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1. Geography

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1. **Arrange the following Seas from south to north:**
   1. **Sulu Sea**
   2. **Banda Sea**
   3. **Celebes Sea**

Choose the Correct Option:

A. 1–2- 3

B. 2 - 1 -3

C. 2–3- 1

D. 3 – 2 - 1

Answer: C

Explanation

- Sulu Sea is located in the northern most position, followed by Celebes Sea and Banda Sea.
  Indonesia lies between latitudes 11°S and 6°N, and longitudes 95°E and 141°E.
- It is the world's largest archipelagic country, extending 5,120 kilometres (3,181 mi) from east to west and 1,760 kilometres (1,094 mi) from north to south.
  The islands of Indonesia are separated by many water bodies (seas).

Sulu Sea

- Sulu sea is a body of water in the south-western area of the Philippines separated from the South China Sea in the northwest by Palawan and from the Celebes Sea in the southeast by the Sulu Archipelago.
- Borneo is found to the southwest and Visayas to the northeast.

Celebes Sea

- The Celebes Sea of the western Pacific Ocean is bordered on the north by the Sulu Archipelago and Sulu Sea and Mindanao Island of the Philippines, on the east by the Sangihe Islands chain, on the south by Sulawesi's Minahasa Peninsula, and on the west by northern Kalimantan in Indonesia.

Banda Sea

- The Banda Sea is a sea in the Maluku Islands of Indonesia, connected to the Pacific Ocean but surrounded by hundreds of islands, as well as the Halmahera and Ceram Seas.

2. **Consider the Following statement about Placer Deposits:**
   1. **Placer is an accumulation of valuable minerals formed by gravity separation from a specific source rock during sedimentary processes.**
   2. **Gold, Diamond and Platinum group metals are mined from placer deposits**

Choose the Correct Statement/(s):

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

- In geology, a placer deposit or placer is an accumulation of valuable minerals formed by gravity separation from a specific source rock during sedimentary processes.
- Types of placer deposits include alluvium, eluvium, beach placers, aeolian placers and paleo-placers.
- Some of the substances commercially mined from placer deposits include:
  - ✓Diamonds
  - ✓Gold
  - ✓Garnet
  - ✓Iron, from iron sands containing high concentrations of magnetite
  - ✓Platinum group metals

Why in news?

- The Geological Survey of India has provided us valuable information pertaining to the gold reserves in India.
- India has 501.83 million tonnes of gold ore reserves as of April 1, 2015, according to National Mineral Inventory data. Out of these, 17.22 million tonnes were placed under reserves category and the rest under remaining resources category.
- The largest reserves of gold ores are located in Bihar (44 per cent), followed by Rajasthan (25 per cent), Karnataka (21 per cent), West Bengal (3 per cent), Andhra Pradesh (3 per cent), Jharkhand (2 per cent).

3. **Consider the following statements about Northeast India's geography:**
   1. **Betlingchhip is the highest peak of Tripura.**
   2. **The state has a tropical Monsoon climate, designated Aw under the Köppen climate classification.**

Choose the correct statements:

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- Betlingchhip, also known as Betalongchhip, Balinchhip and Thaidawr is the highest peak of the Jampui Hills. It is located in the state of Tripura.
- The state has a tropical savannah climate, designated Aw under the Köppen climate classification.
- The undulating topography leads to local variations, particularly in the hill ranges. Wladimir Köppen (1846 - 1940), a German Climatologist, gave a detailed climate classification and his first-ever classification came in 1918 and continued to refine and modify it. The last modified version of his classification was published in 1936.

- This classification was done with the usage of different kinds of symbols which represent different meanings and climate.
- Majorly, the climate classification was done into five major groups along with one more type which was considered a special category.
- The five major climate groups are represented by capital letters i.e A, B, C, D, and E. Among these major groups, only B belongs to the dry type of climate whereas others are humid climate groups.
- These major groups are further divided into subtypes on the basis of their features like temperature and precipitation or level of dryness or coldness, etc.
- Due to the proposed plans to develop a plan regarding the Agarwood trees in Tripura, the climate of the little state comes into picture.
- The Agar species are critically endangered but in Tripura, due to adaptability of the land and low input for management and growth, intercropping adaptation could make Agar a preferred cash crop.
- Hence, in order to promote Agar tree, Agarwood based industry, its plantation, its sustainable harvesting, the Tripura government released the 'Tripura AgarWood Policy 2021,' which aims to double agarwood plantation by the year 2025. The potential of Agar trade estimated to around ₹ 2000 crore.

4. Which of the following are the right–bank tributaries of the Ganga?

1. Gomti

2. Son

3. Punpun

4. Damodar

5. Kosi

Choose the correct option:

A. 1 and 2 only

B. 2 and 3 only

C. 2, 3 and 4

D. All except 5

Answer: C

Explanation

- The Ganges is a trans-boundary river of Asia which flows through India and Bangladesh. The 2,525 km (1,569 mi) river rises in the western Himalayas in the Indian state of Uttarakhand, and
- flows south and east through the Gangetic Plain of North India into Bangladesh, where it empties into the Bay of Bengal.
- Supporting over 11% of world's population as it passes through the densest populated regions on the planet, it is the third largest river on Earth by discharge.
- Major left-bank tributaries include the Gomti River, Ghaghara River, Gandaki River, and Kosi River; major right-bank tributaries include the Yamuna River, Son River, Punpun and Damodar.
- In July 2014, the Government of India announced an integrated Ganges-development project titled Namami Ganga and allocated ₹ 2,037 crore for this purpose.
  In March 2017 the High Court of Uttarakhand declared the Ganges River a legal "person", in a move that according to one newspaper, "could help in efforts to clean the pollution- choked rivers."

5. Consider the following statements:

1. Kuroshio cold current flows through the Bering Strait in southerly direction and thus transports cold water of the Arctic Sea into the Pacific Ocean.

2. **The waters of the Oyashio Current originate in the Arctic Ocean and flow southward via the Bering Sea.**

Choose the correct statement/(s):

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

- The Oyashio cold current is also known as Kurile cold current. This cold current flows through the Bering Strait in southerly direction and thus transports cold water of the Arctic Sea into the Pacific Ocean.
- The Kuroshio System consists of several currents and drifts are similar to the Gulf Stream system of the Atlantic Ocean.
- The Kuroshio , also known as the Black or Japan Current or the Black Stream, is a north-flowing, warm ocean current on the west side of the North Pacific Ocean.
- Like the Gulf Stream in the North Atlantic, the Kuroshio is a powerful western boundary current and forms the western limb of the North Pacific Subtropical Gyre.
- The Oyashio cold current is also known as Kurile cold current. This cold current flows through the Bering Strait in southerly direction and thus transports cold water of the Arctic Sea into the Pacific Ocean.
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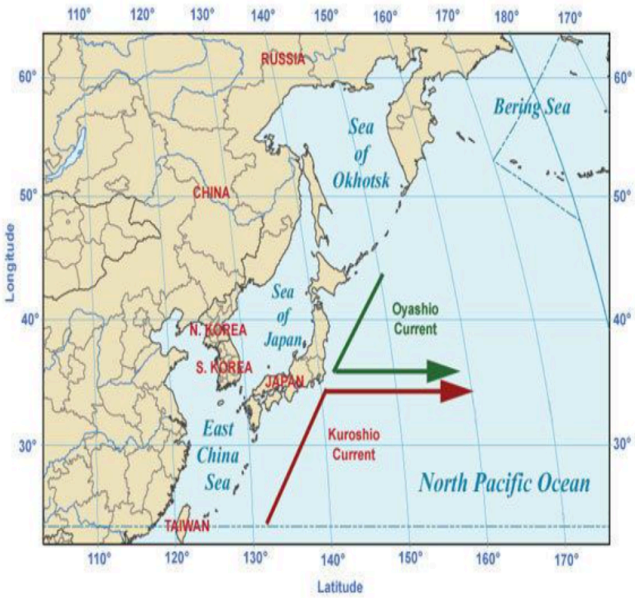


6. **Which of the following statements are incorrect with respect to Ocean Currents?**
   1. **The speed of currents decreases with depth.**
   2. **Cold currents are usually found on the west coast of continents in low and middle latitudes.**
   3. **Ocean currents move in a clockwise direction in Southern hemisphere and anticlockwise in northern hemisphere.**

Select the correct code.

A. 3 and 4 only

B. 2 and 3 only

C. 3 only

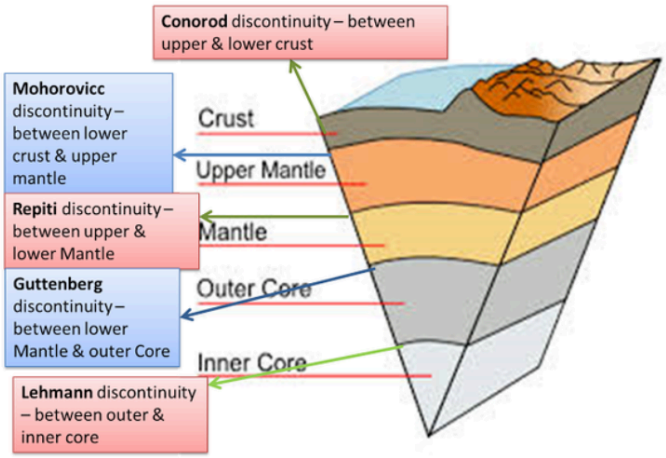
D. 1, 2 and 3 only

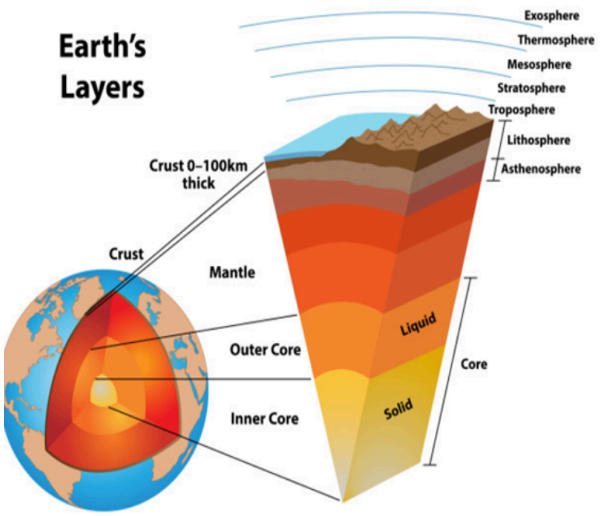
Answer: C

Explanation

- Ocean currents are general movement of a mass of surface water in a fairly defined direction and the speed of the current has nothing to do with the depth of the current.

- It is a persistent, mostly horizontal flow of oceanic water.
- Cold currents are usually found on the west coast of the continents in the low and middle latitudes (true in both hemispheres) and on the east coast in the higher latitudes in the Northern Hemisphere.
- The tropical deserts found on the western margins of the continent owe their existence to these cold currents.
- The Ocean Currents move in a clockwise direction in Norther Hemisphere and anticlockwise direction in Southern Hemisphere.
- Warm ocean currents are wide and shallow while cold ocean currents are narrow and deep.





7. **Consider the following statements**
   1. **This layer of earth's crust makes up about 85% of the volume of the earth.**
   2. **Its density varies between 3.4-3.5 g/ cubic cm to 5.5 g/ cubic cm.**
   3. **It contains dense, coarse grained igneous rocks mostly made of minerals like olivine and pyroxene.**

Which layer of earth is explained in above statements?

A. Crust

B. Mantle

C. Outer core

D. Inner core

Answer: B

Explanation

- The mantle extends from Moho's discontinuity (35 km) to a depth of 2,900 km (Moho-Discontinuity to the outer core).
- The crust and the uppermost part of the mantle are called lithosphere. Its thickness ranges from 10-200 km.
- The lower mantle extends beyond the asthenosphere. It is in solid state.
- The density of mantle varies between 2.9 and 3.3. The density ranges from 3.3 to 5.7 in the lower part. It is composed of solid rock and magma.
- It forms 83 per cent of the earth's volume.
- The outer layer of the mantle is partly simatic while the inner layer is composed of wholly simatic ultra-basic rocks.

8. **Consider the following statements with respect to International North South Transport Corridor.**

   1. **Azerbaijan and Russia are included in this corridor.**
   2. **It will synchronize with the Ashgabat agreement.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

- International North-South Transport Corridor (INSTC) is a multi modal transportation established in 2000 for the purpose of promoting transportation cooperation among the Member States.
- This corridor connects India Ocean and Persian Gulf to the Caspian Sea via Iran, Islamic Rep., and is then connected to Saint Petersburg and North European via Russia.
- Countries/Territories/Economies associated with this Initiative:
  - ✓ Armenia ; Azerbaijan ; Belarus ; Bulgaria ; India ; Iran, Islamic Republic of ; Kazakhstan ; Kyrgyz Republic ; Oman ; Russian Federation ; Syrian Arab Republic ; Tajikistan ; Turkey ; Ukraine.
- Ashgabat Agreement envisages facilitation of transit and transportation of goods between Central Asia and the Persian Gulf.
- India's accession to the Agreement would diversify India's connectivity options with Central Asia and have a positive influence on India's trade and commercial ties with the region.
- Upon receipt of approval of the Union Cabinet for India's accession to the Ashgabat Agreement, India had deposited the Instrument of Accession with Turkmenistan in April 2016.

9. **Agatti island are located in which of the following territories?**

A. Lakshadweep

B. Andaman & Nicobar

C. Tamil Nadu

D. Orissa

Answer: A

Explanation

- Agatti Island is a 7.6 km long island, situated on a coral atoll called Agatti atoll in the Union Territory of Lakshadweep.

10.There are various type of erosions as one seen in making of Chambal Badland topography. Which of the following erosion is the deepest?

A. Splash erosion

B. Sheet erosion

C. Rill erosion

D. Gully erosion

Answer: D

Explanation

- Gully erosion refers to the cutting of narrow channels called gullies. The gullies can be caused by small channels of approximately 3 to 12 inches dee inches deep. Gullies may be one to several feet deep.
- Gully erosion cuts deep and removes the surface soil as well as deeper soil that may still have substantial amounts of total nutrients but less compared to the surface soil.
- Gully erosion needs to be prevented, as it is difficult to check once started. Gully erosion is common on steep slopes. Gullies deepen with rainfall, cut the agricultural lands into small fragments and make them unfit for cultivation.
- A region with a large number of deep gullies or ravines is called badland topography.

11. Consider the following statements with respect to Anti- hail guns.

1. **An anti-hail gun is a machine which generates shock waves to disrupt the growth of hailstones in clouds.**
2. **These shock waves supposedly stop water droplets in clouds from turning into hailstones, so that they fall simply as raindrops.**
3. **Uttarakhand government has tested the use of 'anti-hail guns' imported from Russia.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 1 and 3 only

C. 3 only

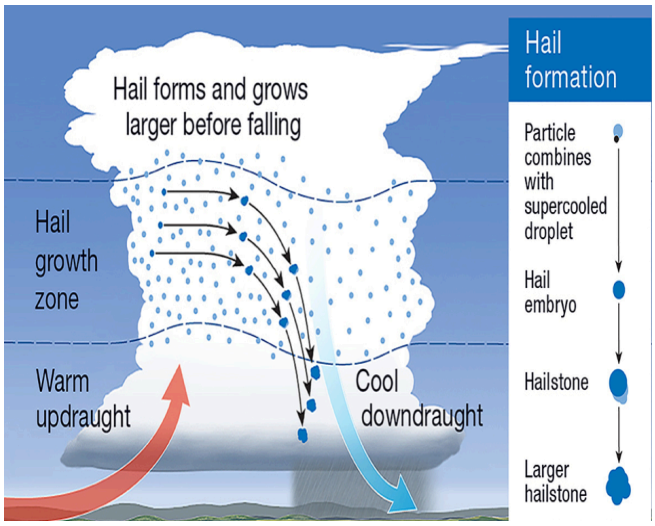
D. 1, 2 and 3

Answer: A

Explanation

- Hail is produced by cumulonimbus clouds, which are generally large and dark and may cause thunder and lightning.

- In such clouds, winds can blow up the water droplets to heights where they freeze into ice.
- The frozen droplets begin to fall but are soon pushed back up by the winds and more droplets freeze onto them, resulting in multiple layers of ice on the hailstones.
- This fall and rise is repeated several times, till the hailstones become too heavy and fall down.
- An anti-hail gun is a machine which generates shock waves to disrupt the growth of hailstones in clouds, according to its makers.
- It comprises a tall, fixed structure somewhat resembling an inverted tower, several metres high, with a long and narrow cone opening towards the sky.
- The gun is "fired" by feeding an explosive mixture of acetylene gas and air into its lower chamber, which releases a shock wave (waves which travel faster than the speed of sound, such as those produced by supersonic aircraft).



- These shock waves supposedly stop water droplets in clouds from turning into hailstones, so that they fall simply as raindrops.

12. A linear feature in a landscape dictated by an underlying geological structure such as a fault is known as which of the following?

A. Streaming potential

B. Geophones

C. Lineament

D. Quadrature

Answer: C

Explanation

- An unfamiliar lineament is among four factors behind frequent earthquakes in northern Assam's Sonitpur area.
- A lineament is a linear feature in a landscape dictated by an underlying geological structure such as a fault.
- The two faults and the lineament, along with the oblique convergence of the Indian plate, have caused frequent earthquakes.
- The National Centre of Seismology recorded 29 earthquakes of magnitude varying from 2.6 to 4.7 in Sonitpur after the 6.4 tremblor on April 28 that damaged several buildings, bridges and a river embankment.

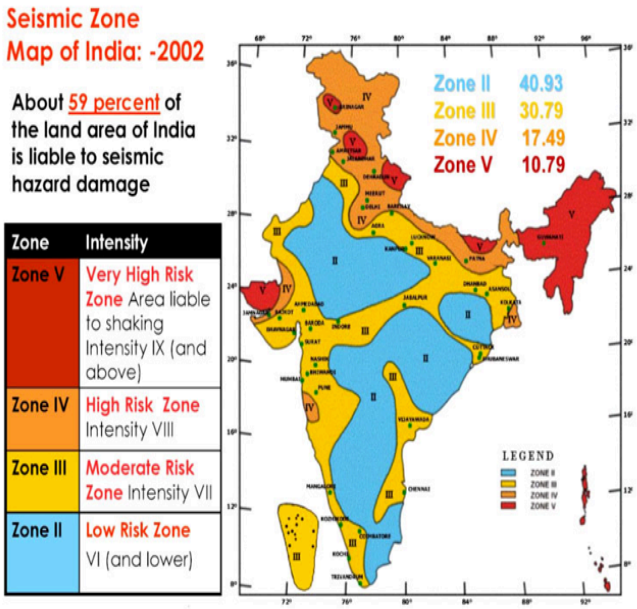


Fig. 1 Seismic zonation and intensity map of India

13. Vorukh, recently heard in news, is a place in which one of the following countries?

A. Tajikistan

B. Kyrgyzstan

C. Uzbekistan

D. Kyrgyzstan

Answer: A

Explanation

- Vorukh is an exclave of Tajik territory, surrounded by Kyrgyzstan.
- Between Vorukh and the rest of Tajikistan sits the village of Ak-Sai, a road, and a river, which have often been sparks for increasing tensions over the years.
- In 2019, for example, anger over road construction near Ak- Sai led to clashes in which two Tajik villagers were killed by gunfire.
- The April 28-29 clashes began near Vorukh but spread to other hotspots along the Kyrgyz-Tajik border.

