Asiatic Wild Ass, the Onager.
- Both are classified as Near Threatened (NT) on the IUCN Red List.
- Its biggest stronghold is the Indian Wild Ass Sanctuary in Little Rann of Kutch (LRK) in Gujarat, and surrounding areas. Hence, option (a) is correct.

QUESTION 5:

Researchers at Wildlife Institute of India (WII), Dehradun have reported the presence of a small population of hog deer in Keibul Lamjao National Park (KLNP). In this context, consider the following statements:

1. The Keibul Lamjao National park is considered a biodiversity hotspot on India-Myanmar border.
2. Hog deer is an endangered species in the IUCN Red List.
3. Hog deer has been placed under Schedule-V of the Indian Wildlife (Protection) Act, 1972.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

- Hog deer is a small deer with dark brown to yellow brown fur and white-tipped tails. This species is typically found in riverine flooded grasslands of Southeast Asia.
- At the beginning of the 20th century, the species was widely distributed throughout Southeast Asian countries. However, in recent years a small and isolated population of it has been reported.
- Western Ghats, The Himalayas, Indo-Burma Region and Sundaland are four biodiversity hotspots in India.
    - **Keibul Lamjao National Park in Manipur** is considered as a **biodiversity hotspot on India-Myanmar border** as it forms the part of Indo-Burma Biodiversity hotspot region. **Hence, statement 1 is correct.**
- The **IUCN Red List of Threatened Species** is the world's most comprehensive inventory of the global conservation status of plant and animal species. In the IUCN Red List, hog deer has been listed as an endangered species. An endangered species is an animal or plant that's considered at risk of extinction. **Hence, statement 2 is correct.**
- Animals that are declared vermin by the Environment Ministry are placed under **Schedule-V of the Wildlife Protection Act, 1972.** Once declared vermin, a species can be hunted or culled without restriction. Hog deer has been declared a protected species under the Wildlife Protection Act, 1972 and has been placed under Schedule-I of the Act. **Hence, statement 3 is not correct.**

News: Researchers at Wildlife Institute of India (WII), Dehradun reported the presence of a small

population of hog deer in Keibul Lamjao National Park (KLNP), Manipur. This study indicates that the western limit of hog deer is Manipur and not central Thailand as believed so far.

QUESTION 6:

With reference to Ortolan bunting, which of the following statements is/are correct?

1. The International Union for Conservation of Nature's (IUCN) Red List of Threatened Species has placed it in the "Least Concern" category.
2. It is endemic to the Western Ghats.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- "Ortolan bunting" is a bird which breeds from Mongolia to Europe and migrates to Africa via the Middle East. In summers it moves to Western Europe and winters in Africa and tropical areas. It is not endemic to Western Ghats of India. **Hence, statement 2 is not correct.**
- The **International Union for Conservation of Nature's (IUCN) red list** of threatened species has placed it in the "Least Concern" category. **Hence, statement 1 is correct.**
- IUCN Red List of Threatened Species is the world's most comprehensive inventory of the global conservation status of plant and animal species.

QUESTION 7:

Consider the following statements regarding transgenic animals:

1. Animals that have had their Deoxyribonucleic acid (DNA) manipulated to possess and express an extra (foreign) gene are known as transgenic animals.
2. They can be used in toxicity assessments.
3. They can be used for testing the safety of vaccines.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: (d)

Explanation

- Animals that have had their DNA manipulated to possess and express an extra (foreign) gene are known as transgenic animals. **Hence, statement 1 is correct.** Transgenic rats, rabbits, pigs, sheep, cows and fish have been produced,(although over 95 per cent of all existing transgenic animals are mice) for the benefit of mankind.

Benefits of Transgenic Animals:

1. **Normal physiology and development:**
   - Transgenic animals can be specifically designed to allow the study of how genes are regulated, and how they affect the normal functions of the body and its development, e.g., study of complex

factors involved in growth such as insulin-like growth factor.

2. **Study of disease:**
   - Many transgenic animals are designed to increase our understanding of how genes contribute to the development of disease.
   - These are specially made to serve as models for human diseases that investigation of new treatments for diseases is made possible.
   - Today transgenic models exist for many human diseases such as cancer, cystic fibrosis, rheumatoid arthritis and Alzheimer's.
3. **Biological products:**
   - Medicines required to treat certain human diseases can contain biological products, but such products are often expensive to make.
   - Transgenic animals that produce useful biological products can be created by the introduction of the portion of DNA (or genes) which codes for a particular product such as human protein (α-1-antitrypsin) used to treat emphysema.
4. **Vaccine safety:**
   - Transgenic mice are being developed for use in testing the safety of vaccines before they are used on humans. **Hence, statement 3 is correct.**
   - Transgenic mice are being used to test the safety of the polio vaccine. If successful and found to be reliable, they could replace the use of monkeys to test the safety of batches of the vaccine.
5. **Toxicity assessments**
   - Transgenic animals are used in toxicity assessments,
   - They are used for understanding the pathobiology of different diseases, finding targets for pharmacological (pharmacology is the science dealing with the preparation, uses, and especially the effects of drugs) manipulations, and for the evaluation of efficacy and toxicity of medicines in preclinical studies. **Hence, statement 2 is correct.**

QUESTION 8:

Which of the following species are now extinct?

1. West African Black Rhinoceros
2. Passenger Pigeon
3. Tasmanian Tiger
4. Dodo

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

Answer: (d)

Explanation

West African Black Rhinoceros

- This subspecies of the black rhino once roamed sub- Saharan Africa, but fell victim to poaching.
- Its population was in the hundreds in 1980, fell to 10 by 2000, and just five a year later. Surveys in 2006 failed to locate any and it was declared extinct in 2011.

Tasmanian Tiger

- Thylacines (Thylacinus cynocephalus) known as Tasmanian tigers due to their stripes, were the largest

modern carnivorous marsupial according to the Smithsonian Institution.

- Marsupials are the group of mammals commonly known as pouched mammals (like the wallaby and kangaroo). Marsupials are an important group of land mammals in South America and Australia.

- They once existed across the Australian continent, but their habitat had been reduced to the island of Tasmania by the time European settlers arrived.
- Thylacines were declared a protected species in 1936, the same year the last known specimen died.
- Using preserved specimens, a team at Pennsylvania State University has successfully sequenced the animal's mitochondrial DNA.

The passenger pigeon

- They may have once constituted 25 to 40% of the bird population. As many as 3 to 5 billion of these birds were alive when Europeans arrived in North America.
- The birds' traditional habitats were the large forests of eastern North America. As settlers cleared the forests for farmland, the pigeons turned to the new fields for subsistence.
- The 19th century brought widespread hunting and trapping of the birds, which severely diminished their populations.

Dodo

- The Dodo which was endemic to Mauritius is perhaps the most famous extinct species.
- The first recorded mention of the flightless bird was by Dutch sailors in 1598; the last sighting of one was in 1662.
- It owes much of its fame to its appearance in Alice's Adventures in Wonderland.

Hence, option (d) is correct.

QUESTION 9:

In the 'Carbon Cycle', the processes by which carbon dioxide is returned to the atmosphere are:

(a) Combustion and Respiration
(b) Decomposition and Nutrition
(c) Photosynthesis and Digestion
(d) Photosynthesis and Respiration

Answer: (a)

Explanation

CYCLING OF MATERIALS

- Since materials flow from non-living to the living and back to the non-living in a more or less circular path, the cycle is also known as biogeochemical cycle.

Carbon cycle

- Carbon is the main constituent of the living matter. It is found in carbohydrates, fats, proteins and nucleic acids that make up the living cell.
- It is available from the following three main sources – atmosphere, oceans (hydrosphere), limestone, coal and petroleum.
- The atmosphere contains about 0.03% to 0.04% carbon dioxide in free state. Green plants use this carbon dioxide to synthesize food by the process of photosynthesis. The atmospheric carbon taken in by the plants is transferred to animals in the form of food. From both plants and animals, it is then passed on to the decomposers after their death.
- There are processes by which carbon dioxide is returned to the atmosphere to maintain a balance.
- The processes by which carbon dioxide is returned to the atmosphere are as follows:

- By the process of combustion, i.e. burning of fuels like wood, coal, petroleum, etc.
- By the process of respiration in plants, animals and decomposers.
- **Hence, option (a) is correct.**

QUESTION 10:

Consider the following statements regarding Gangetic Dolphin:

1. It is found in India only.
2. It is a mammal and cannot breathe in the water.
3. It has been classified as Endangered in the IUCN's Red List of Threatened Species.

Which of the statements given above is/are correct?

(a) 2 and 3 only
(b) 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

Answer: (a)

Explanation

The Ganges River dolphin, or susu, inhabits the Ganges Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh. **Hence, statement 1 is not correct.**

- The Ganges River dolphin is threatened by removal of river water and siltation arising from deforestation, pollution and entanglement in fishing nets. In addition, alterations to the river due to barrages are also separating populations.
- This dolphin is among the four "obligate" freshwater dolphins - the other three are the baiji now likely extinct from the Yangtze river in China, the bhulan of the Indus in Pakistan and the boto of the Amazon River in Latin America. Although there are several species of marine dolphins whose ranges include some freshwater habitats, these four species live only in rivers and lakes.
- Although its eye lacks a lens (this species is also referred to as the "blind dolphin"), the dolphin still uses its eye to locate itself. The species has a slit similar to a blowhole on the top of the head, which acts as a nostril.
- Being a mammal, the Ganges River dolphin cannot breathe in the water and must surface every 30-120 seconds. Because of the sound it produces when breathing, the animal is popularly referred to as the 'Susu'. **Hence, statement 2 is correct.**
- It has been classified as **Endangered** in the International Union for Conservation of Nature's Red List of Threatened Species. **Hence, statement 3 is correct.**

QUESTION 11:

Which of the following statements is/are correct regarding the weight of a human body?

1. It decreases as one moves inside the earth towards the centre.
2. It is higher at the poles than at the equator.
3. It is always greater than the mass of the body.

Select the correct answer using the code given below:

(a) 2 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

Mass is the measure of the amount of matter in a body; whereas weight is the measure of the amount of force acting on a mass due to the gravitational acceleration.

- Weight is given by the product of mass and acceleration of gravity.
- As one goes down below the Earth's surface, for example in a mine shaft, the force of gravity lessens.
- With lowering of gravity, weight and gravitational pull continue to decrease as one gets closer to the centre of the Earth.
- And if a person reaches right in the centre of the earth, by any means, then the Earth surrounding him will pull him equally in all directions and the net effect is that those forces get canceled out. There's no gravitational pull and he would be weightless. **Hence, statement 1 is correct.**
- The effective acceleration of gravity at the poles is 980.665 cm/sec 2 while at the equator it is 3.39 cm/sec2 less due to the centrifugal force. Since, the acceleration due to gravity is higher at poles; weight of the human body will be higher at the poles than at equator. **Hence, statement 2 is correct.**
- Weight of the human body may change but mass of the human body does not since it is the measure of the amount of matter in a body. **Hence, statement 3 is not correct.**

QUESTION 12:

With reference to Radio Frequency Identification (RFID) technology, consider the following statements:

1. RFID tags can have both read and write capabilities.
2. Active RFID tags do not rely on external power sources.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

Radio Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object. At a basic level, each RFID tag works in the same way:

- Data stored within an RFID tags microchip waits to be read.
- The tag's antenna receives electromagnetic energy from an RFID reader's antenna.
- Using power from its internal battery or power harvested from the reader's electromagnetic field, the tag sends radio waves back to the reader.
- The reader picks up the tag's radio waves and interprets the frequencies as meaningful data.
- Active, semi-passive and passive RFID tags are making RFID technology more accessible and prominent in our world. These tags are less expensive to produce, and they can be made small enough to fit on almost any product.
- Active and semi-passive RFID tags use internal batteries to power their circuits. An active tag also uses its battery to broadcast radio waves to a reader, whereas a semi- passive tag relies on the reader to supply its power for broadcasting. Because these active tags contain more hardware than passive RFID tags, they are more expensive. Thus Active RFID tags do not rely on external power sources. **Hence, statement 2 is correct.**

RFID tags have three storage types:

- **Read-Write tags** have the ability to add additional data or be overwritten. **Hence statements 1 is correct.**

- **Read-Only tags** cannot be added to or overwritten, they contain only the data that is stored in them when they were made.
- **Write once, Read many (WORM)** tags can have additional data added once, but they cannot be overwritten.

QUESTION 13:

When a sound wave goes from one medium into another, which of the following quantities do/does not change with change in medium?

1. Velocity
2. Wavelength
3. Frequency

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

Sound is propagated in the form of longitudinal waves. When sound travels from one medium to another, both its velocity and wavelength undergo changes.

- The velocity of sound in a given medium is obtained by the equation v = nW, where ''n'' is the frequency of sound and 'W'' is its wavelength in that medium and v is the speed of sound (in units of m/s).
- As per above equation the velocity of sound is directly proportional to the wavelength. Thus, if the velocity of sound doubles when it travels from one medium to another, its wavelength also doubles.
- However, the frequency of sound depends upon the source of sound, not on the medium of propagation. The frequency therefore remains the same and maintains the frequency of the original source even if velocity (v) and wavelength (W) change with time. **Hence, option B is correct.**

QUESTION 14:

Which of the following items is/are usually basic (alkaline) in nature?

1. Toothpaste
2. Distilled water
3. Baking soda

Select the correct answer using the code given below:

(a) 3 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) None of the above

Answer: (b)

Explanation

Tooth decay starts when the pH of the mouth is lower than 5.5. This is due to bacteria present in the mouth start producing acids by degradation of sugar and food particles remaining in the mouth after eating.

- The basic nature of the toothpaste can neutralise the excess acid and prevent tooth decay. Hence, toothpaste is basic in nature.
- Distilled Water is a pure form of water, which is neither acidic nor basic in nature. Hence, distilled water is not basic in nature.
- Baking soda (Sodium bicarbonate) is a weak base with pH of 9. It is commonly used in cooking. When it reacts with an acid, it liberates carbon dioxide gas. Hence, baking soda is basic in nature. **Hence, option (b) is correct.**

QUESTION 15:

With reference to 'SOFIA', consider the following statements:

1. It is a stratospheric telescope observatory that allows astronomers to study the solar system.
2. It is a joint project of NASA and the German Aerospace Center (DLR).
3. It is permanently installed in the stratosphere for space observation.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

Answer: (c)

Explanation

- Stratospheric Observatory for Infrared Astronomy (SOFIA) is a Boeing 747SP aircraft modified to carry a 2.7-meter (106-inch) reflecting telescope (with an effective diameter of 2.5 meters or 100 inches). Flying into the stratosphere at 38,000-45,000 feet puts SOFIA above 99% of **Earth's infrared-blocking atmosphere, allowing astronomers to study the solar system** and beyond in ways that are not possible with ground-based telescopes. **Hence, statement 1 is correct.**
- SOFIA is made possible through a partnership between NASA and the German Aerospace Center (DLR). **Hence, statement 2 is correct.**
- SOFIA lands after each flight, so its instruments can be exchanged, serviced or upgraded to harness new technologies. Because these new instruments can be tested and adjusted, SOFIA can explore new frontiers in the solar system and beyond and serve as a testbed for technology that may one day fly in space. **Hence, statement 3 is not correct.**

QUESTION 16:

Which of the following is/are correct regarding Lunar Orbital Platform-Gateway?

1. It is a lunar space station proposed by NASA.
2. It will serve as a short-term habitation module in lunar orbit.

Select the correct answer using the code below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

- The **Lunar Orbital Platform-Gateway** is a proposed NASA program that would bring astronauts to

the moon to operate a lunar space station. **Hence, statement 1 is correct.**

- It is intended to serve as a solar-powered communications hub, science laboratory, **short-term habitation module**, and holding area for rovers and other robots. **Hence, statement 2 is correct.**

QUESTION 17:

NASA's ATom mission has been launched for?

(a) Analysing gas molecules in Mars's atmosphere.
(b) Analysing atoms and molecules of elements in meteorites.
(c) Finding the amount of pollution in a remote corner of earth.
(d) To understand the water chemistry of water on the surface of the Moon.

Answer: (c)

Explanation

- The **Atmospheric Tomography Mission (ATom)** will study the impact of human-produced air pollution on greenhouse gases and on chemically reactive gases in the atmosphere. Reductions of atmospheric concentrations of methane (CH4), tropospheric ozone (O3) and black carbon (BC) aerosols are effective measures to slow global warming and to improve air quality.
- Airborne instruments will look at how atmospheric chemistry is transformed by various air pollutants and at the impact on CH4 and O3. **Hence, option C is correct.**

QUESTION 18:

With reference to International Seed Testing Association (ISTA), consider the following statement:

1. The first conference of ISTA was held in India..
2. It produces internationally agreed rules for seed sampling and testing and disseminates knowledge in seed science and technology.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- The **32nd International Seed Testing Association (ISTA)** Congress took place in Hyderabad from 26th June to 3rd July, 2019. However, this is the first congress that is being held in Asia. **Hence, statement 1 is not correct.**
- **It produces internationally agreed rules for seed sampling and testing, accredits laboratories, promotes research, provides international seed analysis certificates and training, and disseminates knowledge in seed science and technology. Hence, statement 2 is correct.**
- The headquarters of the Association is located in Switzerland.

QUESTION 19:

'Osaka Track', sometimes mentioned in the news is a -

(a) Framework to promote cross-border data flow.
(b) Framework to promote Intellectual property regime.
(c) Bilateral trade agreement between U.S and Japan.

(d) A G20 multilateral agreement on investment.

Answer: (a)

Explanation

- 'Osaka Track' is a framework **to promote cross-border data flow** with enhanced protections, launched at the G20 summit in Japan.
- The initiative seeks the removal of prohibitions on data localisation and **urges nations to negotiate rules on data flows**, cloud computing among others. **Hence, option A is correct.**
- Several countries including China, the European Union, the United States and Singapore adopted Osaka Track to formulate rules on digital governance under the concept of "Data Free Flow with Trust". However, **India refused to sign the "Osaka Track".**

QUESTION 20:

'Bhabha Kavach', sometimes mentioned in the news is a -

(a) Bullet proof jacket

(b) Ballistic Missile Defence System

(c) Anti Tank Missile

(d) Anti Nuclear Medical Kit

Answer: (a)

Explanation

- 'Bhabha Kavach' is India's **lightest and cheapest bullet proof jacket.** It weighs just 6.6 kg (traditional jackets weigh around 17 kg).
- It is developed indigenously by Defence organizations like Ordnance Factory Board and Mishra Dhatu Nigam Limited (MIDHANI) with transfer of carbon-nanomaterial technology from Bhabha Atomic Research Centre(BARC). **Hence, option A is correct.**
- Bhabha Kavach is built from layers of **high-density, high-tenacity polyethylene**, which are fused together **at high temperatures** to form a thick, hard armour plate, which is then sprayed with BARC's carbon nanomaterial.
- The **materials used** in the jacket are hard boron carbide ceramics, carbon nano-tubes and composite polymer (polymer made up of two or other types of polymer).

QUESTION 21:

Arrange the following items in ascending order of their contribution in India's import basket:

1. Gold and silver
2. Petroleum products
3. Crude oil
4. Electronic component

Select the correct answer using the code given below:

(a) 1, 3, 2, 4

(b) 3, 1, 4, 2

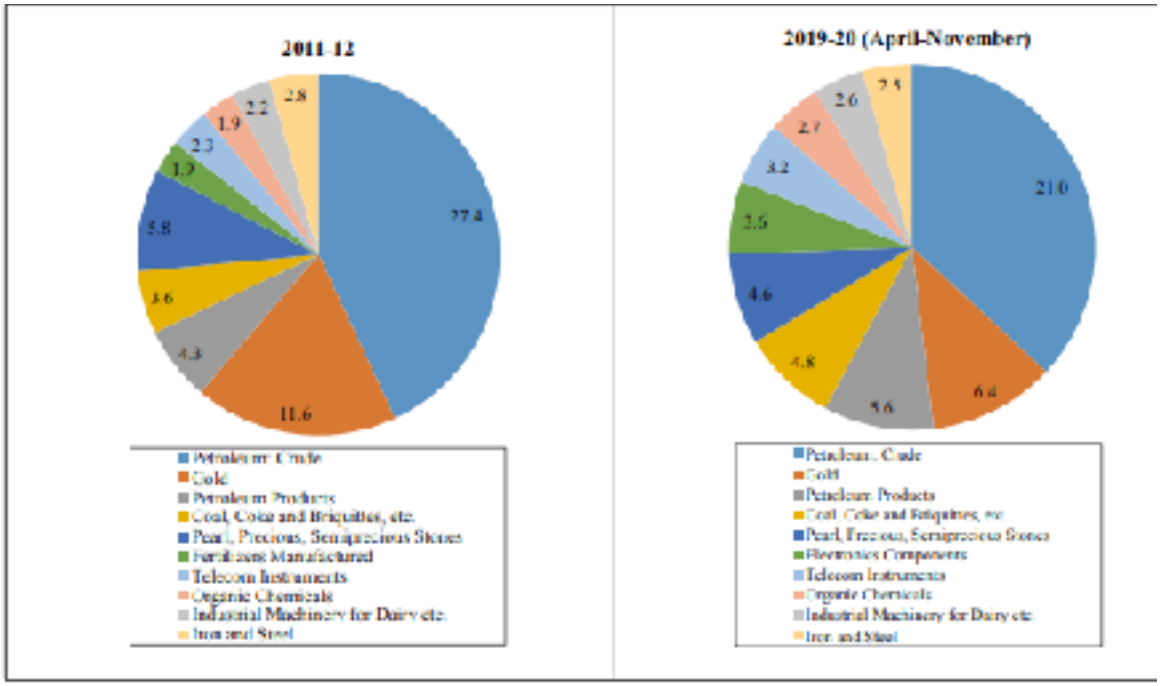
(c) 4, 2, 1, 3

(d) 2, 1, 3, 4

Answer: (c)

Explanation

- Crude petroleum continues to be the largest imported commodity in 2019-20 with a share of 21%, followed by Gold, Silver (6.4%); Petroleum Products (5.6%); electronic component (3.6 %) in the import basket. Hence, option C is correctly matched.



Source: Department of Commerce.

QUESTION 22:

With reference to India's destinations for exports, arrange the following countries in ascending order :

1. United States of America
2. United Arab Emirates
3. China
4. Hong Kong

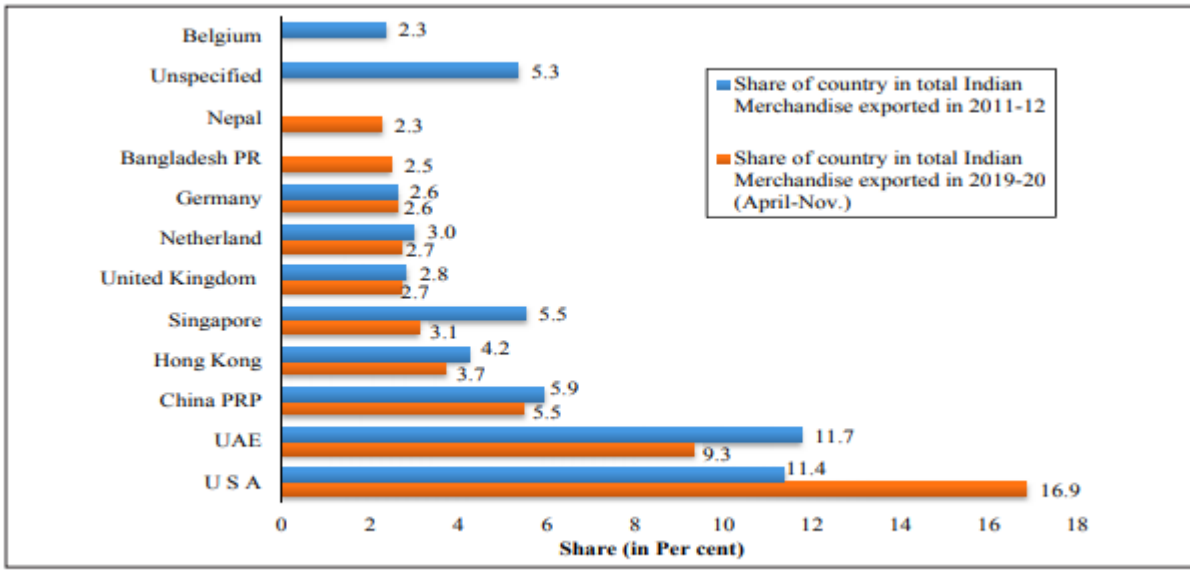
Select the correct answer using the code given below:

(a) 1, 2, 3, 4
(b) 2, 3, 4, 1
(c) 4, 3, 2, 1
(d) 3, 4, 1, 2

Answer: (c)

Explanation

- India's **largest export destination** country continues to be the **United States of America (USA)**, which accounted for 16.9% of India's exports in 2019-20, followed by United Arab Emirates (UAE), China and Hong Kong. **Hence, option C is correct.**



Source: Department of Commerce.

QUESTION 23:

With reference to India's sources of imports, arrange the following countries in descending order:

1. United States of America
2. United Arab Emirates
3. Saudi Arab
4. China

Select the correct answer using the code given below:

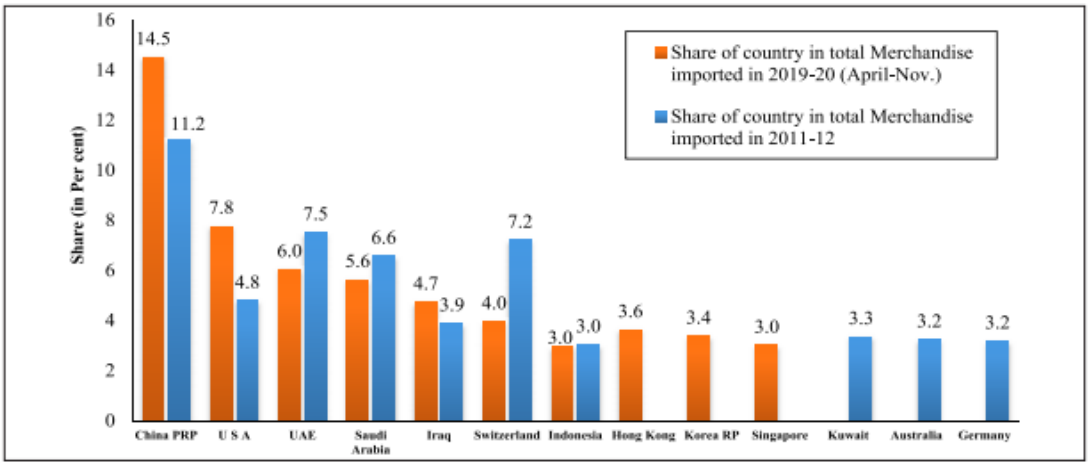
(a) 1, 2 , 3, 4
(b) 2, 3, 4, 1
(c) 4, 3, 2, 1
(d) 4, 1, 2, 3

Answer: (d)

Explanation

- **China is the largest source of imports** of India accounting for 14.5% of the total imported value in 2019-20. The other sources from where India imports are the USA (7.8%), UAE (6%) and Saudi Arabia (5.6%). **Hence, option D is correct.**

Figure 16: Top 10 Import Origins of India in 2011-12 and 2019-20 (April-November) (By Share in Per cent)



Source: Department of Commerce.

QUESTION 24:

Which of the following is/are the components of Human development?

1. Enlarging the range of people's choices
2. Increasing opportunities
3. Sound physical environment
4. Social and political freedom

Select the correct answer using the code given below:

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1 and 4 only
(d) 1, 2, 3 and 4

Answer: (d)

Explanation

- **Human development** is a **process of enlarging the range of people's choices**, increasing their **opportunities** for education, health care, income and empowerment and covering the full range of human choices from a **sound physical environment** to **economic, social and political freedom**.
  - Thus, enlarging the range of people's choices is the most significant aspect of human development. People's choices may involve a host of other issues, but, living a long and healthy life, to be educated and have access to the resources needed for a decent standard of living, including political freedom, guaranteed human rights and personal self-respect, etc. are considered some of the non-negotiable aspects of the human development. **Hence, option D is correct.**

QUESTION 25:

With reference to the 2011 Census migration data, consider the following statements:

1. Uttar Pradesh and Bihar have a disproportionately high number of out-migrants.
2. Delhi and Mumbai are widely considered migrant magnets.
3. Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh account for 50% of India's total inter-state migrants.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (d)

Explanation

- According to the 2011 Census, Uttar Pradesh and Bihar are responsible for the most number of migrants as 20.9 million people migrated outside the state from the two states. **Hence, statement 1 is correct.**
- Delhi and Mumbai are widely considered migrant magnets. Migrants from other states in Delhi and Mumbai numbered 9.9 million, or almost a third of the combined population of 29.2 million in these two metropolises that year. **Hence, statement 2 is correct.**
- According to the Census, the Hindi belt is the main source of migrants as four states, Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh accounted for 50% of India's total inter-state migrants. **Hence, statement 3 is correct.**

QUESTION 26:

Arrange the following in the descending order of employment elasticity:

1. Rubber and plastic products
2. Wood and products of wood
3. Electronic and optical products
4. Transport equipment, machinery
5. Electricity, gas and water supply

Select the correct answer using the code given below:

(a) 1, 3, 4, 5, 2
(b) 2, 3, 4, 5, 1
(c) 2, 3, 4, 5, 1
(d) 5, 4, 3, 2, 1

Answer: (a)

Explanation

- Employment elasticity is a measure of the percentage change in employment associated with a 1 percentage point change in economic growth. The employment elasticity indicates the ability of an economy to generate employment opportunities for its population as per cent of its growth (development) process.
- The sub-sectors with highest employment elasticities are **Rubber and plastic products> Electronic and optical products>Transport equipment>Electricity, Gas and water supply>Wood and products of wood.**
- To step up the impact of economic growth on employment, the focus has to be on such high employment elastic sectors. **Hence, option A is correct.**

QUESTION 27:

As per the United Nations Population Fund , the age group that determines the demographic dividend of a country is:

(a) 15-29 years

(b) 14-49 years
(c) 14-59 years
(d) 15-64 years

Answer: (d)

Explanation

- A **demographic dividend** occurs when the rate of economic growth is increased due to change in the age structure of the population that favours presence of more working age than that of dependent population.
- As per the United Nations Population Fund , the share of the working-age population (15 to 64) has to be larger than the non-working-age share of the population (14 and younger, and 65 and older) to achieve demographic dividend. Also the benefits can be accrued only when economies are in a position to harness the benefits gained from high demographic dividend by generating employment opportunities. **Hence option (d) is correct.**

QUESTION 28:

With reference to objectives of Agriculture Export Policy–2018, consider the following statements:

1. It aims to diversify our export basket, destinations and boost high value and value added agricultural exports including focus on perishables.
2. It will provide an institutional mechanism for pursuing market access, tackling barriers and dealing with sanitary and phyto-sanitary issues.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

The Union Cabinet has approved the Agriculture Export Policy, 2018.