14. Consider the following pre-Monsoon showers and their locations to which they are associated.

1. **Mango Shower- Karnataka**
2. **Loo– Punjab**
3. **Nor Westers- Assam**
4. **Blossom shower- Orissa**

Which of the above pairs are correct?

A. 1, 2 and 3

B. 2, 3 and 4

C. 1, 2 and 4

D. All of the above

Answer: A

Explanation

- Some Famous Local Storms of India in Hot Weather Season:
  - ✓ Mango Shower: Towards the end of summer, there are pre-monsoon showers which are a common phenomenon in Kerala and coastal areas of Karnataka. Locally, they are known as mango showers since they help in the early ripening of mangoes.
  - ✓ Blossom Shower: With this shower, coffee flowers blossom in Kerala and nearby areas.
- Nor Westers: These are dreaded evening thunderstorms in Bengal and Assam.

✓ Their notorious nature can be understood from the local nomenclature of 'Kalbaisakhi', a calamity of the month of Baisakhi.

✓ These showers are useful for tea, jute and rice cultivation. In Assam, these storms are known as "Bardoli Chheerha".

- Loo: Hot, dry and oppressing winds blowing in the Northern plains from Punjab to Bihar with higher intensity between Delhi and Patna.

15. Which is the most probable reason for less rainfall in central peninsular India?

A. Funneling effect

B. Rain shadow effect

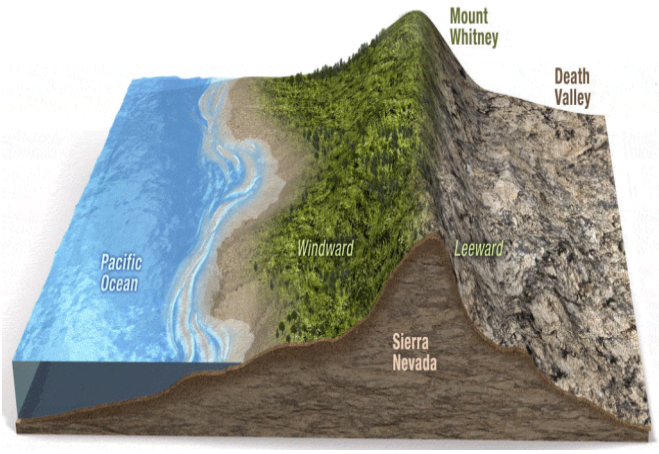
C. Shoaling effect

D. Rossby waves

Answer: B

Explanation

- Both western and eastern ghats block any rain bearing winds. Rainfall occurs mostly on seaward side.
- A rain shadow is a dry area on the leeward side of a mountainous area (away from the wind). The mountains block the passage of rain-producing weather systems and cast a "shadow" of dryness behind them.
- Wind and moist air is drawn by the prevailing winds towards the top of the mountains, where it condenses and precipitates before it crosses the top.
- The air, without much moisture left, advances across the mountains creating a drier side called the "rain shadow".



16. Consider the following statements with respect to geological faults.

1. **Main Frontal Thrust (MFT) is a geological fault along the boundary of the Indian and Eurasian tectonic plates.**
2. **The Kopili Fault is a 300-km northwest-southeast trending fault from the Bhutan Himalaya to the Burmese arc.**
3. **When rocks on either side of a nearly vertical fault plane move horizontally, the movement is called Reverse Fault.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 only

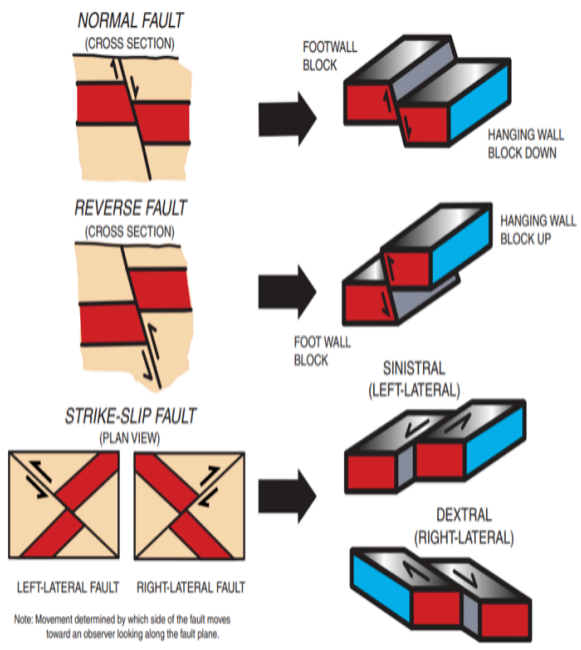
C. 1 and 3 only

D. 2 and 3 only

Answer: A

Explanation

- When the rocks move past each other along fracture surface, it is called a faulting.
- There are four types of faulting -- normal, reverse, strike-slip, and oblique.
  - ✓ A normal fault is one in which the rocks above the fault plane, or hanging wall, move down relative to the rocks below the fault plane, or footwall.
  - ✓ A reverse fault is one in which the hanging wall moves up relative to the footwall.
  - ✓ When rocks on either side of a nearly vertical fault plane move horizontally, the movement is called strike-slip. The San Andreas Fault is an example of a right lateral fault.
  - ✓ An oblique-slip fault is special type fault that forms when movement is not exactly parallel with the fault plane.
  - ✓ Oblique movement occurs when normal or reverse faults have some strike-slip movement and when strike-slip faults have either some normal or reverse movement.
- HFT, also known as the Main Frontal Thrust (MFT), is a geological fault along the boundary of the Indian and Eurasian tectonic plates.
- The Kopili Fault is a 300-km northwest-southeast trending fault from the Bhutan Himalaya to the Burmese arc.



17. Which of the following statements is/ are correct about Sun's halo?

1. **It is a rainbow-coloured ring around the sun.**
2. **It is also known as '22 degree halo'.**
3. **It is an optical phenomenon that occurs due to sunlight refracting in millions of hexagonal ice crystals suspended in the atmosphere.**

Select the correct code.

A. 1 and 2 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

Answer: D

Explanation

- Sun's halo is also known as '22 degree halo'.

- It is an optical phenomenon that occurs due to sunlight refracting in millions of hexagonal ice crystals suspended in the atmosphere.
- It takes the form of a rainbow-coloured ring with a radius of approximately 22 degrees around the sun or the moon.
- Circular halos specifically are produced by cirrus clouds, which are thin, detached, hair-like clouds.
- These clouds are formed very high up in the atmosphere, at a height of over 20,000 feet.
- Clouds contain millions of ice crystals which refract, split, and even reflect the light to give an impression of a circular rainbow ring.
- Sunlight through the ice crystals causes the light to split, or be refracted. When at just the right angle, it causes us to see the halo.
- During the process, light undergoes two different refractions once when it passes through ice crystals and the second when it exists.

- It bends depending on the diameter of the ice crystal and the two refractions bend it by 22 degrees from its original point giving it the name of a 22-degree ring.
- They often do indicate that rain will fall within the next 24 hours since the cirrostratus clouds that cause them can signify an approaching frontal system.

18. Which of the following is incorrect in context with Urban Sprawl?

A. It mainly refers to the unrestricted growth in many urban areas of housing, commercial development, and roads over large expanses of land, with little concern for urban planning.

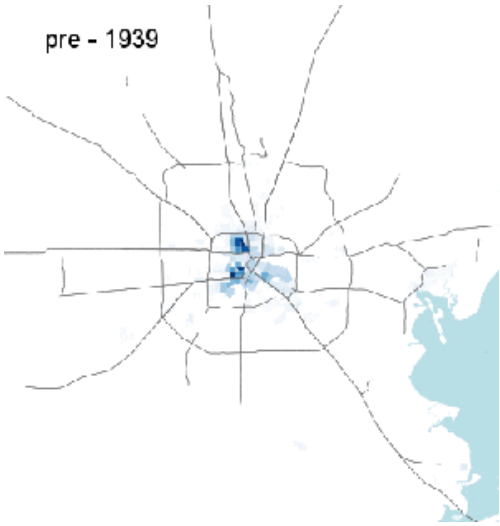
B. It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in central areas.

C. The phenomenon has been closely linked to modernization, industrialization, and the sociological process of rationalization.

D. None of the above

Answer: D

Explanation



19. Consider the following statements:

1. **The highest point above Earth's center is the peak of Mount Everest.**
2. **Mauna Kea is the tallest mountain on Earth.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

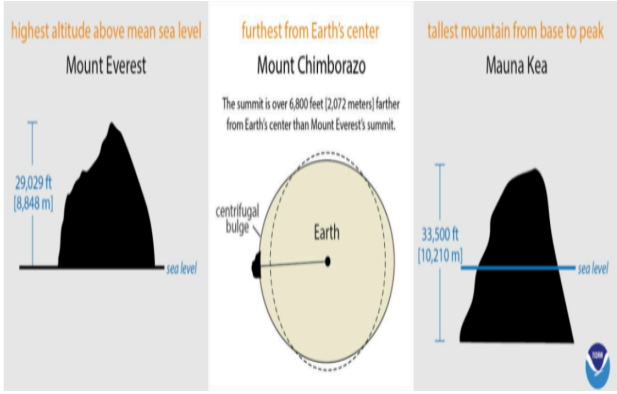
C. Both 1 and 2

D. None of the above

Answer: B

Explanation

- Earth is not a perfect sphere, but is a bit thicker at the Equator due to the centrifugal force created by the planet's constant rotation.
- Because of this, the highest point above Earth's center is the peak of Ecuador's Mount Chimborazo, located just one degree south of the Equator where Earth's bulge is greatest.
- The summit of Chimborazo is 20,564 feet above sea level. However, due to the Earth's bulge, the summit of Chimborazo is over 6,800 feet farther from the center of the Earth than Everest's peak.
- That makes Chimborazo the closest point on Earth to the stars.
- Everest is not the tallest mountain on Earth, either. That honor belongs to Mauna Kea, a volcano on the Big Island of Hawaii. Mauna Kea originates deep beneath the Pacific Ocean, and rises more than 33,500 feet from base to peak.



20. Arrange the following Major Ports from South to North ?

1. **Paradip Port**
2. **Vishakhapatnam Port**
3. **Ennore Port**
4. **Tuticorin Port**

Which of the above statements is/are correct?

A. 4-3-2-1

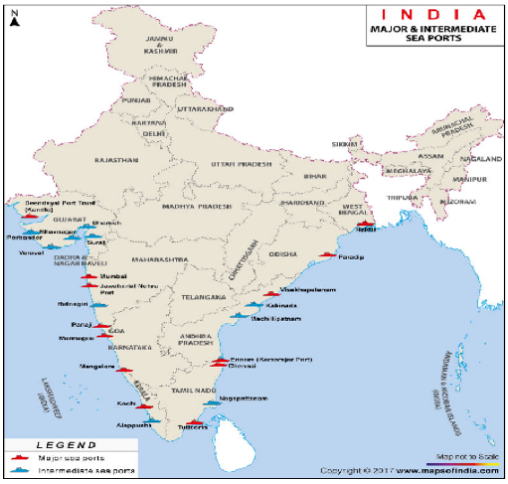
B. 1-3-2-4

C. 1-2-3-4

D. 2-3-4-1

Answer: A

Explanation



2. History & Culture

To watch the following questions on YouTube, click on the links given below

- **Video 1**
- **Video 2**
- **Video 3**
- **Video 4**

1. **Consider the following statements with respect to Dholavira.**
   1. **It is the second site of the ancient Indus Valley Civilisation in India to get the tag of UNESCO world heritage.**
   2. **It is fourth site from Gujarat to make the list of UNESCO world heritage sites.**
   3. **The origin of the Buddhist Stupas lies in the memorials in Dholavira.**

   Which of the above statements is/are correct?

   A. 1 only

   B. 2 and 3 only

   C. 1 and 3 only

   D. 1, 2 and 3

   Answer: B

   Explanation

   - Dholavira, the archaeological site of a Harappan-era city, received the UNESCO world heritage site tag.
   - While Dholavira became the fourth site from Gujarat and 40th from India to make the list, it is the first site of the ancient Indus Valley Civilisation (IVC) in India to get the tag.
   - After Mohen-jo-Daro, Ganweriwala and Harappa in Pakistan and Rakhigarhi in Haryana of India, Dholavira is the fifth largest metropolis of IVC.
   - The site has a fortified citadel, a middle town and a lower town with walls made of sandstone or limestone instead of mud bricks in many other Harappan sites.

2. **What was the part of land granted by the sultan to military chiefs for maintenance of a given number of troopers called?**

   A. Muahatsib

   B. Iqta

   C. Nazir

   D. Usharaf

   Answer: B

   Explanation

   - Under Iqta System, the land of the empire was divided into several large and small tracts called Iqta and assigned these Iqtas to his soldiers, officers and nobles. In the beginning, an Iqta was based upon salary. Later, under Firoz ShahTughlaq, it became hereditary.

   - The agricultural and land revenue system of the early Turkish Sultans rested on two foundations viz. the Iqta (assignment of land revenue) and Kharaj (Land Revenue).

- The Iqta system provided an agrarian system to the country while the members of the ruling class attained income without any permanent attachment to any territory.
- The Iqta system was provided institutional status by Iltutmish and later this system became the mainstay of the sultanate administration under slave dynasty.

3. Consider the following statements about Lingayat tradition.

1. Lingayats encouraged post-puberty marriage and the remarriage of widows.

2. Lingayats emerged as a reactionary force against Jainism in the twelfth century.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- Hinduism being an amorphous religion has seen branches of sub-traditions and oppositional traditions since time immemorial.
- The Lingayats too emerged as a reactionary force against Hinduism in the twelfth century.
- While it rejected most of the broad Hindu traditions, it also assimilated aspects of it, making the demand for a separate religious status a rather complicated affair.
- The Lingayats also encouraged certain practices disapproved in the Dharmashastras, such as post-puberty marriage and the remarriage of widows.

4. Aihole is called the 'Cradle of Indian Temple Architecture'. It is related to which dynasty?

A. Cholas

B. Cheras

C. Chalukyas

D. Pandyas

Answer: C

Explanation

- Aihole was once the capital of the Chalukya Dynasty, and is a city with a rich and illustrious history.
- It has great cultural significance as the cradle of Hindu temple architecture, and has more than 125 temples in and around it.
- Aihole is an archaeologists' delight with several temples dating back to Chalukyan times.
- Aihole is a historic site of ancient and medieval era Buddhist, Hindu and Jain monuments in north Karnataka (India) dated from the fourth century through the twelfth century CE.

5. Which of the following places of India have been recognised under UNESCO's Historic Urban Landscape Project?

1. Gwalior

2. Mysore

3. Varanasi

4. Ajmer

Select the correct code.

A. 1, 2 and 4

B. 2, 3 and 4

C. 1, 3 and 4

D. 1, 2, 3 and 4

Answer: C

Explanation

- MP government has launched the UNESCO's Historic Urban Landscape Project in Gwalior and Orchha in a virtual event with UNESCO representatives and other senior officials of the state.
- Only eight cities in the entire South Asian region have been recognised under the UNESCO's Historic Urban Landscape Project and Varanasi and Ajmer are the other two Indian cities recognised by UNESCO under the project.
- The city of Gwalior hosts the historic Gwalior Fort, Scindia Royal Palace called Jai Vilas Palace and other monuments of tourist interest.
- Similarly, Orchha is also considered a riveting tourist destination among people residing in neighbouring cities and states.
- Being part of the UNESCO missions and projects not only brings technical and financial assistance for the development of the place but also attracts a large number of international tourists whose itinerary begins from visiting top UNESCO recognised sites.

6. Consider the following statements about the Lord Lytton's tenure as Viceroy in India :

1. The Arms Act, passed in 1878, prevented the Indians to keep arms without appropriate license.

2. The system of decentralisation of finance that had begun in the time of Lord Mayo was abolished during the time of Lord Lytton.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

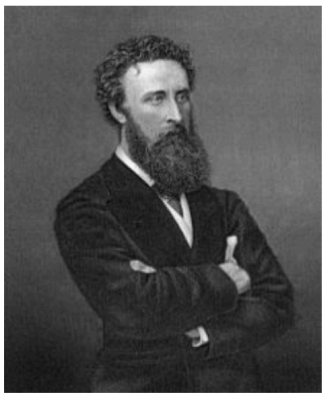
C. Both 1 and 2

D. None of the above

Answer: A

Explanation

Robert Bulwer -Lytton



6th Viceroy of India (1876–80)

- Vernacular Press Act, 1878
- Arms Act, 1878
- Abolished tax on cotton for British traders
- Maximum age to take up civil services exam lowered from 21 to 19
- In the year 1878, the Arms Act was passed.

✓ This Act prevented the Indians to keep arms without appropriate license. Its violation would be a criminal offence.

✓ The Europeans and the Anglo-Indians were exempted from the operation of these legislations.

- The system of decentralisation of finance that had begun in the time of Lord Mayo was continued during the time of Lord Lytton.
- The provincial governments were empowered with some control over the expenditure of all provincial matters like land-revenue, excise, stamps, law and justice.
- Lytton wanted to encourage the provinces in collecting the revenue and thereby strengthen the financial power and position of the provinces.

7. Which of these Mughal Emperors did not engage in a conflict with the Sikhs?

1. Akbar

2. Jahangir

3. Humayun

4. Aurangzeb

Select the correct answer using the codes given below

A. 1 only

B. 1 and 3 only

C. 1 and 4 only

D. 1, 3 and 4 only

Answer: B

Explanation

- Jahangir martyred Guru ArjanDev, 5th Sikh Guru.

  ✓ He later imprisoned the 6th guru, Guru Hargobind at Gwalior, but released him after a number of years when he no longer felt threatened.

- Shah Jahan, took offence at Guru Hargobind's "sovereignty" and after a series of assaults on Amritsar forced the Sikhs to retreat to the Sivalik Hills.
- Aurangzeb martyred the 9th Sikh guru, Guru Teg Bahadur and then engaged in battle with Guru Gobind Singh, the 10th Sikh guru.
- Akbar, on the other hand, supported religious freedom and after visiting the langar of Guru Amar Das got a favourable impression of Sikhism.

  ✓ As a result of his visit he donated land to the langar and the Mughals did not have any conflict with Sikh gurus until his death in 1605.