Objectives of the Agriculture Export Policy are as under:

- To double agricultural exports from present ~US$ 30+ Billion to ~US$ 60+ Billion by 2022 and reach US$ 100 Billion in the next few years thereafter, with a stable trade policy regime.
- To diversify our export basket, destinations and boost high value and value added agricultural exports including focus on perishables. **Hence, statement 1 is correct.**
- To promote novel, indigenous, organic, ethnic, traditional and non-traditional Agri products exports.
- To provide an institutional mechanism for pursuing market access, tackling barriers and dealing with sanitary and phyto-sanitary issues. **Hence, statement 2 is correct.**
- To strive to double India's share in world agri-exports by integrating with the global value chain at the earliest.
- Enable farmers to get benefit of export opportunities in overseas markets.

QUESTION 29:

Which of the following would not be included as contributing negatively to India's current account?

1. Purchase of stock in a British corporation by an Indian company based in Bangalore.
2. Purchase of capital goods such as trucks and bulldozers by an Indian company from Russia.

3. The hiring of a Singapore based logistic company for transportation of Indian goods to South Asian countries.
4. ONGC's acquisition of drilling rights in Russian fields.

Select the correct answer using the code given below:

(a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1 and 4 only
(d) 1, 2 and 4 only

Answer: (c)

Explanation

- Capital account measures financial transactions that don't currently affect a country's income, production, or savings. Their value is based on what they are expected to produce in the future.
- Capital account transactions include international transfers of ownership.For example, Indian Company purchases foreign trademark from a U.S. based company; **ONGC's acquisition of drilling rights to an overseas location**, or purchase of stock by an Indian company in foreign firm, etc. **Therefore, first and fourth given items are included in capital account transactions.**
- Current account of Balance of Payment (BoP) includes Trade in goods and services, net income in the form of interest from foreign investments and direct money transfers in the form of remittance. Import of goods and services leads to a deficit in current accounts and hence affects negatively.
- Purchase and sale of capital goods such as trucks and bulldozers is a current and not a capital transaction. Purchase of trucks and bulldozers by an Indian company from foreign firm would lead to current account deficit in India and will affect negatively. Similarly, purchase of transport services from Singapore would lead to import of services and current account deficit in India. **Hence, option C is correct.**

QUESTION 30:

Consider the following Pairs:

	Financial Term	Description
1.	Golden Handshake	Payment to attract new employees.
2.	Golden Handcuff	Payment to prevent poaching of employees.
3.	Golden Hello	Payment made to existing employees for quitting the job.
4.	Golden Rule	Related to government borrowing and spending

Which of the pairs given above is/are correctly matched?

(a) 3 only
(b) 2 and 4 only
(c) 2, 3 and 4 only
(d) None of the above

Answer: (b)

Explanation

Golden Handshake

- A payment (usually generous) made by a company to its employees for quitting the job. **Hence, pair 1 is not correct.**

Golden Handcuff

- A royalty/bonus payment by a company to its staff (usually top ranking) to keep them with the

company or to save them from poaching by the other companies. **Hence, pair 2 is correct.**

Golden Hello

- A large sum paid by a company to attract a new staff to its fold from the rival companies. **Hence, pair 3 is not correct.**

Golden Rule

- A fiscal policy stance which suggests that over the economic cycle, the government should borrow only to 'invest' and not to finance the 'current expenditure'. The attempts towards 'balanced budgeting', 'zero-based budgeting' were developed under influence of this rule. **Hence, pair 4 is correct.**

QUESTION 31:

With reference to the Himalayan Yew, which of the following statements is/are correct?

1. It is used for making anti-cancer drugs.
2. It is found in western Himalayas only.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

The Himalayan Yew

- The Himalayan Yew (Taxus wallichiana) is a medicinal plant (tree) found in various parts of Himachal Pradesh and Arunachal Pradesh.
- A chemical compound called 'taxol' is extracted from the bark, needles, twigs and roots of this tree, and it has been successfully used to treat some cancers – the drug is now the biggest selling anticancer drug in the world. **Hence, statement 1 is correct.**
- The species is under great threat due to over-exploitation.
- In the last one decade, thousands of yew trees have dried up in various parts of Himachal Pradesh and Arunachal Pradesh. **Hence, statement 2 is not correct.**

QUESTION 32:

Which of the following is/are correct with reference to the Indus river Dolphin?

1. It is found only in the main channel of the Indus River in India.
2. Recently, it has been declared as the state's aquatic animal by Jammu and Kashmir.
3. It is listed endangered in the IUCN's Red List of Threatened Species.

Select the correct answer using the code giving below:

(a) 3 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1 and 3 only

Answer: (a)

Explanation

Recently the Punjab Government declared the Indus River dolphin, as the state's aquatic animal. **Hence, statement 2 is not correct.**

- The Indus river dolphin is found only in the main channel of the Indus River in Pakistan and in the Beas river in India. **Hence, statement 1 is not correct.**
- Indus river dolphins also known as Bhulan are one of the only four river dolphin species and subspecies in the world that are found in freshwater. Others include the Chinese river dolphin, Ganges river dolphin and Amazon river dolphin.
- The Indus river dolphin is a marine mammal which means it's warm-blooded, breathes air, gives birth and produces milk to feed its young.
- It is listed **endangered** in the IUCN's Red List of Threatened Species and its International trade is prohibited by virtue of it being listed under Appendix I of the Convention on International Trade in Endangered Species (CITES). **Hence, statement 3 is correct.**
- Indus dolphin like Ganges River dolphin is functionally blind and relies on echolocation to navigate, communicate and hunt prey in muddy river water.

QUESTION 33:

Consider the following statements with reference to the golden langur:

1. It is declared as critically endangered by IUCN.
2. It is found in forests of Assam and Bhutan only.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

Golden Langur (Trachypithecus geei), found only in few forest patches of **Assam and Bhutan**, is placed among world's 25 endangered primates. **Hence, statement 2 is correct.**

- Seeing the decreasing number of this species, the Assam zoo has decided to breed it. In Assam it is found in Manas Tiger Reserve and in the Umananda temple on river Brahmaputra.
- It is declared as Endangered(EN) by IUCN. **Hence, statements 1 is not correct.**

QUESTION 34:

Consider the following statements with reference to the National Clean Air Programme (NCAP):

1. It aims to bring down the PM 2.5 and PM 10 concentration levels to WHO standards by 2022.
2. It will be implemented in 102 cities having the worst Ambient Air Quality.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- **National Clean Air Programme (NCAP)** is a time bound national level strategy for pan India

implementation to tackle the increasing air pollution problem across the country in a comprehensive manner.

- It will utilise a collaborative and participatory approach involving relevant Central Ministries, State Governments, local bodies and other Stakeholders with focus on all sources of pollution. The tentative national level target of 20%–30% reduction of PM2.5 and PM10 concentration by 2024 is proposed under the NCAP taking 2017 as the base year for the comparison of concentration. **Hence, statement 1 is not correct.**
- The NCAP will be a mid-term, five-year action plan with 2019 as the first year.
- City specific action plans are being formulated for 102 non-attainment (having the worst ambient air quality) cities identified for implementing mitigation actions under NCAP. **Hence, statement 2 is correct.**

QUESTION 35:

The term Dark zone, which was in the news recently, is associated with which of the following?

(a) It is a zone of extreme darkness in the depth of the ocean.
(b) It is an unexplored portion on the moon's surface.
(c) It is an area where groundwater depletion exceeds the rate of recharging.
(d) It is a region of darkness in the black hole with the immense gravitational field.

Answer: (c)

Explanation

- **The dark zone** is an area where groundwater **depletion exceeds the rate of recharging.**
- The report of the **Central Ground Water Board (CGWB)** shows that 1,034 of 6584 assessed blocks in the country are over-exploited, and these blocks are usually referred to as 'dark zones'. **Hence, option C is correct.**

QUESTION 36:

With reference to MIKE programme, consider the following statements:

1. It aims to help range States to improve their ability to monitor elephant populations, detect changes in levels of illegal killing.
2. It is a United Nation funded project.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- **Monitoring the Killing of Elephants (MIKE)** aims to help range States improve their ability to monitor elephant populations, detect changes in levels of illegal killing, and use this information to provide more effective law enforcement. **Hence, statement 1 is correct.**
- The MIKE Programme is entirely dependent on donor support. The **European Union** has been the most important donor for the MIKE programme Funding has also been provided by the **US Fish and Wildlife Service** and the Governments of **Japan**, the **United Kingdom** and **China**.

QUESTION 37:

With reference to 'Economic Valuation of Tiger Reserves in India: A Value+ Approach' study, consider the following statements:

1. It provides conservative estimates of the economic value of tiger reserves in India.
2. It is released by the National Tiger Conservation Authority (NTCA).

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

- The **National Tiger Conservation Authority (NTCA)** has released a study titled **"Economic Valuation of Tiger Reserves in India: A Value+ Approach". Hence, statement 2 is correct.**
- The study, authored by the Centre for Ecological Services Management at the Indian Institute of Forest Management (Bhopal), **estimated the economic valuation**, based on ecosystem services, of ten tiger reserves in the country. **Hence, statement 1 is correct.**
- The Indian Institute of Forest Management is an autonomous institute of the Ministry of Environment, Forest and Climate Change, established in 1982.

QUESTION 38:

The 'Hope Probe', sometimes mentioned in the news is a

(a) Emirates Mars Mission
(b) First Indian mission to study the Sun
(c) NASA's Mercury Mission
(d) Japan mission to clean the space-debris

Answer: (a)

Explanation

- The United Arab Emirates (UAE) has announced that it will launch the 'Hope Probe', the Arab world's first spacecraft to Mars, in July 2020. The space programme, also known as the Emirates Mars Mission (EMM), aims at collecting information on Mars,meteorological layers and studying the causes of loss of hydrogen and oxygen gases -- the two main constituents of water -- from the upper layer of the Martian atmosphere. **Hence, option A is correct.**

QUESTION 39:

Consider the following statements:

1. The Aqueduct Water Risk Atlas is released by World Resources Institute (WRI).
2. Baseline Water Stress is a part of Aqueduct Water Risk Atlas.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

Aqueduct Water Risk Atlas

- Aqueduct's global water risk mapping tool helps companies, investors, governments, and other users understand where and how water risks and opportunities are emerging worldwide.
- Aqueduct tools allow users to better see and understand water risks and make smart decisions to manage them.
- The Aqueduct tool used by the **World Resources Institute (WRI)** ranks countries on the basis of water risk scores which are determined using 13 indicators of water risk. **Hence, statement 1 is correct.**
- Baseline Water Stress (BWS): One-quarter of the world's population faces extremely high levels of baseline water stress.
  - It implies that irrigated agriculture, industries, and municipalities withdraw more than 80% of their available supply on average every year.
  - The **BWS layer, developed as part of WRI's Aqueduct Water Risk Atlas**, measures the ratio of total water withdrawals (municipal, industrial, and agricultural) relative to the annual available renewable surface water supplies. **Hence, statement 2 is correct.**

QUESTION 40:

With reference to 'State Rooftop Solar Attractiveness Index (SARAL)', which of the following statements is/are correct?

1. It provides a comprehensive overview of state-level measures adopted to facilitate rooftop solar deployment.
2. It was launched by the Ministry of Science and Technology.
3. Gujarat has been placed at the first rank in the index followed by Telangana and Andhra Pradesh.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 1only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

- The **Ministry of New and Renewable Energy (MNRE)** has launched the **State Rooftop Solar Attractiveness Index–SARAL. Hence, statement 2 is not correct.**
- It is the first of its kind index to provide a comprehensive overview of state-level measures adopted to facilitate rooftop solar deployment. **Hence, statement 1 is correct.**
- Karnataka has been placed at the first rank in the index followed by Telangana, Gujarat and Andhra Pradesh. **Hence, statement 3 is not correct.**

QUESTION 41:

These people are the inhabitants of the tropical rain forests of the Zaire Basin. They are nomadic and live largely on hunting, trapping, fishing and food gathering. They are among the shortest people in the world. Which of the following tribes has been described above?

(a) Pygmies
(b) Bantu
(c) Masai

(d) Bedouins

Answer: (a)

Explanation

Pygmies are inhabitants of the tropical rain forests of Zaire Basin. They are among the shortest people in the world. The Congo River, formerly known as the Zaire River is the second longest river in Africa, shorter only than the Nile, as well as the second largest river in the world by discharge volume, following only the Amazon.

- This community identifies themselves as "forest people" due to the fundamental importance of the forest to their culture, livelihood and history.
- The African pygmies are divided into three groups:
  - eastern Pygmies-the Mbuti, living in the Ituri forest of the Republic of Congo,
  - the central Pygmies are scattered in the Congo, and
  - the western Pygmies-Bongo, are found in Gabon.
- These tribal groups are nomadic and live largely on hunting, trapping, fishing and food gathering. **Hence option (a) is correct.**
- **Bantu** is a general term for over 400 different ethnic groups in Africa, from Cameroon, Southern Africa, Central Africa, to Eastern Africa, united by a common language family (the Bantu languages) and in many cases common customs.Today, Bantu-speaking people are primarily found in **Rwanda, Angola, Burundi, Zimbabwe, and South Africa**, with some among other nations in the Southern part of Africa.
- The **Maasai (or Masai)** people are an East African tribe who today principally occupy the territory of southern Kenya and northern Tanzania.
- **Bedouin** means "desert people. Bedouins are Arabs and desert nomads who hail from and continue to live primarily in the Arabian peninsula and the Middle East and North Africa.

QUESTION 42:

Consider the following pairs:

	Oil fields	States
1.	Ravva oil field	Gujarat
2.	Moran-hugrijan	Tamil Nadu
3.	Mangala area	Assam

Which of the pairs given above is/are correctly matched?

(a) 1 only

(b) 3 only

(c) 1, 2 and 3

(d) None of the above

Answer: (d)

Explanation

The **Ravva oil field** in the Krishna Godavari Basin is located in coastal Andhra Pradesh. It has been developed in partnership with Cairn India, ONGC, Videocon and Ravva Oil Singapore Private Limited. **Hence, pair 1 is not correctly matched.**

- **Moran-hugrijan oil field** is located 40 km southwest of Naharkatia in Assam. **Hence, pair 2 is not correctly matched.**
- **Mangala Area oil field** is located in the Barmer district of Rajasthan. It was discovered in 2004. It consists of a thick, multi-darcy reservoir containing relatively viscous and paraffinic crude oil. **Hence,**

pair 3 is not correctly matched.

QUESTION 43:

Bunder project, sometimes seen in the news, is related to exploration of which of the following Minerals?

(a) Gold
(b) Copper
(c) Uranium
(d) Diamond

Answer: (d)

Explanation

Bunder project is a diamond exploration project based in Madhya Pradesh.

- The Rio Tinto Group discovered the Bunder diamond deposit in 2004 in Chhatarpur district. The deposit is in an ecologically sensitive area.
- In February 2017, Rio Tinto quit work on the project, and gave the deposit and all on-site equipment to the state government of Madhya Pradesh. **Hence option (d) is correct.**

QUESTION 44:

Which of the following mines in India are known for copper production?

1. Malajkhand
2. Khetri
3. Koderma

Select the correct answer using the code given below:

(a) 2 only
(b) 1 and 2 only
(c) 1, 2 and 3
(d) None of the above

Answer: (b)

Explanation

Balaghat district in Madhya Pradesh is known for its mineral resources. About 80% of the Manganese production of the country comes from Balaghat.

- **Malajkhand** in Balaghat is regarded as the largest copper deposit in the country.
- **Khetri** mines are located in Jhunjhunu district of Rajasthan. The area is known for its copper mining project developed by Hindustan Copper Limited.
- **Koderma mines** in **Jharkhand** are known for mica exploration. Mica is used in Automobile industry paint and cosmetics companies. India is known as the largest producer and exporter of mica in the world.

Hence, option (b) is correct.

QUESTION 45:

Which of the following states is not connected with the Jagdishpur-Haldia and Bokaro-Dhamra Natural Gas Pipeline (JHBDPL) project?

(a) Uttar Pradesh
(b) Madhya Pradesh
(c) Odisha

(d) West Bengal

Answer: (b)

Explanation

The 2,655-km-long JHBDPL project is also known as the "Pradhan Mantri Urja Ganga" project.

It aims at covering five Eastern states — Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal — by 2020. It has been recently decided to extend the project to North East adding another 750-km up to Guwahati and later to all the state capitals of the north-east region.

- The project is being implemented by the Gas Authority of India Limited (GAIL).
- This pipeline project does not pass through Madhya Pradesh. **Hence option (b) is correct.**

QUESTION 46:

Consider the following statements:

1. Haematite ore is the finest iron ore available in terms of percentage of iron content.
2. Anthracite is the highest quality hard coal available in terms of carbon content.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

Almost 20 percent of the world's total reserves of Iron ore are found in India. Haematite, Magnetite and limonite iron ore are the three most common types available in India. Magnetite contains a higher quantity of iron in comparison to hematite ore. **Hence, statement 1 is not correct.**

- Haematite resources are mainly located in Madhya Pradesh, Odisha, Karnataka and Maharashtra; whereas Magnetite resources are mainly located in Goa, Kerala and Tamil Nadu region.
- Anthracite is the best quality of coal available in terms of carbon content. The carbon content in anthracite is between 92-98% which is much higher than that of bituminous coal. **Hence, statement 2 is correct.**

QUESTION 47:

Consider the following statements:

1. 'Forest Area' is defined as an area more than one hectare in extent and having tree canopy density of ten percent and above.
2. The term 'Forest Cover' refers to all the geographic areas recorded as forest in government records.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (d)

Explanation

- The Ministry of Environment, Forest and Climate Change (MoEFCC) has released India State of Forest Report (ISFR) 2019.
  - The Total Forest and Tree cover is 24.56% of the geographical area of the country.
  - The Total Forest cover is 7,12,249 sq km which is 21.67% of the geographical area of the country.
  - The Tree cover is 2.89% of the geographical area of the country.
- As compared to ISFR 2017 the current assessment shows an increase of
  - 0.65% of forest and tree cover put together, at the national level
  - 0.56% of forest cover
  - 1.29% of tree cover
- The term **'forest cover'**, according to the report, includes **"all lands more than one hectare in area with the tree canopy of more than 10% irrespective of land use, ownership and legal status".**
- The term **'Forest Area'** (or recorded forest area) generally refers to all the geographic areas recorded

as forest in government records. Recorded forest areas largely comprises Reserved Forests (RF) and Protected Forests (PF), which have been constituted under the provisions of Indian Forest Act, 1927. **Hence, statements 1 and 2 are not correct.**

QUESTION 48:

Consider the following statements:

1. Density of the atmosphere is highest near the earth surface and decreases with increasing altitude.
2. Thickness of the Troposphere is maximum at the equator.
3. All changes in climate and weather take place in the Stratosphere.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: (a)

Explanation

STRUCTURE OF THE ATMOSPHERE

- The atmosphere consists of different layers with varying density and temperature. Density is highest near the surface of the earth and decreases with increasing altitude. **Hence, statement 1 is correct.**
- The column of atmosphere is divided into five different layers- Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.
- The Troposphere is the lowest layer of the atmosphere. Thickness of the Troposphere is greatest at the equator because heat is transported to great heights by strong convection currents. The height of the top of the troposphere varies with latitude (it is lowest over the poles and highest at the equator) and by season (it is lower in winter and higher in summer). It can be as high as 20 km near the equator, and as low as 7 km over the poles in winter. **Hence, statement 2 is correct.**
- Troposphere layer contains dust particles and water vapour. All changes in climate and weather take place in this layer. This is the most important layer for all biological activity. **Hence, statement 3 is NOT correct.**
- The stratosphere is found above the tropopause. The stratosphere extends from the top of the troposphere to about 50 km above the ground. The important feature of this layer is that it contains the ozone layer.
- The mesosphere is directly above the stratosphere and below the thermosphere. It extends from about 50 to 85 km. Temperature decreases with height throughout the mesosphere. The coldest temperatures in Earth's atmosphere, about -90° C (-130° F), are found near the top of this layer.
- Thermosphere extends from about 90 km to between 500 and 1,000 km. The air density is very low in this layer.
- The uppermost layer of the atmosphere above the thermosphere is known as the exosphere.

QUESTION 49:

Identify the soil type with the help of given information:

1. It is formed in-situ in wet and hot tropical areas.
2. It is derived from its parent rock called Khondalite.
3. It is considered a good building material and is often called brick-stone.
4. It is known for having a high proportion of iron.

Select the correct answer using options given below:

(a) Regur soil

(b) Red soil

(c) Laterite soil

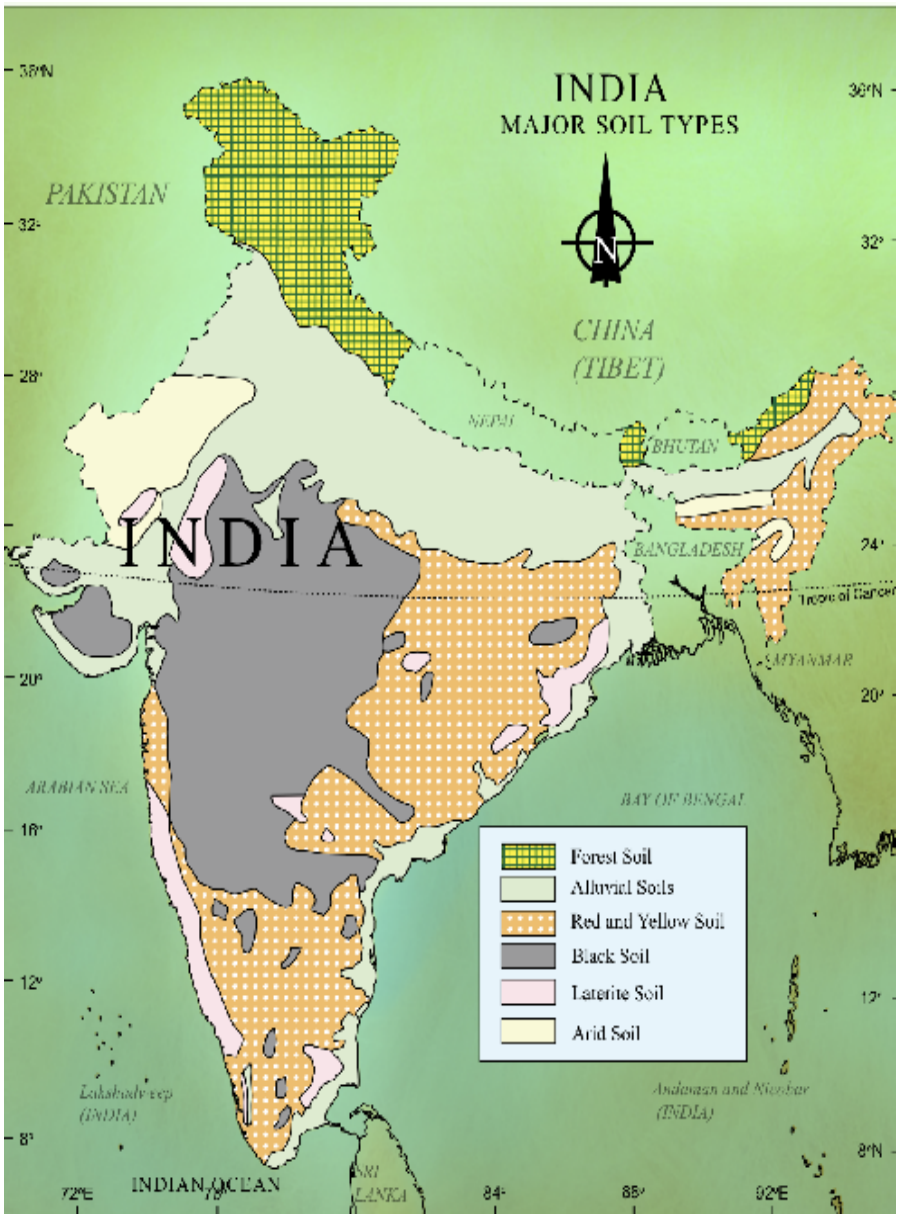
(d) Alluvial soil

Answer: (c)

Explanation

The word Laterite is derived from the Latin word “letritis” that means “brick”. In India, this type of soil is mainly found in Goa, Maharashtra and Western Karnataka.

- Laterization refers to wearing and tearing down of earth surface in such a manner that it results in removal of silica and other vital soluble from soil and accumulation of residual minerals such as iron, aluminium, manganese and nickel at the top layer of the soil.
- Laterization requires hot and humid conditions and mainly occurs in tropical areas. Unlike Alluvial soil, which is formed ex-situ (transported from one place to another); **Laterite soil is formed in-situ** (formed at its original location).
- It is derived from its parent rock called Khondalite. It is full of cavities and pores, and contains a large quantity of iron in the form of red and yellow ochres. In its natural state it is granular in structure and has low plasticity but has excellent durability.
- It is considered a very good building material and is often called “brick-stone”. Since it is vulnerable to water erosion, strip cropping is mainly performed at locations where this soil is found. **Hence, option (c) is correct.**



QUESTION 50:

This mountain pass lies at the strategic tri-junction boundary between Nepal, India and China. It is used by pilgrims going for Kailash-Manasarovar Yatra. India and China opened their first border trade route through this pass in 1992.

Which of the following mountain passes has been described above?

(a) Shipki La
(b) Mana La
(c) Lipulekh La
(d) Nathu La

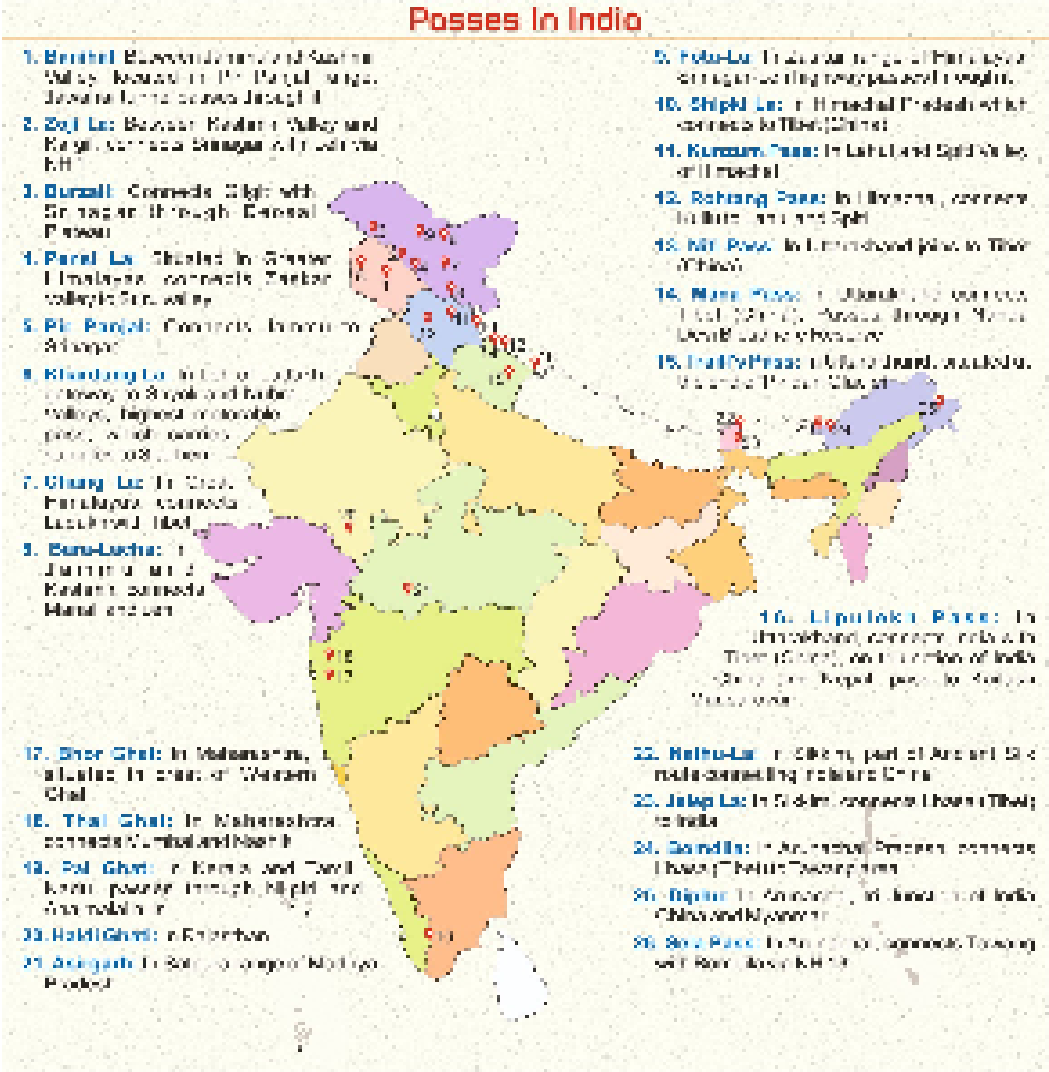
Answer: (c)

Explanation

- Lipulekh pass lies at the strategic tri-junction boundary point between Nepal, India and China borders.
- There are two tri-junction points between Nepal, India and China – one at Lipulekh in western Nepal

and another at Jinsang Chuli in eastern Nepal.

- Lipulekh connects the north-western Byash valley of Nepal and Uttarakhand state with the old trading town of Taklakot in Tibet.
- India and China opened their first border trade route through Lipulekh pass in 1992. The second border trade route between India and China was opened in 1993 at Shipki-la pass.
- Lipulekh is the last point of Nepal's border with China and India and known as an ancient route for traders and pilgrims transiting between Nepal and Tibet. **Hence, option (c) is correct.**



QUESTION 51:

Consider the following statements regarding Man and Biosphere Programme (MAB):

1. It is an initiative of the United Nations Educational, Scientific and Cultural Organization (UNESCO).
2. The World Network of Biosphere Reserves (WNBR) of the MAB Programme fosters the harmonious integration of people and nature for sustainable development.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

Man and the Biosphere Programme (MAB)

- Launched in 1971, **UNESCO's Man and the Biosphere Programme (MAB)** is an Intergovernmental Scientific Programme that aims to establish a scientific basis for the improvement of relationships between people and their environments. **Hence, statement 1 is correct.**
- MAB combines the natural and social sciences, economics and education to improve human livelihoods and the equitable sharing of benefits, and to safeguard natural and managed ecosystems, thus promoting innovative approaches to economic development that are socially and culturally appropriate, and environmentally sustainable.
- It predicts the consequences of today's actions on tomorrow's world and thereby increases people's ability to efficiently manage natural resources for the well-being of both human populations and the environment.