8. Consider the following statements with respect to Charvaka School of Indian Philosophy.

1. It rejects supernatural concepts like God and soul, but accepts metaphysical concepts like afterlife and moksha.

2. It evolved around in 6th-7th CE.

3. They held perception and direct experiments to be the valid and reliable source of knowledge.

Which of the above statements is/are incorrect?

A. 1 only

B. 1 and 2 only

C. 3 only

D. 2 and 3 only

Answer: B

Explanation

- Charvaka/Lokyata is an ancient school of Indian materialism, one of the popular belief system in Ancient India. (Traditional name of Charvaka is Lokyata)
- Founder - Brihaspati - Brihaspati Sutra (lost)
- Time Period - Around 5-6th century BCE.
- Rejects supernatural concepts like God and soul and also metaphysical concepts like afterlife (or reincarnation) and moksha.
- In Charvaka Philosophy, Perception is of 2 types - External and Internal.

9. Which of the following describes Qissa & Var?

A. It was the mystical poetry of Kashmiri Saints.

B. An account of Mewar Rajput's by bards.

C. Love ballads & Heroic poetry in Punjabi.

D. Stories related to Buddhist tanka cults.

Answer: C

Explanation

- The word Qissa, which is Arabic in origin, means a tale. In Punjabi the Qissa developed under the influence of Persian poetry.
- It is interesting to note that the Persian poets have used the word Mathnavi (a poem in rhyming distichs) for their long narratives in verse, instead of the word Qissa.
- In fact the word Qissa is used in Arabic, Persian and Urdu for a long tale in prose.
- There are certain genres that are popular in Punjabi literature such as 'Qissa' (tale/legend) 'Var' (Epic) and 'Dhola' (ballad).

10. Consider the following statements with respect to Khajuraho temples.

1. **These are dedicated to only one religion.**
2. **They are specimens of Nagara style of temple building.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: B

Explanation

- The Khajuraho Group of
- Monuments is a group of Hindu and Jain temples in Madhya Pradesh, India, about 175 kilometers (109 mi) southeast of Jhansi.
- They are one of the UNESCO World Heritage Sites in India.

- The temples are famous for their nagara-style architectural symbolism and their erotic sculptures. Most Khajuraho temples were built between 950 and 1050 by the Chandela dynasty. These are dedicated to Shiva, Vishnu and Jain Tirthankaras.

11. Which of the statements mentioned below is/are incorrect in the context of Chishti tradition and its relations with emperors?

1. **The sufis accepted unsolicited grants and donations from the political elites.**
2. **The Chishtis accepted donations in cash and kind.**
3. **They accumulated these donations for future use.**
4. **Kings sometimes sought legitimation from the Sufis.**

Select the correct code.

A. 1 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 4 only

Answer: C

Explanation

- Of the groups of sufis who migrated to India in the late twelfth century, the Chishtis were the most influential.
- This was because they adapted successfully to the local environment and adopted several features of Indian devotional traditions.

- The sufis accepted unsolicited grants and donations from the political elites.
- The Sultans, in turn, set up charitable trusts (auqaf) as endowments for hospices and granted tax-free land (inam).
- The Chishtis accepted donations in cash and kind.
- Rather than accumulate donations, they preferred to use these fully on immediate requirements such as food, clothes, living quarters and ritual necessities (such as sama').
- All this enhanced the moral authority of the shaikhs, which in turn attracted people from all walks of life.
- Further, their piety and scholarship, and people's belief in their miraculous powers made sufis popular among the masses, whose support kings wished to secure.
- Kings did not simply need to demonstrate their association with sufis; they also required legitimation from them.

12. Consider the following festivals

1. **Saga Dawa - Buddhist festival which celebrates birth, enlightenment of Budha.**
2. **Kharchi Puja - it is a folk festival to celebrate the birth of Krishna.**
3. **Hornbill festival - agricultural festival of Nagaland.**
4. **Amumbachi mela – Festival to celebrate harvest.**

Which of the above statements is/are correct?

A. 1 only

B. 1 and 3 only

C. 2 and 4 only

D. 2 and 3 only

Answer: B

Explanation

- Saga Dawa - It is mostly celebrated in the Buddhist communities living in the State of Sikkim.
  - ✓ It is celebrated on the full moon day that falls in the middle of the Tibetan lunar month called the Saga Dawa.
  - ✓ This day is considered to be a very auspicious day for the Tibetan community.

- Kharchi Pooja - This festival primarily originates from the State of Tripura.
- While it began as a festival of the royal family of Tripura, currently even the common households celebrate this festival.
- It is celebrated over a period of 10 days and takes place in the month of July each year.
- The festival is celebrated in the honour of Lord Shiva who had ordered the people to worship 14 other deities.

13. Which one of the following statements is incorrect about Buland Darwaza?

A. It is a part oaf Fatehpur Sikri complex built-in 1601 by Akbar.

B. It was built to commemorate Akbar's victory over Bengal.

C. It was beautifully carved with inlay work of white marble.

D. It even has the verses of Jesus Christ.

Answer: B

Explanation

- Buland Darwaza or the "Gate of Magnificence", was built in 1601 A.D. by Akbar to commemorate his victory over Gujarat.
- It is the main entrance to the palace at Fatehpur Sikri, a town which is 43 km from Agra, India.
- Buland Darwaza is the highest gateway in the world and is an example of Mughal architecture.
- It displays Akbar's empire On the main gateway an Islamic inscription written in Persian reads "Isa (Jesus), son of Mary said:
- 'The world is a Bridge, pass over it, but build no houses upon it. He who hopes for a day may hope for eternity; but the World endures but an hour. Spend it in prayer for the rest is unseen.' Jesus was advising his followers not to consider the world as a permanent home.
- Verses from the Quran have been carved in the Naskh (script) along the top.

14. The Treaty of Lahore was signed after the First Anglo-Sikh War. Which of the following were the main features of the Treaty?

1. **The Jalandhar Doab (between the Beas and the Sutlej) was annexed to the Company's dominions.**
2. **A British resident was to be established at Lahore under Henry Lawrence.**
3. **Daleep Singh was removed as the ruler of Punjab.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. All of the above

Answer: A

Explanation

- The end of the first Anglo-Sikh War forced the Sikhs to sign a humiliating treaty on March 8, 1846. The main features of the Treaty of Lahore were as follows:
  - ✓ War indemnity of more than 1 crore of rupees was to be given to the English.
  - ✓ The Jalandhar Doab (between the Beas and the Sutlej) was annexed to the Company's dominions.
  - ✓ A British resident was to be established at Lahore under Henry Lawrence.
  - ✓ The strength of the Sikh army was reduced.
  - ✓ Daleep Singh was recognised as the ruler under Rani Jindan as regent and Lal Singh as wazir.
  - ✓ Since, the Sikhs were not able to pay the entire war indemnity, Kashmir including Jammu was sold to Gulab Singh and he was required to pay Rupees 75 lakh to the Company as the price.
  - ✓ The transfer of Kashmir to Gulab Singh was formalised by a separate treaty on March 16, 1846.

15. Consider the following statements about 'the Charter Act of 1813' :

1. **It ended the trade monopoly of the East India Company in India except for trade in tea and trade with China.**
2. **It asserted the sovereignty of the British Crown over the Indian territories held by the Company.**
3. **The revenues of India were now controlled by the British Parliament.**

Which of the statements given above are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Explanation

Main Provision of Charter Act, 1833

- The company was allowed to continued territorial and revenue possession for period of 20 years i.e. from 1833 to 1853. The company was held in trust to the Crown.
- All powers that had full complete and constantly to control, to replace supersede or prevent all proceeding and Act of Governor-General-in-Council were under the British Parliament.
- The Governor-General-in-Council was empowered to make laws and regulation for all person or Court of British India.
- Provisions were made for the representation of natives & their Educational Development.
- All restrictions to European immigrants into India were removed.

- The civil and military power were removed from the Company and its entire control and super tend were vested in Governor-General-in-Council.
- The Act also provided measures for the abolition of slavery trough out in India.
- Prior to 1833, laws made were called as regulation here after the laws made to be called as 'Act'.

16. The famous image of 'Maheshmurti' – three heads showing shiva, bhairava, uma is found in which of the following?

A. Karle cave

B. Ajanta cave

C. Yellora temple

D. Elephanta cave

Answer: D

Explanation

- The image of Maheshmurti at Elephanta dates back to the early sixth century CE. It is located in the main cave shrine.
- In the tradition of western Deccan sculpting it is one of the best examples of qualitative achievement in sculpting images in rockcut caves. The image is large in size.
- The central head is the main Shiva figure whereas the other two visible heads are of Bhairava and Uma.
- The central face is in high relief having a round face, thick lips and heavy eyelids. The lower lip is prominently protruded showing a very different characteristic.
- The all-inclusive aspect of Shiva is exhibited in this sculpture by softmodelling, smooth surface and large face.
- The face of Shiva-Bhairava is clearly shown in profile in anger with bulging eye and mustache.
- The other face showing feminine characters is of Uma who is the consort of Shiva.

17. Consider the following statements with respect to Kailasa temple's architecture at Ellora and Elephanta caves.

1. **Temple has single tiered shikhara.**
2. **In a sculpture, Ravana was making attempts to lift Mount Kailasa, the abode of Siva.**
3. **The important figure is 'Trimurthi' represent the three aspects of Shiva as Creator, Preserver and Destroyer.**

Which of the above statements is/are correct?

A. 1 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

Answer: B

Explanation

- The art and architecture of the Rashtrakutas were found at Ellora and Elephanta.
- At Ellora, the most remarkable temple is the Kailasa temple. It was excavated during the reign of Krishna I.
- It is carved out of a massive block of rock 200 feet long, and 100 feet in breadth and height.
- The temple consists of four parts – the main shrine, the entrance gateway, an intermediate shrine for Nandi and mandapa surrounding the courtyard.
- The temple stands on a lofty plinth 25 feet high.

- It has a three-tiered sikhara or tower resembling the sikhara of the Mamallapuramrathas.
- In the interior of the temple there is a pillared hall, which has sixteen square pillars.
- The Kailasa temple is an architectural marvel with its beautiful sculptures.
- The sculpture of the Goddess Durga is shown as slaying the Buffalo demon.
- In another sculpture Ravana was making attempts to lift Mount Kailasa, the abode of Siva.
- The scenes of Ramayana were also depicted on the walls. The general characteristics of the Kailasa temple are more Dravidian.

- Elephanta is an island near Bombay. It was originally called Sripuri. The Portuguese after seeing the large figure of an elephant named it Elephanta.
- The sculptural art of the Rashtrakutas reached its zenith in this place. There is a close similarity between the sculptures at Ellora and those in Elephanta.
- In the walls of the prakara around the sanctum there are niches containing the images of Shiva in various forms – Nataraja, Gangadhara, Ardhanareesvara and Somaskanda.
- The most imposing figure of this temple is Trimurthi. The sculpture is six metre high.
- It is said to represent the three aspects of Shiva as Creator, Preserver and Destroyer.

18. **Consider the following statements with respect to woods dispatch:**

1. **It is considered as the "Magna Carta of English Education in India".**
2. **It systematised the hierarchy from vernacular primary schools to universities.**
3. **It recommended English as the medium of instruction at all levels.**

Which of the above statement is/are incorrect?

A. 1 only

B. 2 and 3 only

C. 3 only

D. 1 and 3 only

Answer: C

Explanation

Wood's Despatch (1854)

- In 1854, Charles Wood prepared a despatch on an educational system for India.
- Considered the "Magna Carta of English Education in India", this document was the first comprehensive plan for the spread of education in India.
- It asked the government of India to assume responsibility for the education of the masses, thus repudiating the 'downward filtration theory', at least on paper.
- It systematised the hierarchy from vernacular primary schools in villages at the bottom, followed by Anglo-Vernacular High Schools and an affiliated college at the district level, and affiliating universities in the presidency towns of Calcutta, Bombay, and Madras.
- It recommended English as the medium of instruction for higher studies and vernaculars at the school level.
- It laid stress on female and vocational education, and on teachers' training.
- It lay down that the education imparted in government institutions should be secular.
- It recommended a system of grants-in-aid to encourage private enterprise.

19. **Which of the following battles did Babur fight in his quest to establish and consolidate himself in India?**

1. **Battle of Panipat**
2. **Battle of Khanwa**
3. **Battle of Chausa**
4. **Battle of Chanderi**

Select the correct answer using the codes given below

A. A. 1 and 2 only

B. 1, 2 and 4 only

C. 1, 2 and 3 only

D. All of the above

Answer: B

Explanation

- The very first Mughal emperor and the founder of the Mughal emperor Babur brought gunpowder to India
- He is known for defeating:
  - ✓ Ibrahim Lodhi in the First Battle of Panipat (AD 1526)
  - ✓ Rana Sanga (Sangram Singh) at battle of Khanwa
  - ✓ Medini Rai of Chenderi at Battle of Chanderi (AD 1528)
  - ✓ Mahmud Lodi at Battle of Ghagra (AD 1529)
- Babur wrote Tuzuk-i-Baburi in Turkish language
- The first Mughal emperor declared Jehad and adopted the title Ghazi
- Babur died in 1530 and was buried at Aram Bagh (Agra). Late, his body was taken to Bagh-e-Babun (Kabul)
- The Battle of Chausa was a notable military engagement between the Mughal emperor, Humayun, and the Afghan, Sher Shah Suri.

20. Which war ended with the Treaty of Sagauli in 1816?

A. Anglo Maratha

B. Anglo Mysore

C. Anglo Burma

D. Anglo Nepal

Answer: D

Explanation

- Treaty of Sagauli, (March 4, 1816), agreement between the Gurkha chiefs of Nepal and the British Indian government that ended the Anglo-Nepalese (Gurkha) War (1814–16).
- The conflict started due to the Gorkhas' capture of Butwal and Sheoraj in the period of Lord Hastings (181323).
- As per the treaty,
  - ✓ Nepal accepted a British resident.
  - ✓ Nepal ceded the districts of Garhwal and Kumaon, and abandoned claims to Terai.
  - ✓ Nepal also withdrew from Sikkim

3. Polity & Governance

To watch the following questions on YouTube, click on the links given below

- **Video 1**
- **Video 2**
- **Video 3**
- **Video 4**

1. **Recently, NISHTHA initiative was launched. Consider the following statements with respect to the same.**
   1. **The initiative has been launched by Ministry of MSME.**
   2. **The initiative will focus on generating resources for young entrepreneurs.**

   Which of the above statements is/are incorrect?

   A. 1 only

   B. 2 only

   C. Both 1 and 2

   D. None of the above

   Answer: C

   Explanation

   - NISHTHA : National Initiative for School Heads' and Teachers' Holistic Advancement
   - It is an initiative to build capacities of teachers and school principals at the elementary stage.
   - The initiative is an Integrated Teacher Training Programme of the Department of School Education and Literacy, Ministry of HRD as part of its National Mission to improve learning outcomes at the Elementary level under the Centrally Sponsored Scheme of Samagra Shiksha during 2019-20.
   - Due to COVID-19 and to provide continuous development opportunities to the teachers at the elementary level, this Department has launched NISHTHA online using DIKSHA platform in October 2020.

2. **Consider the following statements with respect to Juvenile Justice (Care and Protection of Children) Amendment Bill, 2021.**
   1. **Offences punishable with imprisonment (less than 7 years) will be tried by any Judicial Magistrate.**
   2. **The Bill adds that serious offences will also include offences for which maximum punishment is imprisonment of more than seven years.**

   Which of the above statements is/are correct?

   A. 1 only

   B. 2 only

   C. Both 1 and 2

   D. None of the above

   Answer: B

   Explanation

   - The Juvenile Justice (Care and Protection of Children) Act, 2015 states that adoption of a child is final on the issuance of an adoption order by the civil court.

- The Bill provides that instead of the court, the district magistrate (including additional district magistrate) will issue such adoption orders.
- Under the 2015 Act offences committed by juveniles are categorised as heinous offences, serious offences, and petty offences. Serious offences include offences with three to seven years of imprisonment.
  - ✓ The Bill adds that serious offences will also include offences for which maximum punishment is imprisonment of more than seven years, and minimum punishment is not prescribed or is less than seven years.

3. Consider the following statements with respect to National Commission for Minorities (NCM).

1. The first Statutory National Commission for Minorities (NCM) was set up in 1993 under Ministry of Minority Affairs.

2. The functions of the Commission are related to the six notified minority communities.

Which of the above statements is/are incorrect?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- The National Commission for Minorities (NCM) has informed that the erstwhile Minority Commission in its Annual Reports (1981-82, 1982-83), had recommended for setting up of a Committee to consider the need for considering and, if necessary, to formulate a scheme to establish a National Integration-cum- Human Rights Commission for promotion of secular traditions and national integration.
- The first Statutory NCM was set up on 17th May 1993 under Ministry of Home Affairs Resolution.
- The functions of the Commission as laid down in Section 9(1) of the Act are related to the six notified minority communities i.e. Jain (2014) , Parsi, Sikh, Christian, Buddhist and Muslim.

4. Which of the following agencies act as the nodal body for adoption of Indian children?

A. Indian Council For Child Welfare

B. Central Adoption Resource Authority

C. Central Child Welfare Committee

D. None of the above

Answer: B

Explanation

- Central Adoption Resource Authority (CARA) is a statutory body of Ministry of Women & Child Development, Government of India.
- It functions as the nodal body for adoption of Indian children and is mandated to monitor and regulate in- country and inter-country adoptions.
- CARA is designated as the Central Authority to deal with inter-country adoptions in accordance with the provisions of the Hague Convention on Inter-country Adoption, 1993, ratified by Government of India in 2003.

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

5. Consider the following statements with respect to I-MESA.

1. The scheme has been formulated by Ministry of Social Justice and Empowerment.

2. Under this scheme, Financial Audits are to be conducted for all the schemes of the Department starting FY 2021-22.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- The Ministry of Social Justice and Empowerment has formulated a scheme, namely InformationMonitoring, Evaluation and Social Audit (I- MESA) in FY 2021-22.
- Under this scheme, Social Audits are to be conducted for all the schemes of the Department starting FY 2021-22.
- These social audits are done through Social Audit Units (SAU) of the States and National Institute for Rural Development and Panchayati Raj.
- Social Audit is much more holistic having a greater scope for measuring, understanding and improving the social performance of an activity of an organization.

6. Under which schedule of the Constitution of India can the transfer of tribal land to private parties for mining be declared null and void?

A. Third Schedule

B. Fifth Schedule

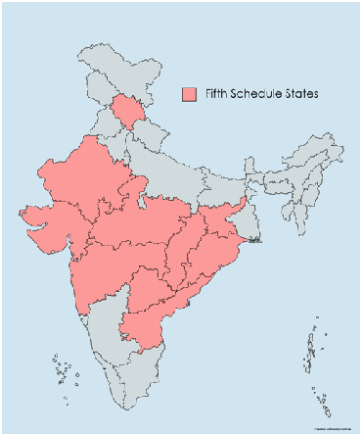
C. Ninth Schedule

D. Twelfth Schedule

Answer: B

Explanation

- In the Article 244(1) of the Constitution, expression Scheduled Areas means such areas as the President may by order declare to be Scheduled Areas.
- The Constitution provides autonomy to tribal areas in matters of governance under the Fifth and Sixth Schedules, which is further fortified by the Samatha v. State of Andhra Pradesh & Ors (1997) judgment where the Supreme Court declared that the transfer of tribal land to private parties for mining was null and void under the Fifth Schedule.