World Network of Biosphere Reserves (WNBR)

- Composed of 686 biosphere reserves in 122 countries, including 20 transboundary sites, the WNBR of the MAB Programme promotes North-South and South-South collaboration and represents a unique tool for international co-operation through sharing knowledge, exchanging experiences, building capacity and promoting best practices.
- It fosters the harmonious integration of people and nature for sustainable development through participatory dialogue; knowledge sharing; poverty reduction and human well-being improvements; respect for cultural values and society's ability to cope with change. **Hence, statement 2 is correct.**

Biosphere Reserves (BRs)

- They are representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof and representative examples of biogeographic zones/ provinces.
- BRs are nominated by the national government which meet a minimal set of criteria and adhere to a minimal set of conditions for inclusion in the world network of Biosphere reserves under the Man and Biosphere Reserve (MAB) Programme of UNESCO. Thus Biosphere reserves are recognized under MAB programme.

QUESTION 52:

Consider the following statements regarding the National Tiger Conservation Authority:

1. The National Tiger Conservation Authority is a statutory body under the Ministry of Environment, Forests and Climate Change.
2. It has been constituted under the Environment Protection Act, 1986.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

The National Tiger Conservation Authority is a statutory body under the Ministry of Environment, Forests and Climate Change. **Hence, statement 1 is correct.**

- It has been constituted under enabling provisions of the Wildlife (Protection) Act, 1972, for

strengthening tiger conservation. **Hence, statement 2 is not correct.**

- It has been fulfilling its mandate within the ambit of the Wildlife (Protection) Act, 1972 for strengthening tiger conservation in the country by retaining an oversight through advisories/ normative guidelines, based on appraisal of tiger status, ongoing conservation initiatives and recommendations of specially constituted Committees.

Objective of the NTCA

- Providing statutory authority to Project Tiger so that compliance of its directives become legal.
- Fostering accountability of Center-State in management of Tiger Reserves, by providing a basis for MoU with States within our federal structure.
- Addressing livelihood interests of local people in areas surrounding Tiger Reserve.

Project Tiger

- It is a Centrally Sponsored Scheme under the Ministry of Environment, Forests and Climate Change, providing funding support to tiger range States, for in-situ conservation of tigers in designated tiger reserves, and has put the endangered tiger on an assured path of recovery by saving it from extinction, as revealed by the recent findings of the All India tiger estimation using the refined methodology.

QUESTION 53:

With reference to "National Wetland Inventory and Assessment (NWIA) project", which of the following statements is/are correct?

1. It uses a classification system based on Wetland Management and Conservation rules, 2010 to categorize wetlands.
2. Its prime objective is to create a spatial database of the wetlands based on the Geographic Information System (GIS).
3. The project is being executed by the Space Applications Centre (SAC), Ahmedabad.

Select the correct answer using the code given below:

(a) 1, 2 and 3
(b) 1 and 2 only
(c) 2 and 3 only
(d) None of the above

Answer: (c)

Explanation

The **National Wetland Inventory and Assessment (NWIA)** project is sponsored by Ministry of Environment and Forests and Climate Change (MoEFCC), and is being executed by Space Applications Centre (SAC) located in Ahmedabad. **Hence, statement 3 is correct.**

- NWIA is using Ramsar/IUCN definitions to categorise the wetlands; it does not use the classification system of the Wetland Conservation and Management Rules, 2010. **Hence, statement 1 is not correct.**
- Space Applications Centre (SAC) is one of the major centres of the Indian Space Research Organisation (ISRO). It focuses on the design of space-borne instruments for ISRO missions and development of applications of space technology for societal benefits.
- The main objectives of the National wetland inventory and assessment (NWIA) project are:
  - Wetland mapping and inventory at 1: 50 000 scale by analysis of Indian Remote Sensing Satellite System (IRS).
  - Creation of digital database in GIS based environment.
  - Preparation of state-wise wetland atlases. **Hence, statement 2 is correct.**

QUESTION 54:

With reference to Bhitarkanika National Park, consider the following statements:

1. It is the only Ramsar Site in Odisha.
2. It has been recently included in the Montreux Records.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (d)

Explanation

- Odisha has two wetlands of international importance under Ramsar Convention namely Chilika and Bhitarkanika. **Hence, statement 1 is not correct.**
- Only two wetlands of India are in Montreux record viz. Keoladeo National Park, Rajasthan and Loktak Lake, Manipur. Chilka lake was also placed in the record but it was later removed from it making it the first site from Asia to be removed from the record. **Hence statement 2 is not correct.**
- Bhitarkanika National Park is one of Odisha's finest biodiversity hotspots and is famous for its mangroves, migratory birds, turtles, estuarine crocodiles, and countless creeks.
    - The wetland is represented by 3 Protected Areas, the **Bhitarkanika National Park**, the **Bhitarkanika Wildlife Sanctuary** and the **Gahirmatha Marine Sanctuary.**
        - Bhitarkanika is located in the estuary of Brahmani, Baitarani, Dhamra, and Mahanadi river systems.

QUESTION 55:

Which of the following statements are related to the ozone?

1. It is treated as a pollutant in the troposphere.
2. It is not a component of photochemical smog
3. It is listed as one of the eight pollutants under the air quality index in India.

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: (c)

Explanation

- **Ozone, a key component of photochemical smog, is formed by a complex reaction between nitrogen dioxide and hydrocarbons in the presence of sunlight. Hence, statement 2 is not correct.**
- Ozone is considered to be a **criteria pollutant in the troposphere** — the lowermost layer of the atmosphere — **but not in the upper atmosphere**, where it occurs naturally and serves to block harmful ultraviolet rays from the Sun. **Hence, statement 1 is correct.**
- There are six AQI categories, namely Good + Satisfactory, Moderately polluted, Poor, Very Poor, and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints). AQ sub-index and health breakpoints are evolved for **eight pollutants (PM10, PM2.5, NO2, SO2, CO, O3, NH3, and Pb)** for which short-

term (up to 24-hours). **Hence, statement 3 is correct.**

QUESTION 56:

Arrange the following National Parks/WildLife Sanctuary from North to South direction:

1. Indravati National Park
2. Nagarhole National Park
3. Silent Valley National Park
4. Coringa Wildlife Sanctuary

Select the correct answer using the code given below:

(a) 1, 4, 2, 3
(b) 2, 1, 4, 3
(c) 3, 4, 1, 2
(d) 2, 3, 4, 1

Answer: (a)

Explanation

- **Indravati National Park** is a national park located in Bijapur district of **Chhattisgarh** state of India. It derives its name from the nearby Indravati River. It is home to one of the last populations of rare wild buffalo.
- **Nagarhole National Park** (also known as **Rajiv Gandhi National Park**), is a national park located in **Kodagu district and Mysore district in Karnataka**, India. It is one of India's premier Tiger Reserves along with the adjoining **Bandipur Tiger Reserve.**
- **Silent Valley National Park**, is a national park in Kerala, India. It is located in the Nilgiri hills.
- **Coringa Wildlife Sanctuary** is a wildlife sanctuary and estuary situated in Andhra Pradesh, India. It is the second largest stretch of **mangrove forests** in India with 24 mangrove tree species and more than 120 bird species.
- **Hence, option A is correct.**

QUESTION 57:

Consider the following statements regarding Bird flu (H5N1):

1. It is responsible for causing Lymphatic Filariasis in humans.
2. It can transmit from one person to another easily by contact.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (d)

Explanation

- Bird Flu (H5N1) is a type of influenza virus that causes a highly infectious, severe respiratory disease in birds called avian influenza.
- Human cases of H5N1 avian influenza occur occasionally, but it is difficult to transmit the infection from person to person. **Hence, statement 2 is not correct.**
- Lymphatic filariasis, also known as elephantiasis, is a human disease caused by parasitic worms known as filarial worms. **Hence, statement 1 is not correct.**

QUESTION 58:

Which one of the following best describes the term Long March-11, sometimes seen in the news?

(a) It is a military retreat undertaken by the Communist Party of China.
(b) It is a protest march launched by farmers in Maharashtra.
(c) It is a space rocket launched by China from the sea.
(d) It is a military campaign against the growing left wing extremism in India.

Answer: (c)

Explanation

- China has launched a space rocket from the sea.
- The **rocket named as 'Long March 11' was launched from a ship in the Yellow Sea.**
- It is the latest step in China's push to become a major space power. Only a few countries have such a capability. **Hence, option C is correct.**

QUESTION 59:

Consider the following statements:

1. Atal Community Innovation Centre (ACIC) program is an initiative under Skill India Mission.
2. The purpose of ACIC is to enable establishment of a socially inclusive innovation ecosystem.
3. An important objective of ACIC establishment is to evolve a Public Private Partnership (PPP) model with participation from the Corporate Social Responsibility (CSR) funds.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (c)

Explanation

- **Atal Community Innovation Centre (ACIC) program is a new initiative under Atal Innovation Mission (AIM), NITI Aayog.** The purpose of ACIC is to enable establishment of a **socially inclusive innovation ecosystem** as well as to encourage the **equitable distribution of necessary infrastructure** for stimulating innovation across the country. **Hence, statement 1 is not correct but statement 2 is correct.**
- An important objective of ACIC establishment is to **evolve a Public Private Partnership (PPP) model** with participation from the **Corporate Social Responsibility (CSR) funds** or other funding sources to support community education and build the innovation ecosystem. **Hence, statement 3 is correct.**

QUESTION 60:

With reference to ' United Nations Convention on International Settlement Agreements (UNISA) ', which of the following statements is/are correct?

1. The convention is named as the "Singapore Convention on Mediation".
2. It facilitates international trade and promotes mediation as an alternative and effective method of resolving trade disputes.
3. It ensures that settlement becomes binding and enforceable in accordance with a simplified and streamlined procedure.

Select the correct answer using the code given below:

(a) 1 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Answer: (d)

Explanation

- Recently, the Union Cabinet has approved the signing of the United Nations Convention on International Settlement Agreements (UNISA) by India. As authorized by the United Nations General Assembly, the Convention will open for signature at a signing ceremony to be held on 7 August 2019 in Singapore and will be known as the **"Singapore Convention on Mediation". Hence, statement 1 is correct.**
- The Convention has been designed to become an essential instrument in the facilitation of international trade and in the promotion of mediation as an alternative and effective method of resolving trade disputes. It also contributes to strengthening access to justice, and to the rule of law. **Hence, statement 2 is correct.**
- The Convention ensures that a settlement reached by parties becomes binding and enforceable in accordance with a simplified and streamlined procedure. **Hence, statement 3 is correct.**

QUESTION 61:

In the context of ecological succession, consider the following statements:

1. Primary succession occurs faster than secondary succession.
2. Pioneer species can be found in primary as well as in secondary succession.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2

(d) Neither 1 nor 2

Answer: (b)

Explanation

The gradual and fairly predictable change in the species composition of a given area is called ecological succession.

- Creating and developing an ecosystem in an area that was previously uninhabited is called **primary succession**, whereas the process of repairing an already existing but damaged ecosystem is called **secondary succession.**
- Secondary succession takes place at locations where the soil already exists. The existence of soil makes the process a much faster process than primary succession, which occurs in areas with no soil. **Hence, statement 1 is not correct.**
- Pioneer species are the species that are first to colonize the bare earth after a disturbance and during ecological succession. Pioneer species can be found in primary as well as in secondary succession. **Hence, statement 2 is correct.**
- In primary succession, the pioneer species are smaller than those in secondary succession. While the process of primary succession starts with the pioneer species such as lichens and mosses, in secondary succession it starts with pioneer species such as fireweed, raspberry and squawbush.

QUESTION 62:

In the context of Nitrogen Cycle, consider the following statements:

1. Atmospheric nitrogen cannot be used directly by plants to make proteins.
2. The process of conversion of atmospheric nitrogen (N2) to ammonia is termed as ammonification.
3. Nitrate present in the soil is reduced to nitrogen by the process called nitrification.

Which of the statements given above is/are correct?

(a) 1, 2 and 3

(b) 2 and 3 only

(c) 1 only

(d) None of the above

Answer: (c)

Explanation

Nitrogen cycle is a complex biogeochemical cycle in which nitrogen is converted from its inert atmospheric molecular form (N2) into a form that is useful in biological processes.

- Atmospheric Nitrogen exists as two nitrogen atoms joined by a very strong triple covalent bond (N ≡ N) and therefore cannot be used directly by plants. **Hence, statement 1 is correct.**
- Nitrogen needs to be 'fixed' or converted to ammonia, nitrates or nitrites before it can be taken up by plants.
- The process of conversion of atmospheric nitrogen (N2) to ammonia is termed as nitrogen fixation. **Hence, statement 2 is not correct.**
- Decomposition of organic nitrogen of dead plants and animals into ammonia is called **ammonification.**
- Nitrate present in the soil is also reduced to nitrogen by the process of denitrification. **Hence, statement 3 is not correct.** Denitrification is done by bacteria Pseudomonas and Thiobacillus.
- Ammonia is first oxidised to nitrite by the bacteria Nitrosomonas and then the nitrite is further oxidised to nitrate with the help of the bacterium Nitrobacter. These steps are called nitrification.

QUESTION 63:

With reference to Wildlife (Protection) Act, 1972, consider the following statements:

1. The State governments are empowered to declare certain animals as vermin.
2. The State governments are authorised to declare certain areas as Sanctuaries and National Parks.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

India is the first country in the world to have made provisions for the protection of the environment in its constitution. Soon after the United Nations (Stockholm) Conference on Human Environment (June 1972), the Wildlife (Protection)Act, 1972 was passed in India.

- As Forests and Wildlife fall under list 2 of the 7th Schedule **(State Subject)**, Wildlife (Protection) Act, 1972 provides the basic framework to ensure the protection and management of wildlife.
- After the amendments of WPA in 1991, the power of the State government to declare any animal as vermin has been removed. **Hence, statement 1 is not correct.**
- However, the state governments are the empowered authorities to declare any area as a Sanctuary or National Park under section 18 and Section 35 of the Act. **Hence, statement 2 is correct.**

QUESTION 64:

Consider the following statements:

1. It is a wildlife sanctuary as well as a biodiversity hotspot, comprising sub-tropical and alpine forests.
2. Rivers Pange, Sipu, Karing and Subansiri flow through it.

The above given statements describe which of the following areas?

(a) Pobitora Wildlife Sanctuary.
(b) Gumti Wildlife Sanctuary.
(c) Talley Wildlife Sanctuary.
(d) Rowa Wildlife Sanctuary.

Answer: (c)

Explanation

- **Talley Valley (in Arunachal Pradesh)** is a wildlife sanctuary and included in the biodiversity hotspot region of Eastern Himalayas. **It comprises sub-tropical and alpine forests having a variety of flora and fauna, many of which are endangered.** The place offers great trekking opportunities. **Talley Valley Reserved Forest and Talley Wildlife sanctuary** is situated at an elevated level with **rivers like Pange, Sipu, Karing and Subansiri** flowing through the Reserved Forest and Sanctuary. It is home to highly endangered species like **clouded leopards. Pleioblastus.** Simone is a bamboo variety only found in Talley Valley. **Hence, option (c) is correct.**
- Pobitora Wildlife Sanctuary is a wildlife sanctuary on the southern bank of the Brahmaputra in Morigaon district in **Assam.**
- Gumti Wildlife Sanctuary is a Wildlife Sanctuary in **Tripura**, India. It is located in the **South Tripura region.**
- Rowa Wildlife Sanctuary is situated on the northern fringes of Tripura.

QUESTION 65:

The Brazzaville declaration is related to which of the following?

(a) Deserts
(b) Coral Reefs
(c) Tropical Rain Forests
(d) Peat lands

Answer: (d)

Explanation

Brazzaville is the capital and largest city of the Republic of the Congo (Congo Republic). The **Brazzaville Declaration** aims to implement coordination and cooperation between different government sectors to protect the benefits provided by **peatland ecosystems.**

- Cuvette Centrale region in the Congo Basin, is the world's largest tropical peatlands, the declaration aims to protect it from unregulated land use and prevent its drainage and degradation,
- Democratic Republic of Congo **(DRC), Republic of Congo** and **Indonesia** jointly signed the Brazzaville declaration that promotes better management and conservation of this globally important carbon store. **Hence, option (d) is correct.**

QUESTION 66:

With reference to One Horned Rhino, consider the following statements:

1. It is the largest species of rhino in the world.
2. Its population in India has recently declined.
3. In India, it is mostly found in Orissa.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (a)

Explanation

The One Horned Rhino is the largest species of Rhino in the world found commonly in India, Nepal, Bhutan, and Pakistan. **Hence, statement 1 is correct.**

- In India, it is found in the state of Assam with two thirds of its population concentrated in Kaziranga National Park. Other areas where it is found are Manas National Park, Pobitora Reserve Forest, Orang National Park, Laokhowa Reserve Forest, etc. **Hence, statement 3 is not correct.**
- It is listed as **Vulnerable** on the IUCN Red List and is protected under the Schedule I of the Wildlife Protection Act.
- According to the World Wide Fund for Nature–India (WWF-India), **from a population of barely 75 in 1905, there are over 3600 one-horned Rhinos (across India-Nepal) by 2020.**
    - **The various conservation efforts (e.g. India Rhino Vision-2020)** have **helped in the increase in the total number of the Rhino population. Hence, statement 2 is not correct.**

Indian Rhino Vision 2020: Launched in 2005, it is an ambitious effort to attain a wild population of at least 3,000 greater one-horned rhinos spread over seven protected areas in the Indian state of Assam by the year 2020.

QUESTION 67:

Which of the following is not a member of 'South Asia Cooperative Environment Programme' (SACEP)?

(a) Afghanistan
(b) Pakistan
(c) Myanmar
(d) Maldives

Answer: (c)

Explanation

SACEP is the inter-governmental environmental organization for the South Asia region established in 1982. The primary function of SACEP is to work with its eight member countries:

- To promote cooperative activities in priority areas of an environment of mutual concern.
- To ensure that these activities are beneficial individually and collectively to the member states of the region.
- To extend support as needed through exchange of knowledge and expertise available among the member countries.
- To provide local resources towards implementation of projects and activities.
- To maximize the impact of support received from donor countries and other sources.

The 8 member countries are:

- **Afghanistan**
- Bangladesh
- Bhutan
- India
- **Maldives**
- Nepal
- **Pakistan**
- Sri Lanka

Hence, option (c) is correct.

QUESTION 68:

Consider the following statements regarding "Biodiversity Hot Spots":

1. They are designated by the United Nations Educational, Scientific and Cultural Organization (UNESCO).
2. They illustrate high species endemism and a threat of loss of habitats.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

The British biologist **Norman Myers** coined the term 'biodiversity hotspot' in 1988 as a biogeographic region characterized both by exceptional levels of plant endemism and by serious levels of habitat loss.

Conservation International (CI) adopted Myers' hotspots as its institutional blueprint in 1989, and later introduced quantitative thresholds for the designation of biodiversity hotspots. Conservation

International is **an American nonprofit environmental organization** headquartered in Arlington, Virginia. **Hence, statement 1 is not correct.**

- According to CI, to qualify as a hotspot a region must meet two strict criteria:
- **Species endemism:** It must contain at least 1,500 species of vascular plants (> 0.5% of the world's total) as endemics.
- **Degree of threat:** It has to have lost at least 70% of its original habitat. **Hence, statement 2 is correct.**
- There are currently 36 recognized biodiversity hotspots.In February 2016, the North American Coastal Plain was recognized as meeting the criteria and became the Earth's 36th hotspot. :

Biodiversity Hotspots in India:

1. **Himalaya:** Includes the entire Indian Himalayan region (and that falling in Pakistan, Tibet, Nepal, Bhutan, China and Myanmar)
2. **Indo-Burma:** Includes entire North-eastern India, except Assam and Andaman group of Islands (and Myanmar, Thailand, Vietnam, Laos, Cambodia and southern China)
3. **Sundalands:** Includes Nicobar group of Islands (and Indonesia, Malaysia, Singapore, Brunei, Philippines)
4. **Western Ghats and Sri Lanka:** Includes entire Western Ghats (and Sri Lanka)

QUESTION 69:

Which of the following are correct with reference to Climate Change Performance Index (CCPI) 2020?

1. The CCP Index of 2020 ranked Denmark first among all the countries.
2. A per the Index, India has improved its performance in the field of renewable energy.
3. Energy Use is one of the four categories which makes the base of this Index.

Select the correct answer using the code given below:

(a) 1, 2 and 3
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1 and 3 only

Answer: (b)

Explanation

Germanwatch and the New Climate Institute along with the Climate Action Network (CAN) published the Climate Change Performance Index (CCPI).

- The ranking results are defined by a country's aggregated performance regarding 14 indicators within the four categories of GHG Emissions, Renewable Energy, **Energy Use** and Climate Policy. **Hence, statement 3 is correct.**
- **Sweden leads the ranking (Ranking starts from Rank 4)**, followed by Sweden, Morocco and the United Kingdom. (None of the countries achieved positions one to three. No country is doing enough to prevent dangerous climate change.)
- The top three ranks of the CCPI 2019 are still unoccupied because none of the 57 countries or the EU are clearly on a well below 2-degree pathway in their overall performance. This year for the first time **Chile**, as the country hold - ing the COP25 presidency, is added to the CCPI. **Hence, statement 1 is not correct.**
- As per the Index, **India moves to rank 9th** (from 11 of 2019) **as a result of an improved performance in renewable energy**, comparatively low levels of per capita emissions and a relatively ambitious mitigation target for 2030. **Hence, statement 2 is correct.**
- According to CCPI India improved its performance in the renewable energy category, joining the group of medium performers.

- The ambitious goal of generating 175 GW of renewable energy by 2022, and initiatives on smart cities, electric vehicles, energy efficiency initiatives and others have now made India one of the global leaders in climate action.
- But the report warned that after three consecutive years of stable CO2 emissions, global emissions are rising again.

QUESTION 70:

With reference to Environment Impact Assessment, which of the following statements is/are correct?

1. It includes socio-economic and health impacts but excludes cultural impacts.
2. It is notified under the Environment (Protection) Act 1986.

Select the correct answer using the code given below:

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

Environment Impact Assessment (EIA)

- It's a process of evaluating the likely environmental impacts of a proposed project or development, taking into account interrelated socio-economic, cultural and human health impacts, both beneficial and adverse. **Hence, statement 1 is not correct.**
- It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
- It is notified under the Environment (Protection) Act 1986.
- It is used by the Environment Ministry, as a major tool for minimizing the adverse impact of rapid industrialization on the environment and for reversing those trends which may lead to climate change in the long run. **Hence, statement 2 is correct.**

QUESTION 71:

Among the following cities, which one lies on a longitude closest to that of Zero Mile Centre of India?

(a) Raipur
(b) Pune
(c) Bangalore
(d) Hyderabad

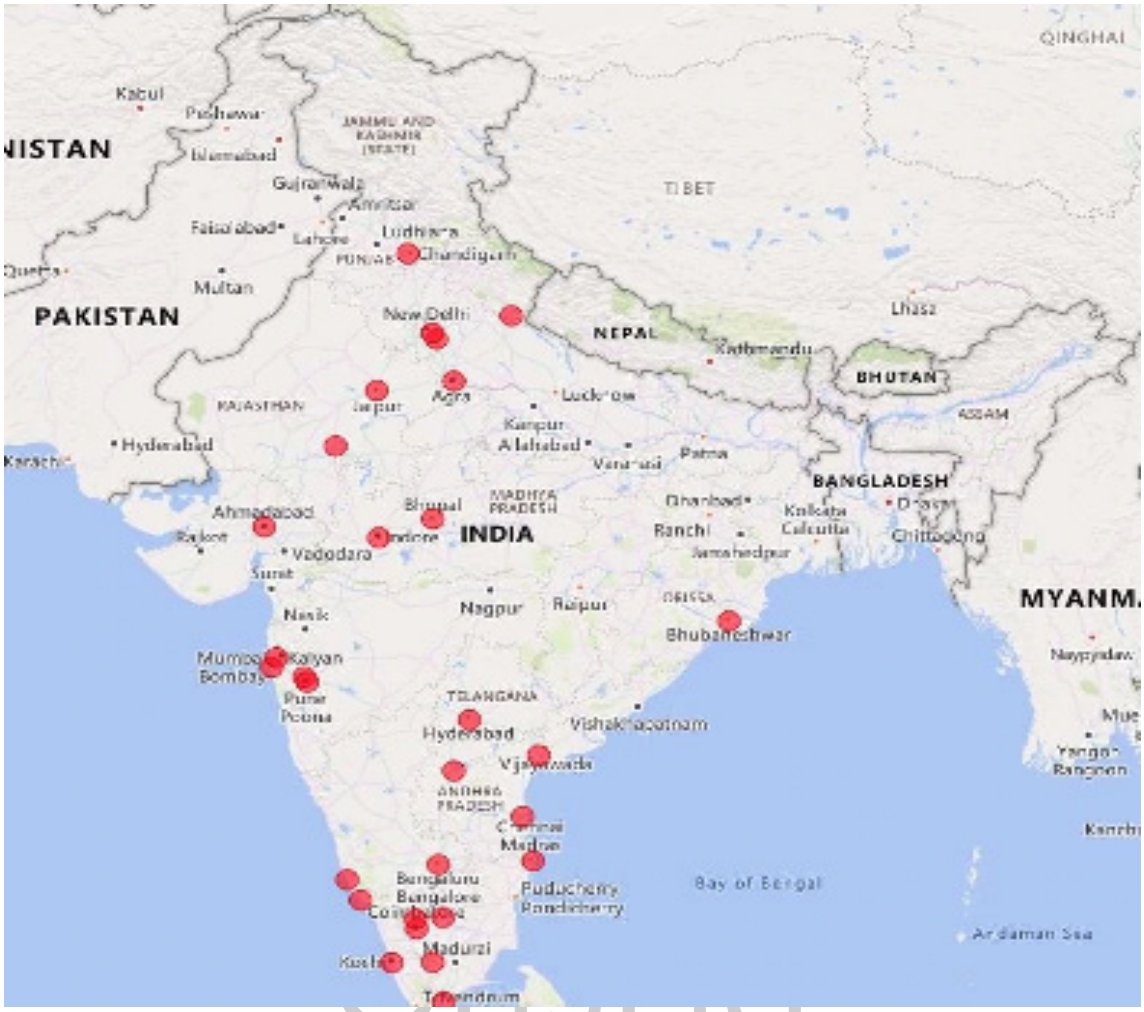
Answer: (d)

Explanation

- Nagpur is precisely at the geographical centre-point of India and is called **Zero-Mile Centre. The distances of various major cities in India are measured from here** and the distance is carved on the pillar erected at this zero mile site.
  - Nagpur extends from latitude 21.1458° N to longitude 79.0882° E.
  - Raipur extends from latitude 21.2514° N to longitude 81.6296° E.
  - Bangalore extends from latitude 12.9716° N to longitude 77.5946° E.
  - Hyderabad extends from latitude 17.3850° N to longitude 78.4867° E.

- Pune extends from latitude 18.5204° N to longitude 73.8567° E.

- From the given description it is evident that Hyderabad lies closest to the longitude of Nagpur (zero mile centre). **Hence, option (d) is correct.**



QUESTION 72:

Consider the following statements about the peninsular region of India:

1. More than 90% of the Gondwana coal deposits of India are found in the peninsular region.
2. The highest peak of peninsular India is Doddabetta.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- Peninsular plateau has flat surface with low gradient. It is characterized by the vertical and radial displacement of the fractured blocks.
- The Peninsular India comprises the diverse topological and climatic patterns of South India. Around 98 per cent of India's total coal reserves are from Gondwana times. This coal was formed about 250

million years ago. Gondwana region in India comprises a major portion of central and south India. **Hence, statement 1 is correct.**

- The demarcation created by the Narmada River and Mahanadi River is the traditional boundary between northern and southern India. **The highest peak of Peninsular India is Anamudi that is 2695 metres above sea level.** Doddabetta has the elevation of 2637 meters. **Hence, statement 2 is not correct.**

QUESTION 73:

Consider the following rivers of India:

1. Betwa
2. Luni
3. Chambal
4. Subarnarekha

Which of the above are north flowing rivers of India?

(a) 1 and 3 only
(b) 1, 2 and 3 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

Answer: (a)

Explanation

- Based on direction of flow, the rivers can be divided into three categories viz. east flowing, west flowing and north flowing. **The north flowing rivers are Chambal, Betwa, Son, Dhasan, etc.**
- **The Subarnarekha River** originates 15 kms south of Ranchi on the Chota Nagpur plateau and drains eastwards through the states of Jharkhand, Orissa and West Bengal before entering the Bay of Bengal.
- **Luni is a west flowing river.** It originates in the Pushkar valley of the Aravalli Range and flows south-westwards for more than 500 km before entering the marshy Rann of Kutch in Gujarat.
- **Betwa River** originates in the Vindhya Range just north of Hoshangabad in Madhya Pradesh and flows northwards traversing 654 km before joining Yamuna near Hamirpur in Uttar Pradesh.
- **Chambal** originates at Janapav, south of Mhow town in the Indore district of Madhya Pradesh and traverses 960 km North before joining Yamuna near village Sahore of the Etawah district in Uttar Pradesh. **Hence, option A is correct.**

QUESTION 74:

Which of the following are the causes of desertification?

1. Animal grazing
2. Climate change
3. Afforestation
4. Urbanization

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1, 2 and 4
(d) 1, 2, 3 and 4

Answer: (c)

Explanation

- Desertification is when land that was originally of another type of biome turns into a desert biome.

Large pockets of land are going through desertification.