- The Fifth Schedule designates tribal majority areas in ten tribal minority states within peninsular India including, Andhra Pradesh, Telangana, Gujarat, Jharkhand, Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, and Rajasthan.

7. Which of the following is correct regarding the President's Rule?

1. It may be imposed whenever a state fails to comply with or to give effect to any direction from the Centre.

2. The proclamation needs to approved only by Lok Sabha within 1 month from the date of its issue.

3. If approved by both the Houses of Parliament, the President's Rule continues for six months.

4. It cannot be extended for a period of more than two years with the approval of the Parliament, every six months.

Select the correct code.

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3 only

Answer: C

Explanation

- The President's Rule can be proclaimed under Article 356 on two grounds—one mentioned in Article 356 itself and another in Article 365:

✓Article 356: A situation has arisen in which the government of a state cannot be carried on in accordance with the provisions of the Constitution.

✓Notably, the president can act either on a report of the governor of the state or otherwise too (ie, even without the governor's report).

✓Article 365: Whenever a state fails to comply with or to give effect to any direction from the Centre.

✓A proclamation imposing President's Rule must be approved by both the Houses of Parliament within two months from the date of its issue.

✓If approved by both the Houses of Parliament, the President's Rule continues for six months.

✓It can be extended for a maximum period of three years with the approval of the Parliament, every six months.

8. Consider the following statements:

1. The Constitution of India defines its 'basic structure' in terms of federalism, secularism, fundamental rights and democracy.

2. The Constitution of India provides for 'judicial review' to safeguard the 'citizens' liberties and to preserve the ideals on which the constitution is based.

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 phrase 'basic structure' itself cannot be found in the Constitution.
- The Supreme Court recognised this concept for the first time in the historic Kesavananda Bharati case in 1973.
- Article 13 in fact provides for the judicial review of all legislations in India, past as well as future.
- This power has been conferred on the High courts and the Supreme court of India which can declare a law unconstitutional if it is inconsistent with any of the provisions of part 3rd of the constitution.

9. Consider the following statements with respect to Essential Defence Services Bill, 2021.

1. Under the Bill, the central government may prohibit strikes, lock-outs, and lay-offs in units engaged in essential defence services.

2. Employers violating the prohibition order through illegal lock- outs or lay-offs will be punished with up to one year imprisonment or Rs 10,000 fine, or both.

3. Fundamental right to form an association can be restricted under Article 19(4) for armed forces and police.

Which of the above statements is/are correct?

A. 1 and 2 only

B. 3 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Explanation

- The Bill allows the central government to prohibit strikes, lock- outs, and lay-offs in units engaged in essential defence services.

- The Bill amends the Industrial Disputes Act, 1947 to include essential defence services under public utility services.
- Under the Act, in case of public utility services, a six-week notice must be given before: (i) persons employed in such services go on strike in breach of contract or (ii) employers carrying on such services do lock-outs.
- Essential defence services include any service in:
- Any establishment or undertaking dealing with production of goods or equipment required for defence related purposes, or

✓any establishment of the armed forces or connected with them or defence.

✓These also include services that, if ceased, would affect the safety of the establishment engaged in such services or its employees.

- In addition, the government may declare any service as an essential defence service if its cessation would affect the:

✓Production of defence equipment or goods,

✓Operation or maintenance of industrial establishments or units engaged in such production, or

✓Repair or maintenance of products connected with defence.

10.If any of the fundamental rights is violated, a person can approach the Supreme Court as per the provisions mentioned under which one of the following articles?

A. Article 44

B. Article 32

C. Article 15

D. Article 226

Answer: B

Explanation

- Article 32 deals with the 'Right to Constitutional Remedies', or affirms the right to move the Supreme Court by appropriate proceedings for the enforcement of the rights conferred in Part III of the Constitution.
- It states that the Supreme Court "shall have power to issue directions or orders or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorari, whichever may be appropriate, for the enforcement of any of the rights conferred by this Part".
- The right guaranteed by this Article "shall not be suspended except as otherwise provided for by this Constitution".

11. Virtual Court is a concept aimed at eliminating presence of litigant or lawyer in the court and adjudication of the case online. Consider the following statements with respect to the same.

1. **Currently, litigant can view the status of a case online through various channels created for service delivery.**
2. **Litigants can file the plaint electronically through e-Filing and also pay the Court Fees or Fine online.**
3. **eCourts Mission Mode Project is a project launched by Uttar Pradesh Government.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 2 and 3 only

Answer: A

Explanation

- In the current scenario facility is provided for Litigants to file the plaint electronically through e-Filing and also pay the Court Fees or Fine online through https://vcourts.gov.in
- Litigant can view the status of the case also online through various channels created for service delivery.
- However for adjudication purpose the Litigant may have to appear in person or through the Lawyer in the Court.

The E-Courts Project was conceptualised on the basis of "National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary - 2005" submitted by e-Committee of the Hon'ble Supreme Court of India.

- The eCourts Mission Mode Project, is a Pan-India Project, monitored and funded by Department of Justice, Ministry of Law and Justice, Government of India for the District Courts across the country.
- The main objectives of the e-Court Project are as follows:
  - ✓ To provide efficient & time-bound citizen-centric service delivery.
  - ✓ To develop, install & implement decision support systems in courts.
  - ✓ To automate the processes to provide transparency of Information access to its stakeholders.
  - ✓ To enhance judicial productivity both qualitatively & quantitatively, to make the justice delivery system affordable, accessible, cost-effective & transparent.

12. The doctrine of separation of power is the three pillars of democracy, namely the executive, judiciary and legislature, perform separate functions and act as separate entities. Which of the following articles facilitates Separation of Powers?

1. **Article 50**
2. **Article 122**
3. **Article 361**

Select the correct code.

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: D

Explanation

- The doctrine of Separation of Powers deals with the mutual relations among the three organs of the Government namely legislature, executive and judiciary.
- Articles in the Constitution facilitating Separation of Powers are as follows:
  - ✓ Article 50 of the Constitution of India, which contains a Directive Principle of State Policy, provides that the State shall take steps to separate the Judiciary from the Executive in the Public Services of the State.

- ✓ Article 122 Constitution of India: Courts not to inquire into proceedings of Parliament.
- ✓ Article 361 is an exception to Article 14 (Right to Equality) of the Indian Constitution.
- ✓ The President or the Governor is not answerable to any court for the exercise of the powers and duties of his office.
- ✓ Article 121 and 211: Judicial conduct of a judge of the Supreme Court and the High Courts' cannot be discussed by the Legislature.

13. Consider the following statements with respect to Finance Bills.

1. **As per Article 117 of the Constitution of India, the Finance Bill is a Money Bill.**
2. **Article 117 of the Constitution categorically lays down that a Bill pertaining to sub-clauses (a) to (f) of clause (1) shall not be introduced or moved except with the President's recommendation.**
3. **The Speaker of the Lok Sabha is authorised to decide whether the Bill is a Money Bill or not.**
4. **The Finance Bill can makes changes in the existing laws wherever required.**

Which of the above statements is/are correct?

A. 1, 2 and 3 only

B. 2, 3 and 4 only

C. 1 and 4 only

D. 1, 2, 3 and 4

Answer: B

Explanation

- As per Article 110 of the Constitution of India, the Finance Bill is a Money Bill. The Finance Bill is a part of the Union Budget, stipulating all the legal amendments required for the changes in taxation proposed by the Finance Minister.
- This Bill encompasses all amendments required in various laws pertaining to tax, in accordance with the tax proposals made in the Union Budget.
- The Finance Bill, as a Money Bill, needs to be passed by the Lok Sabha – the lower house of the Parliament. Post the Lok Sabha's approval, the Finance Bill becomes Finance Act.
- The Union Budget proposes many tax changes for the upcoming financial year, even if not all of those proposed changes find a mention in the Finance Minister's Budget speech.
- These proposed changes pertain to several existing laws dealing with various taxes in the country.
- The Finance Bill seeks to insert amendments into all those laws concerned, without having to bring out a separate amendment law for each of those Acts.
- For instance, a Union Budget's proposed tax changes may require amending the various sections of the Income Tax law, Stamp Act, Money Laundering law, etc.

- The Finance Bill overrides and makes changes in the existing laws wherever required.

14. Which of the following states are covered under Inner Line Permit?

1. **Arunachal Pradesh**
2. **Mizoram**
3. **West Bengal**
4. **Manipur**
5. **Sikkim**

Select the correct code.

A. 1, 2 and 4 only

B. 2 and 4 only

C. 2, 3, 4 and 5 only

D. 1, 4 and 5 only

Answer: A

Explanation

- Inner Line Permit (ILP) is an official travel document issued by the Government of India to allow inward travel of an Indian citizen into a protected area for a limited period.
- It is obligatory for Indian citizens from outside those states to obtain a permit for entering into the protected state.
- The document is an effort by the government to regulate movement to certain areas located near the international border of India.
- ILP is required for Manipur, Arunachal Pradesh, Mizoram and Nagaland.

15. The Chairman of the Rajya Sabha acts as the ex-officio President of which of the following?

A. India Parliamentary Group (IPG)

B. Parliamentary Forum on Population and Public Health

C. Joint Sitting of both the Houses of the Parliament

D. Chairman of Rajya Sabha does not preside any of the above

Answer: B

Explanation

- Indian Parliamentary Group is an autonomous body which was formed in 1949 in pursuance of a motion adopted by the Constituent Assembly.
- The Speaker of Lok Sabha is the ex-ocio president of IPG, the Deputy Speaker of Lok Sabha and Deputy Chairman of Rajya Sabha are the ex-ocio vice presidents.
- The Speaker of Lok Sabha is the ex-ocio President of all the Parliamentary Forums except the Parliamentary Forum on Population and Public Health wherein Chairman Rajya Sabha is the ex-ocio President and Speaker is the ex-ocio Co- President.

16. Consider the following statements with respect to Enforcement Directorate.

1. **The Organization is also mandated with the task of enforcing the provisions of Benami Transactions (Prohibition) Act, 1988.**
2. **Presently, it is a part of Department of Economic Affairs.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: D

Explanation

- The Enforcement Directorate has transferred assets worth
- ₹8,441.50 crore to public sector banks that suffered losses to the
- tune of ₹22,585.83 crore due to frauds committed allegedly by Vijay Mallya, Nirav Modi and Mehul Choksi.
- Directorate of Enforcement is a Multi Disciplinary Organization mandated with the task of enforcing the provisions of two special fiscal laws – Foreign Exchange Management Act, 1999 (FEMA) and Prevention of Money Laundering Act, 2002 (PMLA).
- The origin of this Directorate goes back to 1st May, 1956, when an 'Enforcement Unit' was formed, in Department of Economic Affairs, for handling Exchange Control Laws violations under Foreign Exchange Regulation Act, 1947 (FERA '47).
- In the year 1957, this Unit was renamed as 'Enforcement Directorate'.
- The administrative control of the Directorate was transferred from Department of Economic Affairs to Department of Revenue in 1960.

✓ Fugitive Economic Offenders Act, 2018

✓ Foreign Exchange Management Act, 1999 (FEMA)

✓ Foreign Exchange Management Act (FEMA) Rules

✓ Prevention of Money Laundering Act, 2002 (PMLA)

✓ Prevention of Money Laundering Act (PMLA) Rules

✓ Foreign Exchange Regulation Act, 1947 (FERA)

✓ Foreign Exchange Regulation Act, 1947 (Amended FERA)

✓ Foreign Exchange Regulation Act, 1973 (FERA)

17. Consider the following statements with respect to the administration of Union Territories.

1. **Every union territory is administered by the President acting through an administrator appointed by him.**
2. **The President can also appoint the governor of a state as the administrator of an adjoining union territory.**
3. **Legislative power of Parliament for the union territories on subjects of the State List is affected after establishing a local legislature for them.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 1 only

Answer: A

Explanation

- An administrator of a union territory is an agent of the President and not the head of state like a governor.
- The President can specify the designation of an administrator; it may be Lieutenant Governor or Chief Commissioner or Administrator.
- The President can also appoint the governor of a state as the administrator of an adjoining union territory.
- In that capacity, the governor is to act independently of his council of ministers.
- The Parliament can make laws on any subject of the three lists (including the State List) for the union territories.
- This power of Parliament also extends to Puducherry, Delhi and Jammu and Kashmir, which have their own local legislatures.
- This means that the legislative power of Parliament for the union territories on subjects of the State List remain unaffected even after establishing a local legislature for them.
- But, the legislative assembly of Puducherry can also make laws on any subject of the State List and the Concurrent List.

18. Which one of the following statements is incorrect with respect to Parliamentary Committees?

A. It is appointed or elected by the House or nominated by the Speaker / Chairman.

B. It works under the direction of the Speaker/Chairman.

C. It presents its report to the President.

D. None of the above.

Answer: C

Explanation

- A parliamentary committee means a committee that:
  - ✓ Is appointed or elected by the House or nominated by the Speaker/ Chairman
  - ✓ Works under the direction of the Speaker/Chairman !Presents its report to the House or to the Speaker/ Chairman
  - ✓ Has a secretariat provided by the Lok Sabha/Rajya Sabha
- The consultative committees, which also consist of members of Parliament, are not parliamentary committees as they do not fulfill above four conditions.
- Broadly, parliamentary committees are of two kinds— Standing Committees and Ad Hoc Committees.
- The former are permanent (constituted every year or periodically) and work on a continuous basis, while the latter are temporary and cease to exist on completion of the task assigned to them.

19. Consider the following statements :

1. **The 44th Amendment to the Constitution of India introduced an Article placing the election of the Prime Minister beyond judicial review.**
2. **The Supreme Court of India struck down the 99th Amendment to the Constitution of India as being violative of the independence of judiciary.**

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 Constitution (39th Amendment Act), 1975
- The Act places in court the election of a person holding the office of Prime Minister or Speaker to Parliament, and the election of President and Vice-President, beyond challenge.
- In the case of the State of Uttar Pradesh v. Raj Narain 1976 (2) SCR 347, Article 329A was struck down by the Supreme Court for breach of the basic structure.
- The Constitution (99th Amendment Act), 2014
  - ✓It called for the setting up of the National Judicial Commission.
- Supreme Court declared that the 99th Amendment Act (an amendment to validate the National Judicial Appointments Commission (NJAC) Act) was unconstitutional, which had contemplated a significant role for the executive in appointing judges in the higher judiciary.

20. Consider the following statements with respect to Indian Parliament.

1. **A person cannot be a member of both Houses of Parliament at the same time.**
2. **The Speaker is elected by the Lok Sabha from amongst its members.**
3. **A House can declare the seat of a member vacant if he is absent from all its meetings for a period of sixty days without its permission.**
4. **The Chairman/Speaker has to accept the resignation of any member of parliament.**

Which of the above statements is/are incorrect?

A. 1 and 3 only

B. 4 only

C. 3 and 4 only

D. All statements are correct

Answer: B

Explanation

- Double Membership

- ✓ A person cannot be a member of both Houses of Parliament at the same time. Thus, the Representation of People Act (1951) provides for the following:
  - ✤ If a person is elected to both the Houses of Parliament, he must intimate within 10 days in which House he desires to serve. In default of such intimation, his seat in the Rajya Sabha becomes vacant.
  - ✤ If a sitting member of one House is also elected to the other House, his seat in the first House becomes vacant.
  - ✤ If a person is elected to two seats in a House, he should exercise his option for one. Otherwise, both seats become vacant.

- Resignation
  - ✓ A member may resign his seat by writing to the Chairman of Rajya Sabha or Speaker of Lok Sabha, as the case may be.
  - ✓ The seat falls vacant when the resignation is accepted.
  - ✓ However, the Chairman/Speaker may not accept the resignation if he is satisfied that it is not voluntary or genuine.

- Absence
  - ✓ A House can declare the seat of a member vacant if he is absent from all its meetings for a period of sixty days without its permission.
  - ✓ In computing the period of sixty days, no account shall be taken of any period during which the House is prorogued or adjourned for more than four consecutive days.

4. Economy

To watch the following questions on YouTube, click on the links given below

- **Video 1**
- **Video 2**
- **Video 3**
- **Video 4**

1. **Recently 108 training programmes were organized for the awareness of the farmers under Pandit Deen Dayal Upadhyay Unnat Krishi Shiksha Yojana (PDDUUKSY). The scheme is under which of the following agencies?**

   A. Education Division of ICAR

   B. Krishi Vigyan Kendras

   C. Chaudhary Charan Singh National Institute of Agricultural Marketing

   D. National Skill Training Institute

Answer: A

Explanation

- Pandit Deen Dayal Upadhyay Unnat Krishi Shiksha Yojana (PDDUUKSY) was launched to develop human resource in organic farming, natural farming and cow based economy for environmental sustenance and soil health.
- The scheme is under Ministry of Agriculture and Farmers Welfare, implemented by Education Division of ICAR.
- Three ICAR institutes viz, National Academy of Agricultural Research Management (NAARM), Hyderabad; Central Institute for Women In Agriculture (CIWA), Bhubaneswar and National Institute of Agricultural Economics and Policy Research (NIAP), New Delhi are also under this division.

2. **Consider the following statements with respect to e-RUPI.**

   1. **It is an electronic voucher based digital payment system.**
   2. **The platform has been developed by Reserve Bank of India.**
   3. **e-RUPI is expected to ensure a leak-proof delivery of welfare services.**

   Which of the above statements is/are correct?

   A. 1 only

   B. 2 only

   C. 1 and 3 only

   D. 1, 2 and 3

Answer: C

Explanation

- e-RUPI is a cashless and contactless digital payments medium, which will be delivered to mobile phones of beneficiaries in form of an SMS- string or a QR code.
- This will essentially be like a prepaid gift-voucher that will be redeemable at specific accepting centres without any credit or debit card, a mobile app or internet banking.
- e-RUPI will connect the sponsors of the services with the beneficiaries and service providers in a digital manner without any physical interface.

- The beneficiaries will be identified using their mobile number and a voucher allocated by a bank to the service provider in the name of a given person would only be delivered to that person.

3. Consider the following statements with respect to Indian Economy.

1. It is the world's 3rd largest economy by nominal GDP.

2. It is the sixth largest by purchasing power parity (PPP).

3. Type of Indian Economy is open, liberal and protectionist.

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

Answer: C

Explanation

Country/Economy	GDP (Nominal) (billions of $)						Growth (%)
	2020	Rank	2021	Rank	Share (%)	diff	2021
United States	20,932.75	1	22,675.27	1	24.2	-	6.39
China	14,722.84	2	16,642.32	2	17.7	6,033	8.44
Japan	5,048.69	3	5,378.14	3	5.73	11,264	3.25
Germany	3,803.01	4	4,319.29	4	4.60	1,059	3.60
United Kingdom	2,710.97	5	3,124.65	5	3.33	1,195	5.34
India	2,708.77	6	3,049.70	6	3.25	75.0	12.55
France	2,598.91	7	2,938.27	7	3.13	111	5.81
Italy	1,884.94	8	2,106.29	8	2.24	832	4.15
Canada	1,643.41	9	1,883.49	9	2.01	223	5.05
Korea	1,630.87	10	1,806.71	10	1.92	76.8	3.59

Country/Economy	GDP (PPP) (billions of Int. $)						Growth (%)
	2020	Rank	2021	Rank	Share	diff	2021
China	24,142.83	1	26,656.77	1	18.8 %	-	8.44
United States	20,932.75	2	22,675.27	2	16.0 %	3,982	6.39
India	8,907.12	3	10,207.29	3	7.19 %	12,468	12.55
Japan	5,313.02	4	5,585.79	4	3.93 %	4,622	3.25
Germany	4,496.78	5	4,743.67	5	3.34 %	842	3.60
Russia	4,096.53	6	4,328.12	6	3.05 %	416	3.76
Indonesia	3,302.41	7	3,507.24	7	2.47 %	821	4.30
Brazil	3,153.63	8	3,328.46	8	2.34 %	179	3.66
France	2,999.73	9	3,231.93	9	2.28 %	96.5	5.81
United Kingdom	2,959.92	10	3,174.92	10	2.24 %	57.0	5.34

- India's economy is the world's sixth largest economy by nominal GDP.
- It is the third largest by purchasing power parity (PPP).

4. The term demographic trap relates to:-

A. Combination of high fertility and declining mortality rates

B. Combination of low fertility and rising mortality rates

C. Combination of low fertility and low mortality rates

D. Combination of high fertility and high mortality rates.

Answer: A

Explanation

- According to the Encyclopedia of International Development, the term demographic trap is used by demographers "to describe the combination of high fertility (birth rates) and declining mortality (death rates) in developing countries, resulting in a period of high population growth rate".
- The term "demographic trap" then describes a situation where quality of health care improves and death rates fall, but birth rates still remain high, resulting in a period of high population growth.

- It persists because "falling living standards reinforce the prevailing high fertility, which in turn reinforces the decline in living standards."
- This results in more poverty, where people rely on more children to provide them with economic security.

5. Which one of the following SEZs of India has been awarded IGBC Platinum Rating?

A. Kandla Special Economic Zone

B. Cochin Special Economic Zone

C. Madras Special Economic Zone

D. Noida Special Economic Zone

Answer: A

Explanation

- Kandla SEZ (KASEZ) was awarded IGBC Platinum Rating. KASEZ is the First Green SEZ to achieve the IGBC Green Cities Platinum Rating for Existing Cities.
- IGBC Platinum rating has been awarded for 'Green master planning, policy initiatives and implementation of green infrastructure' by CII's Indian Green Building Council (IGBC).
- The recognition is set to pave way for all the other SEZs in the country to emulate the green initiative and efforts of Kandla SEZ.
- The efforts of KASEZ team were applauded especially noting the fact that this was accomplished in Bhuj region where water conservation and afforestation are critical interventions.

6. Consider the following statement with reference to the structure of India's debt:

1. The public debt to GDP ratio, which was around 66-68 per cent for many years , is now expected to jump to 80 per cent plus in 2020-21.

2. The external debt to GDP ratio increased to 21.1 per cent at end-March 2021.

3. The state government is responsible for 20% of India's total debt.

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 only

Answer: A

Explanation

- At end-March 2021, India's external debt was placed at US$ 570.0 billion, recording an increase of US$ 11.5 billion over its level at end-March 2020.

Structure Of India's Debt

- At end-March 2021, long-term debt (with original maturity of above one year) was placed at US$ 468.9 billion, recording an increase of US$ 17.3 billion over its level at end-March 2020.

- The share of short-term debt (with original maturity of up to one year) in total external debt declined to 17.7 per cent at end-March 2021 from 19.1 per cent at end-March 2020.

What is Debt-to-GDP ratio?

- The debt-to-GDP ratio indicates how likely the country can pay off its debt.
- Investors often look at the debt-to-GDP metric to assess the government's ability of finance its debt. Higher debt-to-GDP ratios have fueled economic crises worldwide.
- The Government's debt portfolio is characterized by very low foreign exchange risk as the external debt is only 2.7 percent of GDP (5.9 per cent of total Central Government liabilities).

Is there an acceptable level of debt-to-GDP?

- The NK Singh Committee on FRBM had envisaged a debt-to- GDP ratio of 40 per cent for the central government and 20 per cent for states aiming for a total of 60 per cent general government debt-to-GDP.
- Of the total public debt, 70 per cent is held by the Centre and 30 percent by the states.

7. Which one of the following State subjects has the 15th Finance Commission recommended moving to the Concurrent List of the 7th Schedule?

A. Health

B. Agriculture

C. Public Order

D. Betting and Gambling

Answer: A

Explanation

- Fifteenth Finance Commission Chairman N.K. Singh said that health should be shifted to the Concurrent list under the Constitution. Presently, 'Health' is under the State List. Additional info:
- The subject-wise distribution of legislative power is given in the three lists of the Seventh Schedule of the Constitution:

✓ List-I- the Union List

✓ List-II- the State List

✓ List-III- the Concurrent List

- Both, the Parliament and state legislature can make laws with respect to any of the matters enumerated in the Concurrent List.
- It includes the matters on which uniformity of legislation throughout the country is desirable but not essential.
- However State legislation operates to the extent that it is not in conflict with the Central legislation.
- At times, the very presence of a central legislation can negate the state's ability to legislate.

- The 42nd Amendment Act of 1976 transferred five subjects to Concurrent List from State List i.e. education, forests, weights and measures, protection of wild animals and birds, and administration of justice; constitution and organisation of all courts except the Supreme Court and the High Courts.

8. Consider the following statements.

1. An IMF member has to agree to conditions or pay a service fee to access reserve tranche.

2. The interest rate on SDRs or (SDRi) is the interest paid to members on their SDR holdings.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

- Reserve Position in the International Monetary Fund implies a portion of the required quota of currency each member country must provide to the IMF that can be utilized for its own purposes.
- The reserve tranche is basically an emergency account that IMF members can access at any time without agreeing to conditions or paying a service fee.
- Special Drawing Rights is an international reserve asset, created by the IMF in 1969 to supplement its member countries' official reserves.
- The SDR is neither a currency nor a claim on the IMF. Rather, it is a potential claim on the freely usable currencies of IMF members.
- SDRs can be exchanged for these currencies.
- The value of the SDR is calculated from a weighted basket of major currencies, including the US dollar, the euro, Japanese yen, Chinese yuan, and British pound.
- The interest rate on SDRs or (SDRi) is the interest paid to members on their SDR holdings.
- India's Forex Reserve include: Foreign Currency Assets; Gold reserves; Special Drawing Rights; Reserve position with the International Monetary Fund (IMF).
- 1 Special drawing Right

  ✓105.58 Indian Rupee

9. Which of the following statements is incorrect with reference to Green Bonds?

A. These instruments are designed specifically for funds to support specific projects benefiting the environment.

B. The World Bank issued the first official green bond in 2009.

C. State Bank of India had issued the first Green Infrastructure Bonds (GIBs) in India.

D. None of the above

Answer: C

Explanation

About Green Bonds

- It is a debt instrument just like any other normal bond, issued by an issuer for raising funds.
- The only difference is that these instruments are designed specifically for funds to support specific projects benefiting the environment.
- Green bonds typically come with tax incentives to enhance their attractiveness to investors.
- The World Bank issued the first official green bond in 2009.
- Green Bonds in India:
  - ✓ Yes Bank was the first Indian Bank to issue Green Infrastructure Bonds (GIBs) in India in 2015.
  - ✓ SEBI has allocated the following eight categories with the tag of green projects:
    - renewable energy
    - clean transportation
    - sustainable water management
    - climate change
    - energy efficiency
    - sustainable waste management and
    - land use and
    - biodiversity conservation.

10. Which one of the following committee was set up for restructuring of loans impacted by the Covid-19 pandemic?

A. Kamath Committee

B. Parekh Committee

C. Manoharan Committee

D. Bhanwala Committee

Answer: A

Explanation

- RBI had formed a five member committee under the chairmanship of former ICICI Bank CEO KV Kamath to make recommendations on the financial parameters to be considered for the one-time restructuring of loans impacted by the Covid 19 pandemic.
- The KV Kamath committee has selected 26 sectors which will require restructuring based on its analyses of financial parameters hit due to the economic crash caused by the Covid-19 pandemic.
- In its report the five member committee said power, construction, iron and steel, roads, real estate, wholesale trading, textiles, consumer durables, aviation, logistics, hotels, restaurants and tourism, mining are among the sectors that will need restructuring.

11. Consider the following statements with respect to Secured Overnight Financing Rate.

1. **It is the rate of interest charged by The Central Bank of India against loans offered to commercial banks.**
2. **It is a replacement for USD LIBOR (London Inter-bank Offered Rate).**
3. **It is based on the Treasury repurchase market (repo), Treasuries loaned or borrowed overnight.**

Which of the above statements are incorrect?

A. 1 only

B. 2 only

C. 3 only

D. None of the above

Answer: A

Explanation

- The secured overnight financing rate (SOFR) is a benchmark interest rate for dollar-denominated derivatives and loans that is replacing the London interbank offered rate (LIBOR).
- SOFR is based on transactions in the Treasury repurchase market and is seen as preferable to LIBOR since it is based on data from observable transactions rather than on estimated borrowing rates.
- While SOFR is becoming the benchmark rate for dollar-denominated derivatives and loans, other countries have sought their own alternative rates, such as SONIA and EONIA.

News

- State Bank of India (SBI) and Indian Oil Corporation Limited (IOCL) will be inking the first SOFR (Secured Overnight Financing Rate) linked external commercial borrowing (ECB) deal as the world moves away from London Interbank Offered Rate (LIBOR), the de facto international benchmark reference rate.

12. Consider the following statements with respect to Limited Liability Partnership (LLP).

1. **In an LLP, one partner is not responsible or liable for another partner's misconduct or negligence.**
2. **The provisions of Indian Partnership Act, 1932 are applicable to an LLP.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- Limited liability partnerships (LLPs) allow for a partnership structure where each partner's liabilities are limited to the amount they put into the business.
- Having business partners means spreading the risk, leveraging individual skills and expertise, and establishing a division of labor.

- LLP shall be a body corporate and a legal entity separate from its partners. It will have perpetual succession.
- LLPs are common in professional business like law firms, accounting firms, and wealth managers.
- Being the separate legislation (i.e. LLP Act, 2008), the provisions of Indian Partnership Act, 1932 are not applicable to an LLP and it is regulated by the contractual agreement between the partners.
- The LLP structure is available in countries like United Kingdom, United States of America, various Gulf countries, Australia and Singapore.
- On the advice of experts who have studied LLP legislations in various countries, the LLP Act is broadly based on UK LLP Act 2000 and Singapore LLP Act 2005.
- Both these Acts allow creation of LLPs in a body corporate form i.e. as a separate legal entity, separate from its partners/members.

13. Consider the following statements with respect to CGST Act.

1. **A person under the CGST Act can only be arrested, if the amount of tax evasion is more than ₹2 crore.**
2. **Offences involving tax evasion of ₹2 crore and above are non-bailable and cognisable.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- Section 69 of the Central Goods and Service Tax (CGST) Act gives power to authorities to arrest any person if there is "reason to believe" that he has committed tax evasion.
- Both Sections 69 and 132 of the CGST Act are constitutional and fall within the legislative competence of Parliament.
- The scope of Article 246A is "significantly wide" as it not only empowers both Parliament and State Legislatures to levy or enact GST Act, but also grants the power to make all laws 'with respect to' GST.
- A person under the CGST Act can only be arrested, if the amount of tax evasion is more than ₹2 crore.
- All offences in which tax evasion is less than ₹5 crore are bailable and only grave offences involving tax evasion of ₹5 crore and above are non-bailable and cognisable.
- The Delhi High Court gave the decision on a petition challenging the Sections 69 (power to arrest) and 132 (punishment for certain offences) of the CGST Act.

14. The government has used financial innovation to recapitalise Punjab & Sind Bank by issuing the lender Rs 5,500-crore worth of special types of zero coupon bonds. Which of the following are the characteristics of these Zero Coupon Bonds?

1. **Non-interest bearing**
2. **Non-transferable**
3. **Maturity of 10-15 years**
4. **Tradable**

Select the correct code

A. 1, 2 and 4

B. 2, 3 and 4

C. 1, 2 and 3

D. 1, 2, 3 and 4

Answer: C

Explanation

- The government has used financial innovation to recapitalise Punjab & Sind Bank by issuing the lender Rs 5,500-crore worth of non-interest bearing bonds valued at par.
- The funds raised through issuance of these instruments, which are a variation of the recapitalisation bonds issued earlier to public sector banks, are being deployed to capitalise the state-run bank.
- Characteristics of these special type of Zero-Coupon Bonds:
  - ✓ Not tradable
  - ✓ Non-interest bearing
  - ✓ Non-transferable special GOI securities
  - ✓ Maturity of 10-15 years
  - ✓ Issued specifically to Punjab & Sind Bank.

15. Consider the following statements with respect to Financial Inclusion Index.

1. **It is launched by Reserve Bank of India.**
2. **The value of index ranges between 0 and 10, where 0 represents complete financial inclusion.**
3. **The base year used for FI-index calculation is 2016.**

Which of the above statements is/are correct?

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: A

Explanation

- The Reserve Bank of India (RBI) announced the formation of a composite Financial Inclusion Index (FI-Index) to capture the extent of financial inclusion across the country.
- The annual FI-Index for the period ended March 2021 stood at 53.9 compared with 43.4 for the period ended March 2017.

- The index has been conceptualised as a comprehensive index incorporating details of banking, investments, insurance, postal as well as the pension sector in consultation with the government and respective sectoral regulators.
- The index captures information on various aspects of financial inclusion in a single value ranging between 0 and 100, where 0 represents complete financial exclusion and 100 indicates full financial inclusion.
- The FI-Index has been constructed without any 'base year' and as such it reflects cumulative efforts of all stakeholders over the years towards financial inclusion.

16. Consider the following statements with respect to National Asset Reconstruction Company Ltd.

1. **It is a type of bad bank.**
2. **The government will have equity contribution of 15% to NARCL.**
3. **The asset reconstruction companies or ARCs are registered under the RBI.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 only

C. 2 and 3 only

D. 1 and 3 only

Answer: D

Explanation

- National Asset Reconstruction Company Ltd (NARCL) has been incorporated, with the Corporate Affairs Ministry giving legal recognition.
- The capital structure will have a component of both equity and debt.
- Public sector banks led by Canara Bank (which is likely to have 12 per cent stake) are expected to hold controlling stake in NARCL.
- The other banks that are expected to pump in capital include State Bank of India, Bank of Baroda, Bank of India and IDBI Bank.
- The government will not have any direct equity contribution to NARCL.
- !It will guarantee the security receipts issued by NARCL, which will buy the bad loans from banks. The Centre has
- earmarked ₹31,000 crore for the guarantees.
- A bad bank is basically an entity that houses the bad loans (non-performing assets) of a bank and will resolve or liquidate bad debt (stressed debt) to recover as much money as it can.
- !The Reserve Bank of India (RBI) has set up six-member committee, headed by Sudarshan Sen (former Executive Director, RBI), to undertake a comprehensive review of the working of asset reconstruction companies (ARCs) in the financial sector ecosystem and recommend suitable measures for enabling them to meet the growing requirements.

17. An 'on-tap' facility would mean the RBI will accept applications and grant license for banks throughout the year. Which of the following are the required eligibility conditions for universal bank license.

1. **Resident professionals who have 10 years of experience in banking and finance at a senior level.**
2. **Groups or companies applying for such licences must have assets of Rs 5,000 crore or above.**

Select the correct code

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

- An 'on-tap' facility would mean the RBI will accept applications and grant license for banks throughout the year. The policy allows aspirants to apply for universal bank license at any time, subject to the fulfillment of the set conditions.
- Among eligible promoters for banks were resident professionals who have 10 years of experience in banking and finance at a senior level.
- Private sector entities owned and controlled by residents and have a successful track record for at least 10 years are also eligible, provided they have assets of ₹5,000 crore or more, and the non-financial business of the group does not account for 40% or more of total assets or gross income.
- Existing non-banking financial companies (NBFCs) controlled by residents and with a successful track record for at least 10 years were also allowed to apply for licences.
- In general, Universal Bank is a name given to banks engaged in diverse kind of banking business which includes not only services related to savings and loans but also investments, offering wide range of financial services, beyond commercial banking and investment banking, insurance etc.

18. Which of the following are dimensions of HDI (Human Development Index)?

1. **Social Inclusion**
2. **Crime Rate**
3. **Maternal mortality**
4. **Access to knowledge**
5. **A decent standard of living.**

Select the correct code.

A. 1 and 2 only

B. 2 and 4 only

C. 3 and 4 only

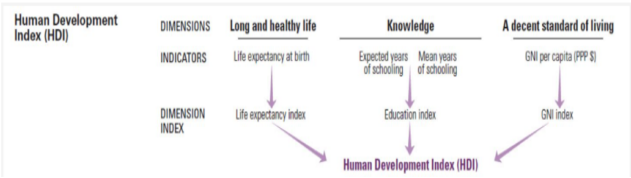
D. 4 and 5 only

Answer: D

Explanation

- Out of 189 countries, India has ranked 131 on the Human Development Index 2020 prepared by the United Nations Development Programme (UNDP).
- As against India's rank at 131, Bangladesh ranked at the 133rd position, while Pakistan stood at 154th place.

- In the South Asian region, India's HDI is more than the region's average which stands at .641, while India is also above the average value of 0.631 among the medium HDI category countries.
- The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living.
- The HDI is the geometric mean of normalized indices for each of the three dimensions.



19. Under Priority Sector Lending guidelines, banks have to set aside a specific portion of bank lending to which of these sectors?

1. **Agriculture**
2. **Education**
3. **Startups**
4. **Housing**
5. **Renewable Energy**

Select the correct code

A. 1, 2 and 3

B. 1, 2 and 4

C. 1, 2, 4 and 5

D. 1, 2, 3, 4 and 5

Answer: D

Answer: D

Explanation

- The Reserve Bank of India has assigned priority sector lending (PSL) status to India's startup sector.
- Under PSL guidelines, banks have to set aside a specific portion of bank lending to sectors deemed important by the central bank.
- The PSL status was till now reserved for sectors such as micro, small and medium enterprises (MSMEs), agriculture, education, Export Credit, Social Infrastructure, Renewable Energy and housing.
- All scheduled commercial banks and foreign banks with a sizeable presence in India are mandated to set aside 40% of their Adjusted Net Bank Credit (ANDC) for lending to these sectors.
- The limits for renewable energy, including solar power and compressed bio-gas plants, are being increased.