- The causes behind the desertification are:
  - **Overgrazing:** animal grazing is a huge problem for many areas that are starting to become desert biomes. If there are too many animals that are overgrazing in certain spots, it makes it difficult for the plants to grow back, which hurts the biome and makes it lose its former greenery.
  - **Deforestation:** the cutting of trees in order to make houses and do other tasks, are contributing to the problems related to desertification. Without the plants (especially trees) around, the rest of the biome cannot thrive.
  - **Urbanization and other types of land development:** It causes harm to soil chemistry. As areas become more urbanized, there are less places for plants to grow, **thus causing desertification.**
  - **Climate Change:** as the days get warmer and periods of drought become more frequent, desertification becomes more and more eminent. Unless climate change is slowed down, huge areas of land will become desert; some of those areas may even become uninhabitable as time goes on. **Hence, option C is correct.**

QUESTION 75:

Consider the following:

1. Kara sea
2. Beaufort Sea
3. Chukchi Sea
4. Weddell Sea

Which of the above-mentioned water bodies surround the Arctic ocean?

(a) 1 and 4 only
(b) 2 and 3 only
(c) 1, 2 and 3
(d) 1, 2, 3 and 4

Answer: (c)

Explanation

- Chukchi Sea, East Siberian Sea, Laptev Sea, Kara Sea, Barents Sea, Norwegian Sea, and the Beaufort Sea surround the Arctic ocean.
- Weddell Sea: It is a **marginal sea of the Southern Ocean** that is situated along the coast of Antarctica south of the Atlantic Ocean.
- **Hence, option C is correct.**

QUESTION 76:

With reference to Meditteranaean climate, consider the following statements:

1. Shifting of the wind belts is responsible for this climate.
2. Mediterranean lands receive most of their precipitation in summers.
3. Many local winds cold and hot are common around the Mediterranean Sea.
4. 'Presence of shade' is a distinct feature of this climate.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 3 and 4 only
(c) 1 and 3 only
(d) 1, 3 and 4 only

Answer: (c)

Explanation

- Meditteranean Climate is entirely confined to the western portion of continental masses, **between 30° and 45° north and south of the equator.**

- The basic cause of this type of climate is the **shifting of the wind belts. Hence, statement 1 is correct.**
- The Mediterranean lands receive **most of their precipitation in winter** when the Westerlies shift towards the equator. **Hence, statement 2 is not correct.**
- The region experiences Local winds like Mistral, Sirocco, Boro etc. These winds create great differences in temperature, pressure, and precipitation. **Hence, statement 3 is correct.**
- Trees decrease in height and density as we move away from the equator. **'Absence of shade'** is a distinct feature of trees in this climate. Plants are in a continuous struggle against heat, dry air, excessive evaporation and prolonged droughts. Therefore, they are generally xerophytic or drought-resistant in nature. They are umbrella-shaped too, exposing only narrow edges to strong winds. They are mostly hard, gnarled, thorny and exude gum. Hence, statement 4 is not correct.

QUESTION 77:

With reference to the Laurentian type climate, consider the following statements:

1. It has features of both maritime and continental climate.
2. It is mainly predominant in the northern hemisphere.
3. It is characterised by cold & wet winters and warm and dry summers.
4. It is characterised by taiga vegetation.

Which of the statements given above are correct?

(a) 1, 2 and 4 only
(b) 1, 3 and 4 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

Answer: (a)

Explanation

Laurentian type of climate

- Intermediate type of climate between the **British Type Climate** and the **Siberian Type Climate** of climate. It has features of **both** the maritime and the continental climates. **Hence statement 1 is correct.**
- The Laurentian type of climate is found only in two regions and that too only in the **northern hemisphere.**

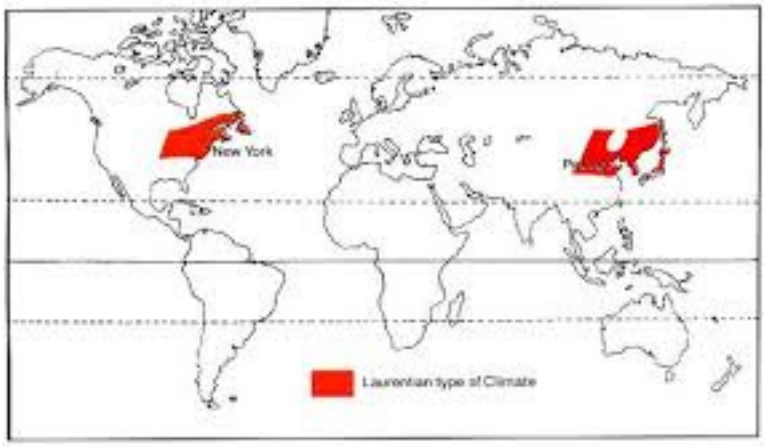


Fig. 153 Regions with a Cool Temperate Eastern Margin Climate (Laurentian type)

- This type of climate is absent in the southern hemisphere, as only a **small section of continents** extends south of 40°S latitude. **Hence, statement 2 is correct.**

- It is characterized by **cold & dry winters and warm & wet summers.** Winter temperatures are below freezing-point and snowfall is quite natural. Summers are as warm as the tropics (~25 °C).
  - **Cold & wet winters and warm and dry summers are a characteristic feature of the Mediterranean climate. Hence statement 3 is not correct.**
- The economic activity involving felling, hauling, logging of timber is known as **lumbering.** It is well developed in the coniferous forest belt of the cool temperate lands
- Mixing of warm and cold currents make the region the most productive fishing grounds on earth. **Hence, statement 4 is correct.**

Source: GC Leong

QUESTION 78:

Which of the following is not a favourable condition for the formation and intensification of tropical storms:

(a) Large sea surface with temperature higher than 25 degree Celsius
(b) Absence of the Coriolis force
(c) Small variations in the vertical wind speed
(d) A pre-existing weak low- pressure area or low-level-cyclonic circulation

Answer: (b)

Explanation

- Tropical cyclones are violent storms that originate over warm tropical oceans and move over to the coastal areas bringing about large scale destruction caused by violent winds, very heavy rainfall and storm surges
- The conditions favourable for the formation and intensification of tropical storms are:
  - Large sea surface with temperature higher than 27° C
  - **Presence of the Coriolis force;**
  - Small variations in the vertical wind speed;
  - A pre-existing weak low- pressure area or low-level-cyclonic circulation
  - Upper divergence above the sea level system.
- Tropical cyclones **do not form near the Equator** (within 5 degrees latitude) **because the Coriolis force is ZERO** and air tends to flow straight into low pressure centers, so it fills up before the pressure can drop enough. **Hence, statement B is not correct.**

QUESTION 79:

With reference to Angikaar Campaign, consider the following statements:

1. The campaign focuses on social behaviour change and on issues such as water & energy conservation, tree plantation, etc.
2. It has been launched by the Ministry of Environment, Forest and Climate Change.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- **Angikaar Campaign** has been launched for social behaviour change, focusing on issues such as water & energy conservation, waste management, health, tree plantation, sanitation and hygiene for beneficiaries of completed houses under Pradhan Mantri Awas Yojana - PMAY (U). **Hence, statement 1 is correct.**
  - The campaign will converge with schemes and missions of other Ministries dealing with the stated subjects.
  - The convergence would especially focus on Ujjwala for gas connection and Ayushman Bharat for health insurance to the beneficiaries of PMAY (U).
- It has been launched by the Ministry of Housing and Urban Affairs. **Hence, statement 2 is not correct.**

QUESTION 80:

Consider the following statements:

1. Operation 'SAMADHAN' was launched by the Ministry of Home Affairs (MHA) to tackle the issue of Left Wing Extremism (LWE).
2. 'Greyhounds' is a special force raised by the Indian Army to deal with LWE in India.

Which of the statements given above is/are not correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- **SAMADHAN doctrine** is the one-stop solution for the LWE problem. It encompasses the entire strategy of government from short-term policy to long-term policy formulated at different levels. It was launched by the Ministry of Home Affairs. **Hence, statement 1 is correct.**
- **'Greyhounds'** is a special police force unit raised by the Andhra Pradesh and Telangana Police to deal with Left Wing Extremism in the state. It is not raised by the Indian Army. **Hence, statement 2 is not correct.**
- **'SAMADHAN' means-**
- **S- Smart Leadership**
- **A- Aggressive Strategy**
- **M- Motivation and Training**
- **A- Actionable Intelligence**
- **D- Dashboard Based KPIs (Key Performance Indicators) and KRAs (Key Result Areas)**
- **H- Harnessing Technology**
- **A- Action plan for each Theatre**
- **N- No access to Financing**

QUESTION 81:

Consider the following statements regarding Earth BioGenome Project:

1. It aims at sequencing the (Deoxyribonucleic acid) DNA of all known eukaryotic and prokaryotic species on Earth.
2. This Project will help in understanding the evolution and organization of life on our planet.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- The Earth BioGenome Project (EBP) was officially launched in 2018 by seventeen institutions from across the globe, including the USA, United Kingdom, China, Germany, Denmark and Brazil. In addition, 15 scientific communities and national and regional projects are also affiliated with the EBP.
- It aims at sequencing the (Deoxyribonucleic acid) DNA of all known Eukaryotic (a group that includes plants, animals, fungi and other organisms whose cells have a nucleus that houses their chromosomal DNA) species on Earth. It does not include sequencing of prokaryotic species on Earth **Hence, statement 1 is not correct.**
- The central goal of the EBP is to understand the evolution and organization of life on our planet by sequencing and functionally annotating the genomes of 1.5 million known species of eukaryotes. **Hence, statement 2 is correct.**
- Eukaryotic cells contain membrane-bound organelles, including a nucleus. Eukaryotes can be single-celled or multi-celled, such as humans, plants, fungi, and insects. Bacteria are an example of prokaryotes. Prokaryotic cells do not contain a nucleus or any other membrane- bound organelle.
- To date, the genomes of less than 0.2 percent of eukaryotic species have been sequenced.
- This initiative promises to be a complete transformation of the scientific understanding of life on Earth and a vital new resource for global innovations in medicine, agriculture, conservation, technology and genomics.
- The project also seeks to reveal some of the estimated 10 million to 15 million unknown species of eukaryotes, most of which are single cell organisms, insects and small animals in the oceans.
- The genomic data will be a freely available resource for scientific discovery and the resulting benefits will be shared with countries and indigenous communities where biodiversity is sourced.
- Researchers estimate the proposed initiative will take 10 years and cost approximately $4.7 billion.

QUESTION 82:

The terms Ripple, Ethereum, Cardano, sometimes seen in the news are related to:

(a) Exoplanets
(b) Cryptocurrencies
(c) Cyber attacks
(d) Mini satellites

Answer: (b)

Explanation

- A cryptocurrency is a digital or virtual currency that uses cryptography for security. A cryptocurrency is difficult to counterfeit because of this security feature.
- Many cryptocurrencies are decentralized systems based on blockchain technology (a distributed ledger enforced by a disparate network of computers).
- A defining feature of a cryptocurrency is that it is not issued by any central authority, rendering it theoretically immune to government interference or manipulation.
- The first blockchain-based cryptocurrency was Bitcoin, which still remains the most popular and most valuable.

- Today, there are thousands of alternate cryptocurrencies with various functions or specifications. Some of these are Bitcoin, **Ripple**, Litecoin, **Ethereum**, EOS, **Cardano**, Stellar, etc. **Hence, option B is correct.**
- The Reserve Bank of India (RBI) in April, 2018 directed all regulated entities including banks, not to provide services to businesses dealing in cryptocurrency, so as to protect consumer interest and check money laundering.

QUESTION 83:

With reference to Stratospheric Aerosol Injection Programme, consider the following statements:

1. The programme involves spraying of sulphate particles in the lower stratosphere.
2. It is a strategy to reduce global warming.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

- The Stratospheric aerosol injection program is a climate engineering initiative. Under this program, tiny sulphate particles will be released into the lower stratosphere.
- The fine solid sulphate particles suspended in air act as an aerosol. It involves use of big cannons, hoses or special types of aircraft to spray huge quantities of sulphate particles. **Hence, statement 1 is correct.**
- The idea behind this program is to help shield the Earth from just enough sunlight to help keep temperatures low.
- The sulphate particles serve as a reflective barrier against the sunlight. The sulphate particles reflect the sunlight back into the upper atmosphere and reduce Earth's average temperature thereby reducing global warming on earth. **Hence, statement 2 is correct.**

QUESTION 84:

Which of the following is the source of Cosmic Microwave Background Radiation (CMBR)?

(a) Black holes
(b) Supernovae
(c) Pulsars
(d) Cosmic Dawn

Answer: (d)

Explanation

- The Big Bang theory predicts that the early universe was a very hot place and that as it expands, the gas within it cools.
- Thus the universe should be filled with radiation that is literally the remnant heat left over from the Big Bang, called the "Cosmic Microwave Background", or CMB.
- The CMB radiation was emitted 13.7 billion years ago, only a few hundred thousand years after the Big Bang, long before stars or galaxies ever existed. This period is known as the Cosmic Dawn.
- Thus, by studying the detailed physical properties of the radiation, we can learn about conditions in the universe on very large scales at very early times, since the radiation we see today has traveled

over such a large distance.

- The Raman Research Institute (RRI) Bengaluru conducted experiments at Timbaktu in Andhra Pradesh to detect CMBR. **Hence, option D is correct.**
- The scientific space project **CMB-Bharat** has been presented as a proposal to ISRO and is being considered by it.
  - CMB-Bharat is a proposal for a comprehensive next generation Cosmic Microwave Background (CMB) mission in international collaboration with major Indian contributions.

QUESTION 85:

With reference to Hydrogen Fuel Cell vehicles, consider the following statements:

1. They use a modified internal combustion engine to turn the wheels.
2. They emit only water as a byproduct.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- Hydrogen fuel cell vehicles are zero emission and run on compressed hydrogen fed into a fuel cell "stack" that produces electricity to power the vehicle. A fuel cell can be used in combination with an electric motor to drive a vehicle – quietly, powerfully and cleanly.

How It Works

- A hydrogen fuel cell electric vehicle is powered by a group of individual fuel cells, known as a fuel cell stack. The stack is designed to contain enough cells to provide the necessary power for the automotive application. The electricity generated by the fuel cell stack powers the electric motor that propels the vehicle. **Hence, statement 1 is not correct.**
- Each fuel cell has an anode, a cathode and a proton exchange membrane sandwiched in between. Hydrogen, from a tank onboard the vehicle, enters into the anode side of the fuel cell. Oxygen, pulled from the air, enters the cathode side.
- As the hydrogen molecule encounters the membrane, a catalyst forces it to split into electrons and protons.
- The proton moves through the fuel cell stack and the electron follows an external circuit, delivering current to the electric motor and other vehicle components.
- At the cathode side, the proton and electron join again, and then combine with oxygen to form the vehicle's only emission, water. **Hence, statement 2 is correct.**
- There are two principle drawbacks of Hydrogen Fuel Cell cars:
  - It requires an extensive network of Hydrogen filling stations to be developed.
  - The predominant method of producing hydrogen involves the use of Natural gas (Methane) and Steam under high pressure.
- Due to the above reasons Electric cars are preferred as it does away with the need to have a hydrogen fuel cell. Furthermore, it can be operated using the existing electric infrastructure with minimal changes such as charging stations.

QUESTION 86:

With reference to Genetically modified crops (GM crops), consider the following statements:

1. The Ministry of Science and Technology deals with the approval of GM crops in India.
2. Bt cotton remains the only GM crop allowed to be cultivated in the country.
3. Cartagena Protocol is the major international instrument on genetically modified organisms.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

- In India, it is the responsibility of the **Genetic Engineering Appraisal Committee (GEAC)** under the **Ministry of Environment Forest and Climate Change** to assess the safety of genetically modified plants and decide whether it is fit for cultivation. **Hence, statement 1 is not correct.**
- Besides Bt cotton, the GEAC has cleared two other genetically modified crops — brinjal and mustard — but these have not received the consent of the Ministry of Environment Forest and Climate Change. **Hence, statement 2 is correct.**
- The **Cartagena Protocol on Biosafety to the Convention on Biological Diversity** is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.
    - India is a signatory to the Cartagena Protocol. **Hence, statement 3 is correct.**

QUESTION 87:

Consider the following statements about the GROWTH-India telescope:

1. The telescope is located at the Indian Astronomical Observatory (IAO) in Ladakh.
2. It is the country's first robotic telescope.
3. It aims to capture cosmic events occurring in timescales much shorter than light years.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 3 and 3 only
(d) 1, 2 and 3

Answer: (d)

Explanation

- GROWTH-India telescope is located at the Indian Astronomical Observatory (IAO) at Hanle village in Ladakh. It is part of a multi-country collaborative initiative known as **Global Relay of Observatories Watching Transients Happen (GROWTH). Hence, statement 1 is correct.**
- The telescope is the country's first robotic telescope aimed to capture cosmic events occurring over relatively shorter periods of the cosmological timescale: years, days and even hours. **Hence, statements 2 and 3 are correct.**
- The Rs-3.5-crore telescope is a joint project of the Bengaluru-based Indian Institute of Astrophysics (IIA) and IIT Bombay.
- The project is fully funded by the Science and Engineering Research Board of the Department of Science and Technology, under the Partnerships for International Research and Education (PIRE) project, administered by the Indo-US Science and Technology Forum.

QUESTION 88:

With reference to 'Free Space Optical Communication', consider the following statements:

1. It is a line of sight communication technology.
2. It can deliver higher data transmission speeds than Broadband.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (c)

Explanation

Free Space Optical (FSO) Communication provides point-to-point transmission of information through the atmosphere using the Optical signals. It has the following benefits:

- Cost effective
- Easy to install
- Enables quick establishment of communication link especially in the disaster management scenario,
- High bandwidth provisioning.
- The range of frequencies where it operates makes FSO communication free from licensing.

- With FSO communication, maximum data transfer rates up to 2.5 Gbps is possible, unlike the maximum data transfer rates of a few Mbps offered by broadband communication systems. **Hence, statement 2 is correct.**
- FSO involves the optical transmission of voice, video, and data using air as the medium of transmission.
- Each FSO system uses a high-power optical source (e.g. laser) plus a telescope that transmits light through the atmosphere to another telescope that receives the information.
- A Free Space Optical transmission system is a wireless communication system connecting two points which have a direct line of sight. **Hence, statement 1 is correct.**
- The systems operate by taking a standard data or telecommunications signal, converting it into a digital format and transmitting it through free space. FSO can be severely affected by fog and atmospheric turbulence.

QUESTION 89:

Why does the food cooked in a pressure cooker take less time and consume a lesser amount of water than other conventional cooking methods?

(a) Pressure cooker represents an isolated system in thermodynamics that allows no mass and heat to be transferred out of the system.
(b) The pressure inside the pressure cooker is higher due to which the boiling point of water decreases.
(c) Latent heat of sublimation increases inside the pressure cooker.
(d) The boiling point of water increases inside the pressure cooker due to higher pressure.

Answer: (d)

Explanation

- A pressure cooker is a pot with a special lid that seals. The sealing ring, typically a rubber gasket, prevents steam and air from escaping as they expand. This causes the pressure in the vessel (Pressure Cooker) to build as the temperature rises.

- Increase in pressure increases the boiling point of water. Resultantly, a greater amount of heat transfer can occur inside the cooker before the water gets boiled and gets converted to gas.
- This higher amount of heat transfer to water and then to food inside the cooker is responsible for fast cooking of food and lesser amount of water being required. **Hence, option (d) is correct.**
- Pressure cooker represents a **closed system** and **not an isolated system** in thermodynamics. Closed system allows no transfer of mass out of the system but heat or energy can be transferred out from it.

QUESTION 90:

Consider the following statements regarding Sound Waves:

1. They travel faster in outer space than on earth.
2. They travel faster through solids than in liquids and gases.
3. The speed of these waves decreases with increase in temperature.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Answer: (b)

Explanation

Sound wave is a mechanical wave and requires material medium like air, water and steel to propagate. It cannot travel in vacuum like outer space because there is no matter for the propagation of sound waves. **Hence, statement 1 is not correct.**

- The distances between molecules or particles in solids are very small, as compared to that in liquids and gases. Being close together, the particles collide very quickly in solids, due to which sound waves propagate easily and faster in solids. **Hence, statement 2 is correct.**
- When a sound is created, the molecules bump or push into one another in a pattern. Those molecules bump into the next set of molecules, which in turn bump into the next molecules. This continues and sound waves propagate through the medium.
- Molecules at higher temperatures have more energy, thus they can vibrate faster. Since the molecules vibrate faster, sound waves can travel more quickly at higher temperature. **Hence, statement 3 is not correct.**

QUESTION 91:

With reference to the new E-Commerce policy, consider the following statements:

1. It has set up a new E-Commerce regulator.
2. It lays down that vendors that have any stake owned by an e-commerce company cannot sell their products on that e-commerce company's portal.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

E-commerce companies can operate under two different models in India.

- The first is the marketplace model where the e-commerce firm simply acts as a platform that connects buyers and sellers. FDI is allowed in e-commerce companies in this model.
- The second model is inventory-based where the inventory of goods sold on the portal is owned or controlled by the e-commerce company. FDI is not allowed under this model.
- Large e-commerce companies such as Amazon and Flipkart, while not owning inventory themselves, have been providing a platform for their group companies such as CloudTail and WS Retail respectively. This is seen as skewing the playing field, especially if these vendors enjoyed special incentives from the e-commerce firm, over others. These controlled or owned vendors may then be able to offer discounts to customers that competitors may not be able to match.
- The Department of Industrial Policy & Promotion has issued a clarification to the existing rules pertaining to Foreign Direct Investment in e-commerce companies.
- **The main features of the new E-Commerce policy include the following provision:**
  - Vendors that have any stake owned by an e-commerce company cannot sell their products on that e-commerce company's portal. **Hence, statement 2 is correct.**
  - Vendors who purchase 25% or more of its inventory from an e-commerce group company will be considered to be controlled by that e-commerce company, and thereby barred from selling on its portal.
  - The e-commerce firm will not be allowed to influence the price of a product sold on its portal by giving incentives to particular vendors.
  - The new policy does not set up a regulator for e-commerce entities. **Hence, statement 1 is not correct.**

QUESTION 92:

Which of the following were the conditions put forth by the International Monetary Fund for granting loans to India during the Economic Reform of 1991?

1. Devaluation of the rupee
2. Drastic reduction in the peak import tariff
3. Hike in Excise duties
4. Reduction in all government expenditure

Select the correct answer using the code given below:

(a) 1, 2 and 4 only
(b) 1, 2 and 3 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

Answer: (d)

Explanation

- The IMF conditions put forth for granting loans to India during the Economic Reform of 1991 were as under:
  - **Devaluation of the rupee** by 22 per cent (which was given effect in two phases and the Indian rupee fell down from `21 to `27 per US Dollar).
  - **Drastic reduction in the peak import tariff** from the prevailing level of 130 per cent to 30 per cent (India completed it by 2000–01 itself and now it is voluntarily cut to the level of 15 per cent).
  - **Excise duties** (i.e., CENVAT now) to be hiked by 20 per cent to neutralise the revenue shortfalls due to the custom cut (a major tax reform programme was launched to streamline, simplify and

modernise the Indian tax structure which is still going on).

- All **government expenditure** to be cut down by 10 per cent, annually (i.e., cutting the cost of running the government and denotes, interests, pays, pension PF and subsidies. A pressure on the government to consolidate the fiscal deficit and go for fiscal prudence). **Hence, option D is correct.**

QUESTION 93:

With reference to Capital Markets, consider the following statements:

1. Primary markets are not used for trading purposes.
2. A blue chip company's initial public offering can be listed in both primary and secondary markets.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

Primary and Secondary Market

- **Primary market** refers to buying of shares in an initial public offering (IPO); IPO is the first time offer of shares in primary markets which are then traded in secondary markets. Primary markets are not used for trading purposes. **Hence, statement 1 is correct.**
  - The shares are bought in Primary markets by applying through a share application form.
  - Initial public offerings (IPO provide companies with an opportunity to obtain capital by offering shares through the primary market only and not through the secondary market. **Hence, statement 2 is not correct.**
- Secondary market refers to transactions where one investor buys shares from another investor at the prevailing market price or at an agreed price.
  - The shares are bought and sold in the secondary market that is on the stock exchanges. The investors may buy and sell securities on the stock exchanges through stock brokers.
  - **Blue chip** is a nationally recognized, well-established, and financially sound company. Blue chips generally sell high-quality, widely accepted products and services. It follows the same listing rules as all other companies.

QUESTION 94:

With reference to Wind-Rush Scheme, consider the following statements:

1. It is a scheme aiming to double global wind power generation capacity by 2022.
2. It is promoted by the United Kingdom and benefits all commonwealth countries.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

Wind-Rush Scheme

- More than 450 Indians have been confirmed their British citizenship under the British government's 'Wind-rush Scheme'.
- Under the 'Wind-rush' Scheme, citizenship has been granted to immigrants from Commonwealth countries to the UK, who arrived or settled in the UK before 1 January, 1973 and have been continuously resident in the UK since their arrival. **Hence, statement 1 is not correct while statement 2 is correct.**
- The **'Windrush Generation'** refers to citizens of former British colonies who arrived in the UK before 1973, when the rights of such Commonwealth citizens to live and work in Britain was substantially curtailed.
- While a large proportion of them were of Jamaican/ Caribbean descent, they also included Indians and other South Asians.
- The immigrants referred to under the bracket of 'Windrush Generation' relate to a ship named 'Windrush', which brought Jamaican workers to the UK shores in 1948.

QUESTION 95:

With reference to the Most Favoured Nation (MFN) status under WTO, consider the following statements:

1. When a country is given MFN status it receives preferential treatment in terms of tariffs and quotas.
2. WTO allows a country to grant MFN status to only developing countries.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (d)

Explanation

Most Favoured Nation

- Article 1 of General Agreement on Tariffs and Trade (GATT), 1994, requires every World Trade Organization (WTO) member country to accord MFN status (or preferential trade terms with respect to tariffs and trade barriers) to **all other member countries** (Not only developing countries). **Hence, statement 2 is not correct.**
- Accordingly, India accorded MFN status to all WTO member countries, including Pakistan, from the date of entry into force of the so called Marrakesh Agreement, establishing the WTO.
- Although it sounds as if MFN offers preferential treatment, it only ensures non-discriminatory trade. **Hence, statement 1 is not correct.**
- It makes sure that any country receiving MFN status **avoids any disadvantageous** situation in comparison to the granter's other trade partners.
- According to the World Trade Organisation rules, countries cannot normally discriminate between their trading partners.
- If one country is granted a trade concession such as, for example, lower import duties, then all WTO members must be extended the same concessions.
- This principle is known as the **Most Favoured Nation treatment.** Despite repeated promises, **Pakistan has never granted MFN status to India.**
- Therefore, MFN is a non-discriminatory trade policy as it ensures equal trading among all WTO member nations rather than exclusive trading privileges.
- Since India and Pakistan are part of the WTO, both are required to grant MFN status to each other

and other partner countries.

QUESTION 96:

Which of the following is used as a tool by the RBI to reduce the money supply in the economy?

1. Increasing Bank Rate
2. Increasing Reverse Repo rate
3. Increasing Marginal Standing facility (MSF)

Select the correct answer using code given below:

(a) 1, 2 and 3
(b) 1 and 3 only
(c) 1 and 2 only
(d) 2 only

Answer: (a)

Explanation

- RBI uses various quantitative and qualitative tools to control money supply in an economy.Bank rate is the rate at which the RBI lends money for long terms to the commercial banks. If the bank rate is increased the commercial banks will borrow less funds and give less loans. This in turn reduces the supply of money in the market.
- Reverse Repo rate is the short term borrowing rate at which RBI borrows money from banks. An increase in the reverse repo rate means that the banks will get a higher rate of interest from RBI. As a result, banks prefer to lend their money to RBI rather than lending it to the public. This in turn reduces money supply in the economy.
- Marginal Standing facility (MSF) is a special window for the commercial banks to borrow from the RBI against approved government securities. This tool is used by banks in case of an acute cash shortage. An increase in the MSF rate leads to higher borrowing cost for the banks and thus reduces money supply in the economy. **Hence, option A is correct.**

QUESTION 97:

With reference to the Karez System, consider the following statements:

1. It is an indigenous water harnessing system of India.
2. Gravity plays a significant role in bringing water from underground sources.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (b)

Explanation

- The Karez system is a water harnessing technology that originated in Iran/Persia and is found in 38 countries worldwide. Most of these are concentrated in the **Middle East region**. Persia is known for the earliest known and documented Karez system. **Hence, statement 1 is not correct.**
- In this system, no mechanical pump or lift is used. **Gravity** alone brings the water from the underground source. **Hence, statement 2 is correct.**

QUESTION 98:

Recently in the news, WAYU is related to?

(a) Indigenously developed fighter jet
(b) Air pollution control device
(c) Indigenously developed variant of CNG
(d) Unmanned Aerial Vehicle

Answer: (b)

Explanation

- **WAYU (Wind Augmentation PurifYing Unit)** is developed to address air pollution at traffic intersections and dense traffic zones.
- It has been **indigenously developed** by the Council of Scientific and Industrial Research - National Environmental Engineering Research Institute (CSIR-NEERI). **Hence, option B is correct.**

QUESTION 99:

EChO Network, recently in the news, is related to:

(a) Internet of Things
(b) Health care in tribal areas
(c) Ecology and Environment
(d) Development of disabled children

Answer: (c)

Explanation

- **EChO Network** is a collaborative effort of the Government of India, industry and academia to provide a template for cross-disciplinary leadership related ecology and environment. **Hence, option C is correct.**
- It has a specific focus on increasing research, knowledge, and awareness of Indian ecology and the environment.
- The network aims to identify gaps in knowledge regarding the environment and then train postdoctoral leaders in research and outreach on these topics, incorporating current public and private efforts.

QUESTION 100:

With reference to Indian Pharmacopoeia (IP), consider the following statements:

1. It is an officially recognized book of standards for drugs.
2. Germany is the first country to formally recognise Indian Pharmacopoeia.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Answer: (a)

Explanation

- Indian Pharmacopoeia (IP) is an officially recognized book of standards as per the Drugs and Cosmetics Act, 1940 and Rules 1945 thereunder. **Hence, statement 1 is correct.**

- The Islamic Republic of Afghanistan has formally recognised the Indian Pharmacopoeia (IP). **Hence, statement 2 is not correct.**
- It is an **autonomous institution** under the **Ministry of Health and Family Welfare** which is responsible to set standards of drugs in the country.
- It promotes public and animal health in India by bringing out authoritative and officially accepted standards for quality of drugs including active pharmaceutical ingredients, excipients and dosage forms, used by health professionals, patients and consumers.
- It also develops **IP Reference Substances (IPRS)** that act as fingerprints for identification of an article under test and its purity as prescribed in the IP monographs.