20. Consider the following statements with respect to Disinvestment.

1. **Ministry of Commerce is responsible for disinvestment.**
2. **Revenue collected from disinvestment is a part of Revenue accounts.**

Which of the above statements is/are incorrect?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

Explanation

- Disinvestment refers to the government selling or liquidating its assets or stakes in PSE (public sector enterprise).
- The Union Cabinet approved the new Strategic Disinvestment policy under which the Department of Investment and Public Asset Management (DIPAM) under the Ministry of Finance has been made the nodal department for the strategic stake sale.
- DIPAM and NITI Aayog will now jointly identify PSUs for strategic disinvestment.
- DIPAM secretary would now co-chair the inter-minister group on disinvestment, along with the secretary of administrative ministries concerned.

5. Environment

To watch the following questions on YouTube, click on the links given below

- **Video 1**
- **Video 2**
- **Video 3**
- **Video 4**

1. **Consider the following statements with respect to Ozone in atmosphere.**

   1. **Recently, there has been an increase in abundance of ozone from 0-5 km altitude.**
   2. **Any reading of up to 50 on the air quality index is considered to be an indicator of good air quality.**
   3. **Ozone is formed only by chemical reactions involving solar ultraviolet radiation (sunlight) and oxygen molecules.**

   Which of the above statements are correct?

   A. 1 and 2 only

   B. 2 and 3 only

   C. 1 and 3 only

   D. 1, 2 and 3

   Answer: A

   Explanation

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

- A Centre for Science and Environment study has found that ozone levels are exceeding the permitted levels even during winter in Delhi-NCR, making the smog more "toxic".
- Despite the pandemic and lockdowns, more days and locations witnessed higher and longer duration of ozone spells.
- Stratospheric ozone. Stratospheric ozone is formed naturally by chemical reactions involving solar ultraviolet radiation (sunlight) and oxygen molecules, which make up 21% of the atmosphere.
- Tropospheric ozone. Near Earth's surface, ozone is produced by chemical reactions involving naturally occurring gases and gases from pollution sources.

2. **Which of the following Tiger Reserves in India have received accreditation of the Global Conservation Assured Tiger Standards in 2021?**

   1. **Corbett**
   2. **Valmiki Tiger Reserve**
   3. **Sunderbans**
   4. **Bandipur Tiger Reserve**
   5. **Ranthambore**

   Select the correct code.

   A. 1, 2, 3 and 4

   B. 2, 3 and 4

   C. 1, 4 and 5

   D. 1, 2, 3 and 5

Answer: B

Explanation

- On the occasion of International Tiger Day, Union Minister for Environment, Forest and Climate Change announced that 14 tiger reserves in India have received accreditation of the Global Conservation Assured Tiger Standards (CA|TS).
- 14 Tiger Reserves:
  - ✓ Manas, Kaziranga and Orang in Assam
  - ✓ Satpura, Kanha and Panna in Madhya Pradesh
  - ✓ Pench in Maharashtra
  - ✓ Valmiki Tiger Reserve in Bihar
  - ✓ Dudhwa in Uttar Pradesh
  - ✓ Sunderbans in West Bengal
  - ✓ Parambikulam in Kerala
  - ✓ Bandipur Tiger Reserve of Karnataka
  - ✓ Mudumalai and Anamalai Tiger Reserve in Tamil Nadu
- The three most popular tiger reserves Bandhavgarh in MP, Corbett in Uttarakhand, and Ranthambore in Rajasthan are not on the list of reserves that have been granted accreditation
- Fourteen out of India's 52 tiger reserves have received the Conservation Assured Tiger Standards (CATS) accreditation for meeting a set of standards for effective conservation of big cats.

3. Recently, Carbon Border Arrangements (CBA), first dedicated climate law was signed into action by the European Parliament. Consider the following statements with respect to the same.

1. Companies abroad that wanted to sell cement, iron, steel, aluminum, fertilizer or electricity to the EU would also be required to pay that price for each ton of carbon dioxide they emit in making their products.

2. The carbon border tax will be effective from 1st Jan 2022.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

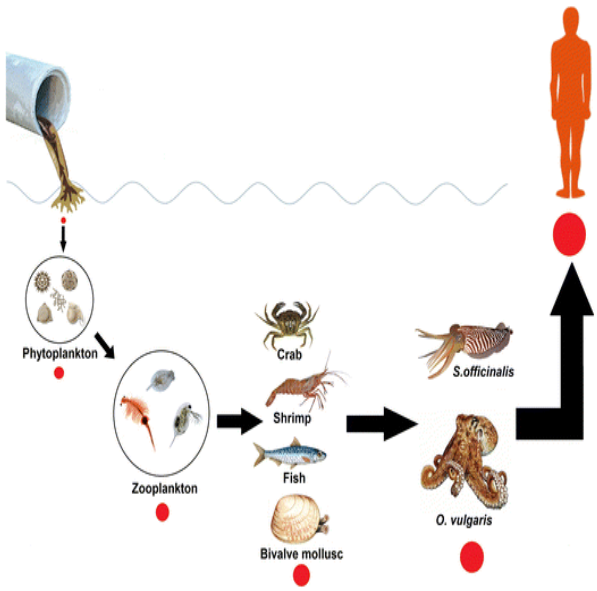
Answer: A

Explanation

- June 2021 marked a historic month, as the first dedicated climate law was signed into action by the European Parliament.

Carbon Border Arrangements (CBA) or Carbon border tax or carbon border adjustment mechanism (CBAM)

- Companies abroad that wanted to sell cement, iron, steel, aluminum, fertilizer or electricity to the EU would also be required to pay that price for each ton of carbon dioxide they emit in making their products.
- The idea would be to level the carbon playing field. The border tax would not take effect until 2026.



4. **Which of the following are necessary conditions for a pollutant for its Biomagnification to occur?**

   1. **It should be fat soluble.**
   2. **It should be water soluble.**
   3. **It should be biologically inactive.**
   4. **It should be short lived.**

Select the correct code.

A. 1 and 3 only

B. 2, 3 and 4 only

C. 1 and 4 only

D. 1 only

Answer: D

Explanation

- In biomagnification there is an increase in concentration of a pollutant from one link in a food chain to another. In order for biomagnification to occur, the pollutant must be: long- lived, mobile, soluble in fats, biologically active. E.g. DDT (Dichlorodiphenyltrichloroethane)
- If a pollutant is short-lived, it will be broken down before it can become dangerous.
- If it is not mobile, it will stay in one place and is unlikely to be taken up by organisms.
- If the pollutant is soluble in water, it will be excreted by the organism. Pollutants that dissolve in fats, however, may be retained for a long time.

5. **Which of the following Biosphere Reserves have been declared as UNESCO Biosphere Reserve?**

   1. **Manas**
   2. **Simlipal**
   3. **Khangchendzonga**
   4. **Sunderbans**
   5. **Panna**

Select the correct code.

A. 1, 2, 4 and 5

B. 2, 3 and 5

C. 2, 3, 4 and 5

D. 1, 2, 3, 4 and 5

Answer: C

Explanation

- Biosphere reserves are sites established by countries and recognized under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science.
- The programme of Biosphere Reserve was initiated by UNESCO in 1971.
- Biosphere reserves are designated by the UNESCO to resolve man-animal conflict and promote conservation of biodiversity as well as enable sustainable use of natural resources.
- Biosphere Reserves recognised by UNESCO

✓ Nilgiri, 2000

✓ Gulf of Mannar, 2001

✓ Sunderban, 2001

✓ Nanda Devi, 2004

✓ Nokrek, 2009

✓ Pachmarhi, 2009

✓ Similipal, 2009

✓ Achanakmar-Amarkantak, 2012

✓ Great Nicobar, 2013

✓ Agasthyamala, 2016

✓ Khangchendzonga, 2018

✓ Panna, 2020

6. Consider the following statements with respect to Coral Reefs.

1. **Coral reefs are naturally colorful because of algae, which lives inside of the coral, providing them with food.**
2. **Coral reefs cover less than 1% of the ocean but are home to almost 25% of all known marine species.**
3. **ReefWatch Marine Conservation is an agency under Ministry of Environment, Forest and Climate Change working on marine conservation since 1993.**

Which of the above statements is/are correct?

A. 1 only

B. 2 and 3 only

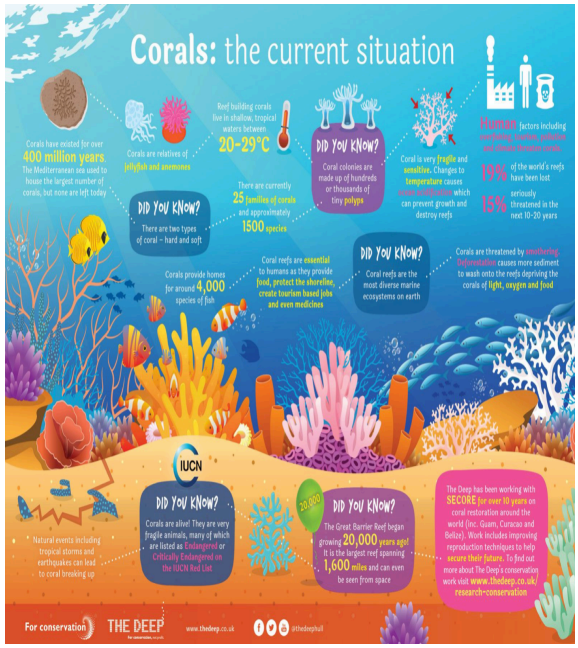
C. 1 and 2 only

D. 1 and 3 only

Answer: C

Explanation

- Coral reefs are unique and the most diverse marine ecosystems on Earth. They are believed to have existed for about 200 million years. It is estimated that it took corals about 50 million years to reach their present level of diversity.
- They play a crucial role in supporting the flora and fauna in the marine ecosystem.
- They have, since time immemorial, provided us with food, pleasure and protection from storm and other natural calamities.
- Known as "rainforests of the sea," coral reefs cover less than 1% of the ocean but are home to almost 25% of all known marine species.
- Coral reefs are the largest structures on earth of biological origin.
- Coral reefs are naturally colorful because of algae, which lives inside of the coral, providing them with food.
- The three main types of coral reefs are fringing reefs, barrier reefs, and coral atolls.



- ReefWatch Marine Conservation is an Indian NGO in the Andaman islands working on marine conservation since 1993.

7. Which of the following is true about Limiting Factors in Ecology?

1. **Limiting factor causes competition between individuals of a species population.**
2. **Extreme Sunlight in the rain forest is a limiting factor.**
3. **Moisture in the rain forest is a limiting factor.**

Choose the correct code.

A. 1 and 3 only

B. 1 and 2 only

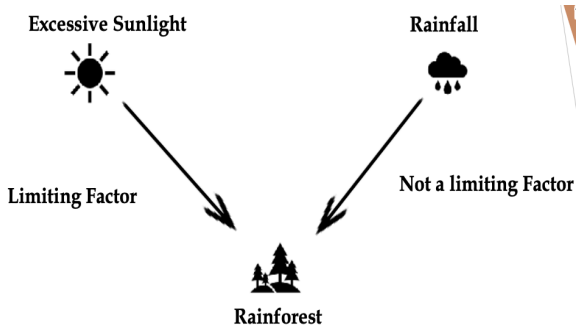
C. 2 and 3 only

D. All are correct

Answer: B

Explanation

- In ecology, common limiting factor resources are environmental conditions that limit the growth, abundance, or distribution of an organism or a population of organisms in an ecosystem.
- The limiting factor also causes competition between individuals of a species population.
- For example, space is a limiting factor, Sunlight in the rain forest is a limiting factor for plants at the floor, etc. But moisture in the rain forest is not a limiting factor as it fairly abundant.



8. Recently few species were spotted for the first time in India. Consider the following pairs with respect to the same.

Species : First sighted in

1. **Himalayan serow : Jammu and Kashmir**
2. **The Striped Hairstreak : Arunachal Pradesh**
3. **Willow warbler : Eastern Ghats**

Which of the above pairs are incorrect?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: C

Explanation

- A Himalayan serow has been sighted for the first time in the Himalayan cold desert region.
- A biologist has described a Himalayan serow as resembling a cross between a goat, a donkey, a cow, and a pig.
- It's a medium-sized mammal with a large head, thick neck, short limbs, long, mule-like ears, and a coat of dark hair.

- Himalayan serows are herbivores, and are typically found at altitudes between 2,000 metres and 4,000 metres (6,500 to 13,000 feet).

- They are known to be found in eastern, central, and western Himalayas, but not in the Trans Himalayan region.
- The Striped Hairstreak (Yamamotozephyrus kwangtugenesis) was located in Vijaynagar (Arunachal Pradesh) bordering Myanmar.
- It was first recorded by Japanese entomologists in Hainan province of China.
- India now has 1,327 species of butterflies, up from 1,318 in 2015.
- Willow warbler has been sighted for the first time in the country in Thiruvanathapuram.

- It is the longest migrating bird in the 10 gms Warblers weight category.
- Willow Warbler is very difficult to identify as it is quite small and the plumage colour changes twice a year.

9. Ramadevarabetta Vulture Sanctuary, India's only vulture sanctuary is present in which of the following states?

A. Madhya Pradesh

B. Tamil Nadu

C. Kerala

D. Karnataka

Answer: D

Explanation

- India's only vulture sanctuary, Ramadevarabetta Vulture Sanctuary in Ramanagara district of Karnataka, has finally got its much-needed protective barrier and notified as an eco-sensitive zone (ESZ).
- Being very close to Bengaluru, the granite rocky hills have witnessed an indiscriminate expansion of industries and real estate activity in the last few years.
- The Central Government has notified an area from 1.30 metres to 1.80 km from the boundary of the 346- hectare area sanctuary.
- The total geographical area of the ESZ is 7.08 sq km and covers a total of six villages and one hamlet.

- It is the only place in Karnataka where the critically endangered and endemic Indian white backed vulture and long-billed vultures are found and breed naturally in the entire South.
- A rescue centre for vultures will be set up in the Bihar's Valmiki Tiger reserve's Ganauli range to increase the number of vultures.

10. In recent years, The Himalayan trillium has become one of the most traded commercial plants of the Himalayan region, due to which one of the following reason?

A. Use in textile fibre

B. Use in Bio-diesel

C. Pulp for paper industry

D. High medicinal quality

Answer: D

Explanation

- The Himalayan trillium — found across India, Bhutan, Nepal and China — is a natural source of steroidal saponins which are important components of steroidal drugs.
- The plant is popular in traditional Chinese medicine.
- The Himalayan trillium, a common herb of the Himalayas was declared 'endangered' by the International Union for Conservation of Nature (IUCN).
- Increased demands over the last decade has made its illegal collection from the wild a rather lucrative business in India: a kilogram fetches about Rs.3,000-5,000.

11. Consider the following statements with respect to Black Softshell Turtle.

1. **It is a brackish-water species.**
2. **It enjoys legal protection under the Indian Wildlife (Protection) Act of 1972.**
3. **The International Union for Conservation of Nature had in 2021 listed the turtle as 'critically endangered'.**

Which of the above statements is/are incorrect?

A. 1 only

B. 2 and 3 only

C. 2 only

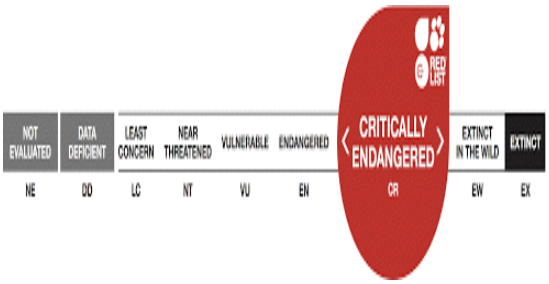
D. 1 and 2 only

Answer: D

Explanation

- Until sightings along the Brahmaputra River's drainage in Assam, the black softshell turtle was thought to be 'extinct in the wild' and confined only to ponds of temples in northeastern India and Bangladesh.

- The International Union for Conservation of Nature had in 2021 listed the turtle as 'critically endangered'.



- But it does not enjoy legal protection under the Indian Wildlife (Protection) Act of 1972 although it has traditionally been hunted for its meat and cartilage, traded in regional and international markets.

- A major temple in Assam has signed a memorandum of understanding with two green NGOs, the Assam State Zoo cum Botanical Garden and the Kamrup district administration for long-term conservation of the rare freshwater black softshell turtle (Nilssonia nigricans).

12. 'Carbon Watch' was recently heard in news. Consider the following statements with respect to the same.

1. **It is a Smart Watch which will be positioned in prime regions of a city to calculate carbon emissions in that region.**
2. **Chandigarh became the first state or Union Territory in India to launch Carbon Watch.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

- Chandigarh became the first state or Union Territory in India to launch Carbon Watch, a mobile application to assess the carbon footprint of an individual.
- Although the app can be accessed by everyone, it has specific options for the residents of Chandigarh to compile a detail study.
- As a person downloads the application, they will need to fill details in four parts –

  ✓ Water

  ✓ Energy

  ✓ Waste Generation and

  ✓ Transport (Vehicular movement).
- In the category of Water, the person will be required to inform about the consumption of water.
- In the Energy category, the details regarding the electricity units consumed every month at the house, monthly bill etc and usage of solar energy will have to be furnished.

- In the Waste category, the individual will need to inform about the waste generation on their part and their family.
- In the transport section, the individual will have to inform about the mode of transport used by them- four wheeler, two-wheeler or bicycle.
- With the mentioned information, the mobile application will automatically calculate the carbon footprint of the individual.

13. The report, titled Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions was recently released by which of the following?

A. Climate and Clean Air Coalition

B. United Nations Environment Programme

C. Both A and B

D. Intergovernmental Panel on Climate Change

Answer: C

Explanation

- Recently, a report, titled Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions was released by the Climate and Clean Air Coalition and the United Nations Environment Programme (UNEP).
- Key Findings:
  - ✓ Human-caused methane emissions must be cut by 45 per cent
  - ✓ to avoid the worst effects of climate change.
  - ✓ It would prevent 260,000 premature deaths, 775,000 asthma- related hospital visits annually, as well as 25 million tonnes of crop losses.
  - ✓ Methane in the atmosphere reached record levels last year, according to the data from the United States National Oceanic and Atmospheric Administration.
  - ✓ Most human-caused methane emissions came from three sectors: Fossil fuels, waste and agriculture.
- The assessment found that the mitigation potential varied between countries and regions. Europe had the greatest potential to curb methane emissions from farming, fossil fuel operations and waste management.
- The European Commission had adopted the European Union Methane Strategy in October 2020. It outlined measures to cut methane emissions in Europe and internationally.
- Three behavioural changes— reducing food waste and loss, improving livestock management and adopting healthy diets (vegetarian or with a lower meat and dairy content) — could reduce methane emissions by 65–80 million tonnes per year over the next few decades

14. Which of the following are the sites that has been recognized under the 1971 Ramsar Convention on Wetlands?

1. **Thol Lake Wildlife Sanctuary**
2. **Kabartal Wetland**
3. **Carambolim lake**
4. **Sultanpur National Park**
5. **Varthur lakes**

Select the correct code

A. 1, 2 and 4 only

B. 1, 3 and 4 only

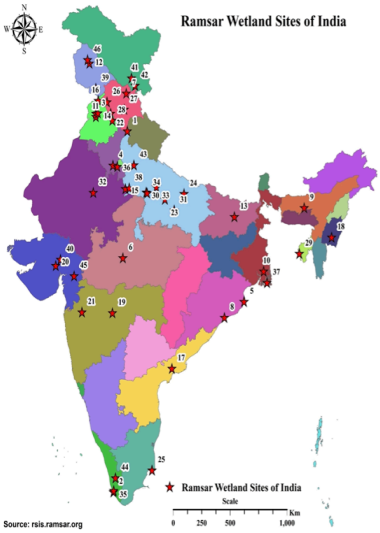
C. 1, 3, 4 and 5 only

D. 1, 2, 3, 4 and 5

Answer: A

Explanation

- India added another feather in its cap when four more sites - two each from Haryana and Gujarat - were recognised as wetlands of international importance under the Ramsar Convention.
- Sultanpur National Park in Gurgaon and Bhindawas Wildlife Sanctuary in Jhajjar (both in Haryana) have been added to the list this year. Apart from that, Thol and Wadhwana from Gujarat too have now become a part of the convention.
- The Ramsar Convention on Wetlands is an intergovernmental treaty adopted on February 2, 1971 in the Iranian city of Ramsar, on the southern shore of the Caspian Sea.
- It came into force for India on February 1, 1982. Those wetlands which are of international importance are declared as Ramsar sites.



S.No	Site Name	Designation Date	Area (Sq. Km)
1	Asan Conservation Reserve	21-07-2020	440.33
2	Ashtamudi Wetland	19-08-2002	374.87
3	Beas Conservation Reserve	26-09-2019	437.34
4	Bhindawas Wildlife Sanctuary	25-05-2021	443.41
5	Bhitarkanika Mangroves	19-08-2002	374.87
6	Bhoj Wetland	19-08-2002	374.87
7	Chandertal Wetland	08-11-2005	386.64
8	Chilika Lake	01-10-1981	298.6
9	Deepor Beel	19-08-2002	374.87
10	East Calcutta Wetlands	19-08-2002	374.87
11	Harike Lake	23-03-1990	329.55
12	Hokera Wetland	08-11-2005	386.64
13	Kabartal Wetland	21-07-2020	440.33
14	Kanji	22-01-2002	372.70
15	Keoladeo National Park	01-10-1981	298.6
16	Keshopur-Miani Community Reserve	26-09-2019	437.34
17	Kolleru Lake	19-08-2002	374.87
18	Loktak Lake	23-03-1990	329.55
19	Lonar Lake	22-07-2020	440.34
20	Nalsarovar	24-09-2012	411.76
21	Nandur Madhameshwar	21-06-2019	436.37
22	Nangal Wildlife Sanctuary	26-09-2019	437.34
23	Nawabganj Bird Sanctuary	19-09-2019	437.27
24	Parvati Arga Bird Sanctuary	03-12-2019	438.81
25	Point Calimere Wildlife and Bird Sanctuary	19-08-2002	374.87
26	Pong Dam Lake	19-08-2002	374.87
27	Renuka Wetland	08-11-2005	386.64
28	Ropar	22-01-2002	372.70
29	Rudrasagar Lake	08-11-2005	386.64
30	Saman Bird Sanctuary	03-12-2019	438.81
31	Samaspur Bird Sanctuary	03-10-2019	437.41
32	Sambhar Lake	23-03-1990	329.55
33	Sandi Bird Sanctuary	26-09-2019	437.34
34	Sarsai Nawar Jheel	19-09-2019	437.27
35	Sasthamkotta Lake	19-08-2002	374.87
36	Sultanpur National Park	25-05-2021	443.41
37	Sundarban Wetland	30-01-2019	434.95
38	Sur Sarovar	21-08-2020	440.64
39	Surinsar-Mansar Lakes	08-11-2005	386.64
40	Thol Lake Wildlife Sanctuary	05-04-2021	442.91
41	Tso Kar Wetland Complex	17-12-2020	441.52
42	Tsomoriri	19-08-2002	374.87
43	Upper Ganga River	08-11-2005	386.64
44	Vembanad-Kol Wetland	19-08-2002	374.87
45	Wadhwana Wetland	05-04-2021	442.91
46	Wular Lake	23-03-1990	329.55

ENVIS-Resource Partner Wildlife and Protected Areas 2021
भारतीय वन्यजीव संस्थान Wildlife Institute of India

15. Consider the following regarding biofuels

1. **First generation biofuels are produced directly from food crops.**
2. **Third generation biofuels are aimed at capturing and storing carbon dioxide also.**
3. **Fourth generation biofuels use specially engineered energy crops such as algae.**

Which of the above statements is/are correct?

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 3 only

Answer: A

Explanation

- First Generation biofuels are produced directly from food crops by abstracting the oils for use in biodiesel or producing bioethanol through fermentation.
- Crops such as wheat and sugar are the most widely used feedstock for bioethanol while oil seed rape has proved a very effective crop for use in biodiesel.
- Second Generation biofuels are produced from non-food crops such as wood, organic waste, food crop waste and specific biomass crops.
- Cellulosic ethanol technology fits in here, as do non-food crop technologies such as jatropha-based biofuels.
- Third Generation of biofuels is based on improvements in the production of biomass.
  - ✓It takes advantage of specially engineered energy crops such as algae as its energy source.
  - ✓The algae are cultured to act as a low-cost, high-energy and entirely renewable feedstock.
- Fourth Generation Biofuels are aimed at not only producing sustainable energy but also a way of capturing and storing
  CO2.

16. India hosted a two-day summit on Green Hydrogen initiatives involving the BRICS nations. Consider the following statements with respect to Green Hydrogen.

1. **Hydrogen when produced from biomass is known as Green Hydrogen.**
2. **Green Hydrogen can be used to replace the industrial hydrogen that gets made every year from natural gas.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

- Green hydrogen is a clean burning fuel that eliminates emissions by using renewable energy to electrolyse water, separating the hydrogen atom within it from its molecular twin oxygen.
- While blue hydrogen is created from fossil sources, where the carbon emissions are captured and stored, green hydrogen is made from non-fossil sources.
- Green hydrogen energy is vital for India to meet its Nationally Determined Contributions and ensure regional and national energy security, access and availability.
- Hydrogen can act as an energy storage option, which would be essential to meet intermittencies (of renewable energy) in the future.

17. Which one of the following statements correctly defines The Zero waste International Alliance?

A. An international organization promoting alternatives to landfill and incineration.

B. An alliance of nations striving to minimize their plastic waste disposal in the ocean.

C. A group of individuals promoting minimalist living and less consumerism.

D. An alliance of technology based multinational companies undertaking recycling of e-waste.

Answer: A

Explanation

Zero Waste International Alliance (ZWIA)

✓ It is a group of environmental professionals dedicated to working towards a world without waste through public education and practical application of Zero Waste principles.

✓ By disseminating knowledge and providing support to its members ZWIA is promoting the implementation of Zero Waste Principles in various aspects.

- This alliance has been established to promote positive alternatives to landfill and incineration and to raise community awareness of the social and economic benefits to be gained when waste is regarded as a resource base upon which can be built both employment and business opportunity.

18. Several countries, including the UK and France, have enacted laws promising to achieve a net-zero emission scenario by the middle of the century. Consider the following statements with respect to the same.

1. **Net-zero, which is also referred to as carbon-neutrality, means that a country would bring down its emissions to zero.**
2. **No country in Asia has negative emissions.**
3. **The European Union has launched a campaign called "Fit for 55", to cut emissions by 55 per cent below 1990 levels by 2030.**

Which of the above statements is/are incorrect?

A. A. 1 only

B. 2 and 3 only

C. 1 and 2 only

D. 3 only

Answer: C

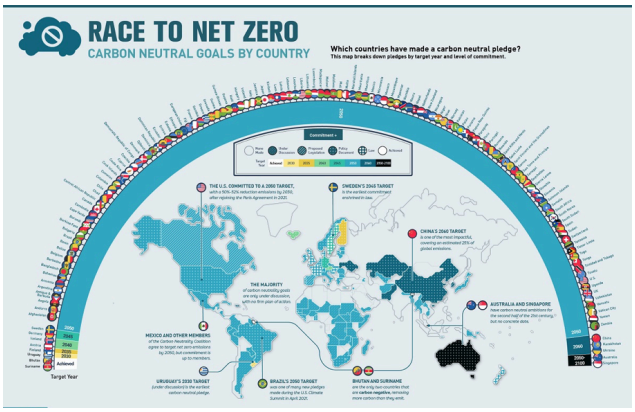
Explanation

- Net-zero, which is also referred to as carbon-neutrality, does not mean that a country would bring down its emissions to zero.
- That would be gross-zero, which means reaching a state where there are no emissions at all, a scenario hard to comprehend.
- Therefore, net-zero is a state in which a country's emissions are compensated by absorption and removal of greenhouse gases from the atmosphere.

- It is even possible for a country to have negative emissions, if the absorption and removal exceed the actual emissions. Bhutan has negative emissions, because it absorbs more than it emits.

Initiatives

- In 2019, the New Zealand government passed the Zero Carbon Act, which committed the country to zero carbon emissions by 2050 or sooner, as part of the country's attempts to meet its Paris climate accord commitments.
- In the same year, the UK's parliament passed legislation requiring the government to reduce the UK's net emissions of greenhouse gases by 100 per cent relative to 1990 levels by the year 2050.
- The European Union too, has a similar plan, called "Fit for 55", the European Commission has asked all of its 27 member countries to cut emissions by 55 per cent below 1990 levels by 2030.
- Last year, China also announced that it would become net-zero by the year 2060 and that it would not allow its emissions to peak beyond what they are in 2030.



19. Consider the following statements with respect to Hydrochlorofluorocarbons.

1. **India has successfully achieved the complete phase out of hydrochlorofluorocarbon (HCFC)-141 b.**
2. **It is a chemical used by foam manufacturing enterprises.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

- HCFC-141b is not produced in the country and all the domestic requirements are met through imports. With the notification of prohibiting the import of HCFC-141 b, the country has completely phased out the important ozone depleting chemical.
- Simultaneously, the use of HCFC-141 b by foam manufacturing industry has also been closed as on 1st January, 2020 under the Ozone Depleting Substances (Regulation and Control) Amendment Rules, 2014.
- The phase out of HCFC-141b from the country has twin environmental benefits viz.
  - ✓Assisting the healing of the stratospheric ozone layer, and

✓Towards the climate change mitigation due to transitioning of foam manufacturing enterprises at this scale under HPMP to low global warming potential alternative technologies

- Nearly, 50 % of the consumption of ozone depleting chemicals in the country was attributable to HCFC-141 b in the foam sector.
- The Ministry adopted a structured approach to engage with foam manufacturing enterprises for providing technical and financial assistance in order to transition to non-ODS and low GWP technologies under HCFC Phase out Management Plan (HPMP).
- Around 175 foam manufacturing enterprises have been covered under HPMP out of which, 163 enterprises are covered under stage II of HPMP.

20. Consider the following statements:

1. **The Biological Diversity Act (BDA) 2002 is in line with the United Nations Convention on Biological Diversity (CBD).**
2. **To obtain biological resources, foreign nationals require the approval of the ministry of environment.**
3. **There is a provision of separate biodiversity board for union territories under the Biological Diversity Act.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 1 only

C. 2 and 3 only

D. 2 only

Answer: B

Explanation

- All foreign nationals require approval from NBA for obtaining Biological Resources from India.
- There is no provision for a Biodiversity Board for a Union Territory because Union Territories have been placed under National Biodiversity Authority.
- The Biological Diversity Act 2002 was born out of India's attempt to realize the objectives enshrined in the United Nations Convention on Biological Diversity (CBD) 1992 which recognizes the sovereign rights of states to use their own Biological Resources.
- An Act to provide for the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.
- Powers and Functions of National biodiversity act (NBA)

✓All foreign nationals require approval from NBA for obtaining Biological Resources from India.

✓All Indian individuals/entities are required to seek NBA approval before transferring knowledge/ research and material to foreigners.

✓Prior approval of NBA before applying for any kind of IPR based on research conducted on biological material and or associated knowledge obtained from India.

The Biodiversity Act 2002 mandates each state to notify its State Biodiversity Board.

6. Science & Technology

To watch the following questions on YouTube, click on the links given below

- **Video 1**
- **Video 2**
- **Video 3**
- **Video 4**

1. **In the context of recent advances in human reproductive technology, 'Pronuclear Transfer" is used for**

   A. Fertilization of egg in vitro by the donor sperm

   B. Genetic modification of sperm producing cells

   C. Development of stem cells into functional embryos

   D. Prevention of mitochondrial diseases in offspring

Answer: D

Explanation

- Mutations in mtDNA are a cause of mitochondrial disease, a heterogeneous group of diseases that can lead to premature death, sometimes in infancy or childhood.
- Most mitochondrial diseases lack specific treatments, and women who carry the causative mutations are at high risk of transmitting the diseases to their offspring.
- In pronuclear transfer, the mother's egg is first fertilized with the father's sperm, producing a zygote.
- The pronuclei of the egg and sperm are then removed from the zygote and inserted into a donor egg that has been fertilized and has had its own nucleus removed (a pronucleus is the nucleus of the egg or sperm at the stage of fertilization prior to nucleus fusion).
- The zygote derived from the donor egg is then implanted into the mother's uterus.

2. **Consider the following statements with respect to Zolgensma gene therapy.**

   1. **It is a one-time injection that replaces the defective gene with normal gene and rectifies the disorder.**
   2. **Recently, European Medicines Agency (EMA) approved this therapy for children aged less than two years.**

   Which of the above statements is/are correct?

   A. 1 only

   B. 2 only

   C. Both 1 and 2

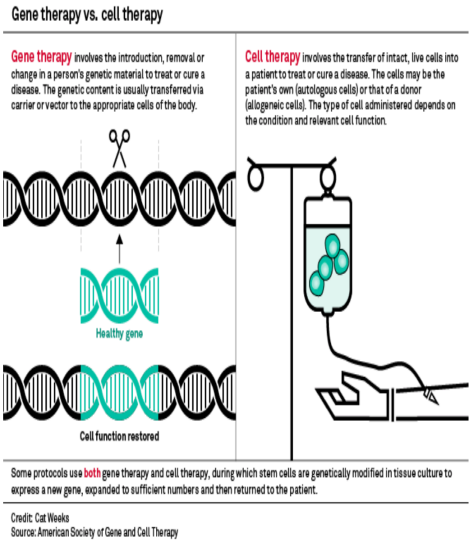
   D. None of the above

Answer: A

Explanation

- ZOLGENSMA is a gene therapy used to treat children less than 2 years old with spinal muscular atrophy (SMA).
- It is given as a one-time infusion into a vein.

- ZOLGENSMA can cause acute serious liver injury.
- Liver enzymes could become elevated and may reflect acute serious liver injury in children who receive ZOLGENSMA.
- In 2019, US FDA approved this therapy for children aged less than two years.



3. Which of the followings are the reasons for the occurrence of multi-drug resistance in microbial pathogens in India?

1. **Genetic predisposition of some people.**
2. **Taking incorrect doses of antibiotics to cure diseases.**
3. **Using antibiotics in livestock farming.**
4. **Multiple chronic diseases in some people.**

Select the correct answer using the code given below.

A. 1 and 2

B. 2 and 3 only

C. 1, 3 and 4

D. 2, 3 and 4

Answer: D

Explanation

- Antibiotic resistance is specific to drugs and their ineffective action on bacteria.
- Antimicrobial resistance is a broader term, encompassing resistance to drugs that treat infections caused by other microbes as well, such as parasites, viruses and fungi.
- Acquired resistance refers to micro-organisms acquiring the gene coding for resistance. It's kind of like hacking, except it's happening inside our bodies.
- Overuse and misuse of antimicrobial agents is the single most important cause of development of resistance.
- For instance, when antibiotics (which are meant for bacterial infections only) are taken by people with viral infections like colds and flu.
- They are also used indiscriminately as growth promoters in animals or used to prevent diseases in healthy animals.
- !Poor infection control practices in hospitals, in the hospitality sector, and at home can cause the spread of disease, fuelling the high use of these drugs.

4. "Additive Manufacturing" is commonly known as which of the following?

A. Manual Labour

B. 3D Printing

C. Artificial Intelligence

D. Bitcoin Mining

Answer: B

Explanation

- Additive manufacturing, also known as 3D printing, is a transformative approach to industrial production that enables the creation of lighter, stronger parts and systems.

- It is yet another technological advancement made possible by the transition from analog to digital processes. In recent decades, communications, imaging, architecture and engineering have all undergone their own digital revolutions.
- Now, AM can bring digital flexibility and efficiency to manufacturing operations.
- Additive manufacturing uses data computer-aided-design (CAD) software or 3D object scanners to direct hardware to deposit material, layer upon layer, in precise geometric shapes.

5. Consider the following statements about a digital signature:

1. An electronic record that identifies the certifying authority issuing it.

2. Used to serve as a proof of identity of an individual to access information of server on Internet.

3. An electronic method of signing an electronic document and ensuring that the original content is unchanged.

Which of the statements given above is/are correct?

A. 1 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

Answer: D

Explanation

- A digital signature is a mathematical technique used to validate the authenticity and integrity of a message, software or digital document.
- It's the digital equivalent of a handwritten signature or stamped seal, but it offers far more inherent security.
- A digital signature is intended to solve the problem of tampering and impersonation in digital communications.
- Digital signatures can provide evidence of origin, identity and status of electronic documents, transactions or digital messages. Signers can also use them to acknowledge informed consent.

6. Which of the following statements is/are correct with respect to Olympics?

1. No player can participate in Olympics without representing his/ her nation.

2. International Olympic Committee is an inter-governmental organisation dedicated to using the revenue generated from the Olympic Games to assist athletes and develop sport worldwide.

Select the correct code.

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer:

Explanation

- In December 2019, the World Anti-Doping Agency (WADA) banned Russia for four years from competing in international events, including the Tokyo Olympics and the FIFA World Cup in 2022.
- The ban was enacted after new revelations came up about a doping programme that Russia had been accused of.
- In 2020, the Court of Arbitration for Sport (CAS) reduced the initial ban of four years to two, but it ensured that no official Russian team can participate in events organised by a WADA signatory until the sanction term ends on December 16, 2022.

- The ban is not outright, and 335 athletes from Russia are still playing at Tokyo, only under the name ROC, meaning Russian Olympic Committee – the team that sends Russian athletes to all Games.

7. Recently, the Department of Space (DoS) has signed an MoU with geospatial technology company, CE Info Systems Pvt Ltd. Consider the following statements with respect to the same.

1. The collaboration will enable them to jointly identify and build a holistic geospatial portal utilising earth observation datasets.

2. Bhuvan is a data repository for all the meteorological missions of ISRO and deals with weather-related information, oceanography, and tropical water cycles.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

- Department of Space entered into an MoU with M/s CE Info Systems Pvt Ltd., an Indian Geospatial Technology company developing location based Software Service and AI based solutions.
- Through the MoU, the combined geospatial expertise of the Department and CE Info Systems will be leveraged through their respective Geoportals.
- The collaboration will enable them to jointly identify and build a holistic geospatial portal utilising earth observation datasets, 'NavIC', Web Services and APIs (application programming interface) available in Mapmy India,
- The geospatial portals will be called 'Bhuvan', 'VEDAS' and 'MOSDAC'.
- Indian Regional Navigation Satellite System also known as NavIC (Navigation with Indian Constellation), is an indigenous navigation system, developed by ISRO.
- Bhuvan is the national geo-portal developed and hosted by ISRO comprising geospatial data, services, and tools for analysis.
- VEDAS (Visualisation of Earth observation Data and Archival System) is an online geo processing platform that uses optical, microwave, thermal, and hyper-spectral EO data covering applications particularly meant for academia, research and problem solving, ISRO said.
- MOSDAC (Meteorological and Oceanographic Satellite Data Archival Centre) is a data repository for all the meteorological missions of ISRO and deals with weather-related information, oceanography, and tropical water cycles.

8. **NASA and ISRO are collaborating on developing a satellite called NISAR. Consider the following statements with respect to the same.**

   1. **NISAR will be launched from Kennedy Space Center, Florida.**
   2. **It will scan the globe every 12 days over the course of its seven-year mission.**

Which of the above statements is/are incorrect?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

- Using advanced radar imaging that will provide an unprecedented, detailed view of Earth, the NASA-ISRO Synthetic Aperture Radar, or NISAR, satellite is designed to observe and take measurements of some of the planet's most complex processes.
- !These include ecosystem disturbances, ice-sheet collapse, and natural hazards such as earthquakes, tsunamis, volcanoes and landslides.
- Data collected from NISAR will reveal information about the evolution and state of Earth's crust, help scientists better understand our planet's processes and changing climate, and aid future resource and hazard management.

9. **Which of the following countries have their own self- developed space station in service?**

   1. **Japan**
   2. **China**
   3. **Russia**

Select the correct code.

A. 1 and 2 only

B. 3 only

C. 2 only

D. 2 and 3 only

Answer: C

Explanation

- China launched the first astronauts to its self-developed space station's core module Tianhe for a three-month mission.
- The new multi-module Tiangong station is set to be operational for at least 10 years.
- Tianhe is one of three main components of what would be China's first self-developed space station, rivalling the only other station in service – the ISS.
- Tianhe will act "the management and control hub of the space station".
- The ISS consists of Canada, Japan, the Russian Federation, the United States, and eleven Member States of the European Space Agency.
- Aside from the ISS, three nations (U.S., Russia and China) have independently launched and operated space stations.

- ✓Soviet Space Program Salyut 1, 3-7: Beginning with Salyut 1 in 1971, the Soviet Space Program launched and operated six more stations, culminating in Salyut 7, which operated for nearly 9 years.
- ✓NASA Skylab: The United States' first space station, Skylab was visited three times from 1973-1979.
- ✓Soviet Space Program Mir: Mir was the first modular space station. Beginning in 1986, it remained in use for 15 years, first by the Soviet Space Program and later by the Russian space program.
- ✓CNSA Tiangong 1 and 2: China's first experimental space stations launched in 2011 and 2016, respectively.

10. **The Canadian Hydrogen Intensity Mapping Experiment (CHIME) has detected 535 new fast radio bursts during its first year of operation. Consider the following statements with respect to the same.**

1. **FRBs are radio pulses that look like light flashes and last for a fraction of a millisecond, and which can glow anytime.**
2. **CHIME has successfully traced the origin of FRBs to black holes.**
3. **CHIME is located at Dominion Radio Astrophysical Observatory in British Columbia.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 3 only

C. 1 and 3 only

D. 2 and 3 only

Answer: C

Explanation

- Located at the Dominion Radio Astrophysical Observatory in British Columbia in Canada, scientists used the radio telescope Canadian Hydrogen Intensity Mapping Experiment (CHIME) to carry out its maiden sky scanning after it became operational in 2018.
- FRBs are oddly bright flashes of light, registering in the radio band of the electromagnetic spectrum, which blaze for a few milliseconds before vanishing without a trace.
- These brief and mysterious beacons have been spotted in various and distant parts of the universe, as well as in our own galaxy.
- Their origins are unknown and their appearance is highly unpredictable.

11. **Which of the following has been selected by ESA as its next orbiter that will visit Venus sometime in the 2030s?**

A. Venus Express

B. Venera 15

C. EnVision

D. Mariner 10

Answer: C

Explanation

- EnVision will be ESA's next Venus orbiter, providing a holistic view of the planet from its inner core to upper atmosphere to determine how and why Venus and Earth evolved so differently.
- The mission was selected by ESA's Science Programme Committee on 10 June as the fifth medium-class mission in the Agency's Cosmic Vision plan, targeting a launch in the early 2030s.
- It will be an ESA led mission with contributions from NASA.
- It will be launched on an Ariane 6 rocket, the spacecraft will take about 15 months to reach Venus and will take 16 more months to achieve orbit circularisation.

12. Indian Institute of Technology Ropar has developed a first-of-its-kind Internet of Things (IoT) device - AmbiTag. Which of the following correctly defines it?

A. Device used to engrave electronic tags on products for quality assurance.

B. Device that continuously records the temperature of its immediate surroundings from -40°C to 80°C.

C. Device, when installed in a vehicle, monitors its speed and informs emergency when vehicle has a solid impact.

D. None of the above

Answer: B

Explanation

- Indian Institute of Technology in Punjab's Ropar has developed a first-of-its-kind Internet of Things (IoT) device - AmbiTag.
- The institute stated that the device records real-time ambient temperature during the transportation of perishable products, body organs, and blood, vaccines, etc.
- AmbiTag is a USB-shaped device that continuously records the temperature of its immediate surroundings from -40°C to 80°C in any time zone for a full 90 days on a single charge.
- Most of the similar devices available in the international market record data only for a duration of 30 - 60 days. AmbiTag has a range of inbuilt features to customise logging intervals, time zone, and alarms.

13. Agni-P (Prime) missile was successfully test-fired by the Defence Research and Development Organisation (DRDO). Which of the following is/are the characterstics of this missile?

1. Surface-to-air ballistic missile

2. Range of 500 to 1000 km

3. Nuclear capable

Select the correct code

A. 1 and 3 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

Answer: C

Explanation

- A new generation nuclear capable ballistic missile Agni-P (Prime) was successfully test-fired by the Defence Research and Development Organisation (DRDO).
- Agni-P is a new generation advanced variant of Agni class of missiles. It is a canisterised missile with range capability between 1,000 and 2,000 km.
- Various telemetry and radar stations positioned along the eastern coast tracked and monitored the missile.
- Canisterisation of missiles reduces the time required to launch the missile while improving its storage and mobility.
- The longest of the Agni series, Agni-V, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km, has already been tested several times and validated for induction.

14. Consider the following statements with respect to SWASTIIK Technology.

1. **This technology is a platform for early diagnosis of dengue.**
2. **The technique used in SWASTIIK is hydrodynamic cavitation.**
3. **The technology has been developed by CSIR-National Chemical Laboratory (CSIR-NCL) at Pune.**

Which of the above statements is/are correct

A. 1 and 2 only

B. 2 and 3 only

C. 3 only

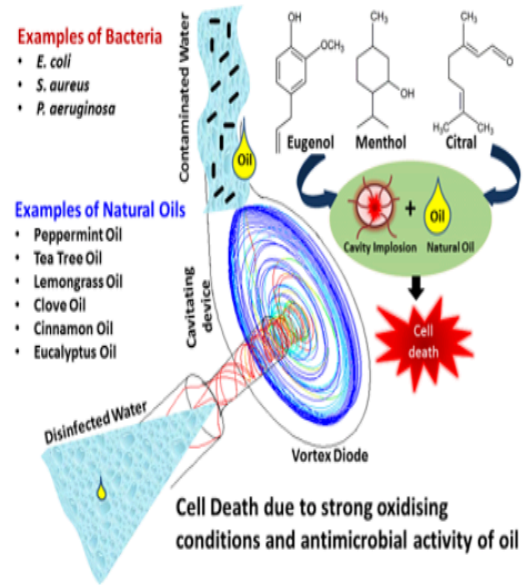
D. 1, 2 and 3

Answer: B

Explanation

- Scientists at CSIR-NCL Pune has developed the novel hybrid technology called SWASTIIK' that involves boiling of a liquid as a result of pressure reduction (cavitation) and also uses natural oils having antimicrobial properties.
- This technology can eliminate harmful bacteria, including antimicrobial-resistant bacteria, economically.
- It not only integrates Indian traditional knowledge of Ayurveda for complete disinfection of water but also may offer possible health benefits of natural oils.

- The technique used ---hydrodynamic cavitation combines chemistry, biology, and chemical engineering along with natural resources in the form of natural oils and plant extracts.
- The novel strategy of SWASTIIK (Safe Water and Sustainable Technology Initiative from Indian Knowledge base) can have significant benefits in terms of providing SAFE WATER and also possible health benefits that can also boost immunity, an important aspect as underlined in the current COVID-19 era.



Mechanism of the new hybrid cavitation technology using natural oils

15. Which of the following countries are the founding members of Global Partnership on Artificial Intelligence?

1. **Canada**
2. **France**
3. **India**
4. **Slovenia**
5. **Russia**

Select the correct code.

A. 1, 3 and 4 only

B. 2, 3 and 5 only

C. 1, 2, 3 and 4 only

D. 1, 2, 3, 4 and 5

Answer: C

Explanation

- The Global Partnership on Artificial Intelligence (GPAI) is a multi-stakeholder initiative which aims to bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities.
- Built around a shared commitment to the OECD Recommendation on Artificial Intelligence, GPAI brings together engaged minds and expertise from science, industry, civil society, governments, international organisations and academia to foster international cooperation.
- 19 international partners have joined together to guide the responsible development and use of artifical intelligence, grounded in human rights, inclusion, diversity, innovation and economic growth:

  ✓ Australia, Brazil, Canada, France, Germany, India, Italy, Japan, Republic of Korea, Mexico, Netherlands, New Zealand, Poland, Singapore, Slovenia, Spain, United Kingdom, United States and European Union.

16. Consider the following statements with respect to Propellants.

1. **The propellant is the chemical mixture burned to produce thrust in rockets and consists of a fuel and an oxidizer.**
2. **Cryogenic propellants contain solids stored at very low temperatures.**
3. **Solid propellant motors can be shutdown during any part of the journey.**

Which of the above statement is/are incorrect?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: C

Explanation

Propellants

- The propellant is the chemical mixture burned to produce thrust in rockets and consists of a fuel and an oxidizer.
- A fuel burns when combined with oxygen producing gas for propulsion. An oxidizer is used that releases oxygen for combination with a fuel.
- Ammonium nitrate, Ammonium dinitramide, Ammonium perchlorate, potassium nitrate are used as oxidizers.
- Propellants are classified into liquid, solid, or hybrid.

Liquid Propellants

- In a liquid propellant rocket, the fuel and oxidizer are stored in separate tanks and are fed through a system of pipes, valves, and turbo pumps to a combustion chamber where they are combined and burned to produce thrust.
- Liquid oxygen (LOX), highly refined kerosene (RP-1), liquid hydrogen, Dinitrogen tetroxide (N2O4), hydrazine (N2H4) are some of the common liquid propellants.

Cryogenic propellants

- Cryogenic propellants are liquefied gases stored at very low temperatures, most frequently liquid hydrogen (LH2) as the fuel and liquid oxygen (LOX) as the oxidizer.
- Hydrogen and oxygen remain liquid at temperatures of -253°C and - 183°C respectively.

Solid Propellants

- Solid propellant consists of a casing filled with a mixture of solid compounds (fuel and oxidizer) which burn at a rapid rate, expelling hot gases from a nozzle to produce thrust.
- When ignited, a solid propellant burns from the center out towards the sides of the casing.
- The shape of the center channel determines the rate and pattern of the burn, thus providing a means to control thrust.
- Unlike liquid-propellant engines, solid propellant motors cannot be shut down. Once ignited, they will burn until all the propellant is exhausted.

17. India imports most of its rare earth needs in finished form from China. Consider the following statements with respect to the same.

1. **The rare earths minerals (REM) are a set of fifteen metallic elements.**
2. **India has the world's third-largest reserves of rare earth elements.**
3. **IREL Limited, a government-owned corporation, has a monopoly over the primary mineral that contains REEs in India.**

Which of the above statements is/are correct?

A. A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 3 only

Answer: D

Explanation

- The rare earth elements (REE) are a set of seventeen metallic elements. These include the fifteen lanthanides on the periodic table plus scandium and yttrium.
- Rare-earth elements (REE) are necessary components of more than 200 products across a wide range of applications, especially high-tech consumer products, such as cellular telephones, computer hard drives, electric and hybrid vehicles, and flat-screen monitors and televisions.
- Significant defense applications include electronic displays, guidance systems, lasers, and radar and sonar systems.
- China today controls nearly 90% of global rare earth production.
- India has the world's fifth-largest reserves of rare earth elements, nearly twice as much as Australia, but it imports most of its rare earth needs in finished form from its geopolitical rival, China.
- India has granted government corporations such as Indian Rare Earths Limited (IREL) a monopoly over the primary mineral that contains REEs: monazite beach sand, found in many coastal states.
- IREL produces rare earth oxides (low-cost, low-reward "upstream processes"), selling these to foreign firms that extract the metals and manufacture end products (high-cost, high-reward "downstream processes") elsewhere.

18. Recently DRDO conducted maiden trial of Python-5 Missile. Which of the following is/are the characteristics of this missile?

1. **Surface to Air Missile**
2. **Developed indigenously**
3. **Can engage enemy aircraft from very short ranges and near beyond visual range.**

Select the correct code.

A. 1 and 2 only

B. 2 only

C. 3 only

D. 1, 2 and 3

Answer: C

Explanation

- Python-5 is a fifth-generation air-to-air missile (AAM) manufactured by Rafael Advanced Defense Systems.
- It is the newest member in the range of Python AAMs. !The missile can engage enemy aircraft from very short ranges and near beyond visual range.
- Python-5 is the most accurate and reliable AAM of the Israeli Air Force and one of the most sophisticated guided missiles in the world.
- Tejas, India's indigenous Light Combat Aircraft, added the 5th generation Python-5 Air-to-Air Missile (AAM) in its air- to-air weapons capability.

19. Consider the following statements with respect to Dipcovan, recently seen in news.

1. **It is a COVID-19 Rapid Antigen Self Test Kit.**
2. **It has a shelf life of 18 weeks.**
3. **It has been developed by Defence Institute of Physiology and Allied Sciences (DIPAS).**
4. **It is approved by the Indian Council of Medical Research (ICMR).**

Which of the above statements is/are correct?

A. 2 and 3 only

B. 1 and 4 only

C. 1, 2 and 4 only

D. 3 and 4 only

Answer: D

Explanation

- Defence Research and Development Organisation has developed a new antibody detection-based kit, that can give the result in 75 minutes and will cost Rs 75.
- The DRDO's Defence Institute of Physiology and Allied Sciences (DIPAS) laboratory has developed the DIPCOVAN kit, which can "detect spike as well as nucleocapsid (S&N) proteins of SARS-CoV-2 virus with a high sensitivity of 97% and specificity of 99%.
- The DIPCOVAN kit has an 18-month shelf life.
- The kit will be very useful for understanding Covid-19 epidemiology and assessing an individual's previous SARS-CoV-2 exposure.
- The Drugs Controller General of India (DCGI), Central Drugs Standard Control Organisation (CDSCO), and the Ministry of Health and Family Welfare granted regulatory approvals to manufacture the kit for sale and distribution.

20. Consider the following statements:

1. **The Earth's magnetic field has reversed every few hundred thousand years.**
2. **When the Earth was created more than 4000 million years ago, there was 54% oxygen and no carbon dioxide.**
3. **When living organisms originated, they modified the early atmosphere of the Earth.**

Which of the statements given above is/ are correct?

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: C

Explanation

- On the scale of a million years, the earth's magnetic fields has been found to reverse its direction. Basalt contains iron, and basalt is emitted during volcanic activity.
- The little iron magnets inside it align themselves parallel to the magnetic field at that place as the basalt cools and solidifies.
  !Geological studies of basalt containing such pieces of magnetised region have provided evidence for the change of direction of earth's magnetic field, several times in the past.
- There are three stages in the evolution of the present atmosphere.
- The first stage is marked by the loss of primordial atmosphere.
- In the second stage, the hot interior of the earth contributed to the evolution of the atmosphere.
- Finally, the composition of the atmosphere was modified by the living world through the process of photosynthesis.
- The early atmosphere largely contained water vapour, nitrogen, carbon dioxide, methane, ammonia and very little of free oxygen.
- One of the processes that changed Earth's early atmosphere was photosynthesis.
- About 2.4 billion years ago, a type of organism called cyanobacteria evolved on the early Earth and began carrying out photosynthesis.
- Photosynthesis uses carbon dioxide and energy from the Sun to produce sugar and oxygen.
- The cyanobacteria were very simple organisms but performed an important role in changing Earth's early atmosphere.

- They carried out photosynthesis to produce the materials they needed to grow. They gave off oxygen to the atmosphere as they did this.

21. Consider the following statements.

1. **It is a female spacefaring humanoid robot developed by the Indian Space Research Organisation to function on- board the Gaganyaan, a crewed orbital spacecraft.**
2. **It is equipped with a head, two arms, and a torso and is built to mimic crew activity inside the crew module of Gaganyaan.**

Based on the above statements identify the ISRO's project.

A. NISAR

B. Rohini

C. Vyommitra

D. None of the above

Answer: C

Explanation

- Vyommitra is a female humanoid - something that has an appearance resembling a human but is robotic - built by ISRO.
- She has been built for ISRO's first unmanned Gaganyaan mission.
- Vyommitra can monitor module parameters, alert astronauts and perform life support operations. It will simulate the exact human functions in space; it will check whether the systems are right.
- This will be very useful to simulate as if a human is flying.
- The Gaganyan mission, scheduled for December 2021, is ISRO's first human space mission. Gaganyan will undertake two unmanned space flights before the manned mission.