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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

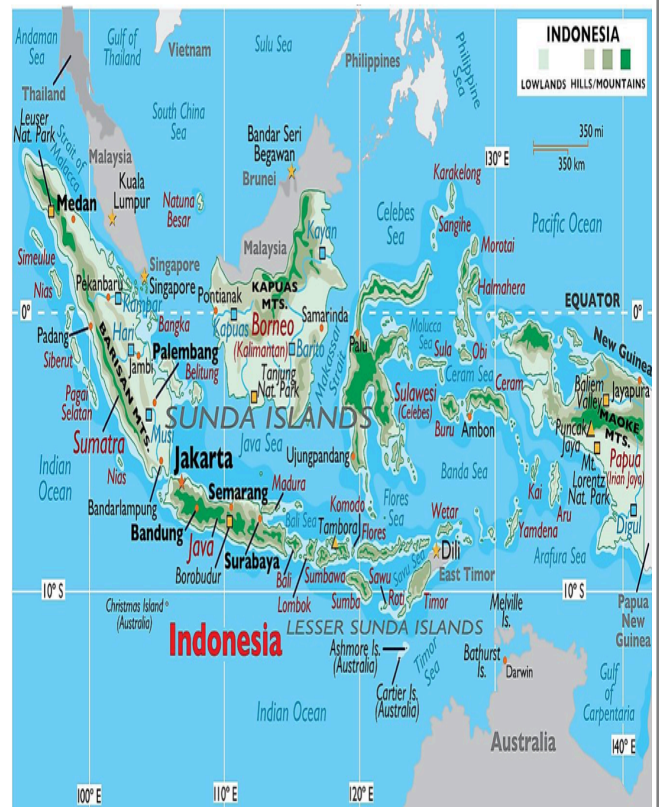
- Sulu sea is a body of water in the south-western area of the Philippines separated from the South China Sea in the northwest by Palawan and from the Celebes Sea in the southeast by the Sulu Archipelago.
- Borneo is found to the southwest and Visayas to the northeast.

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):

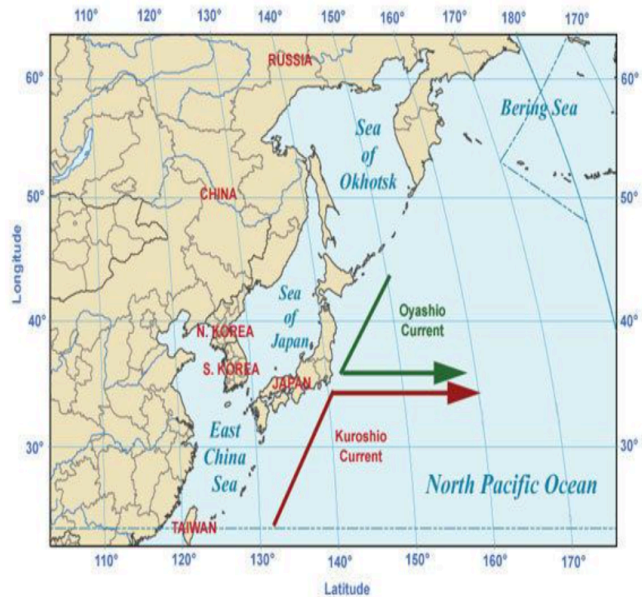
- A. 1 only
- B. 2 only
- C. Both 1 and 2

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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- 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.



2. History & Culture

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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 Shah Tughlaq, 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.

3. Polity & Governance

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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 Information Monitoring, 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.

4. Economy

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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

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

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

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.

5. Environment

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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.**

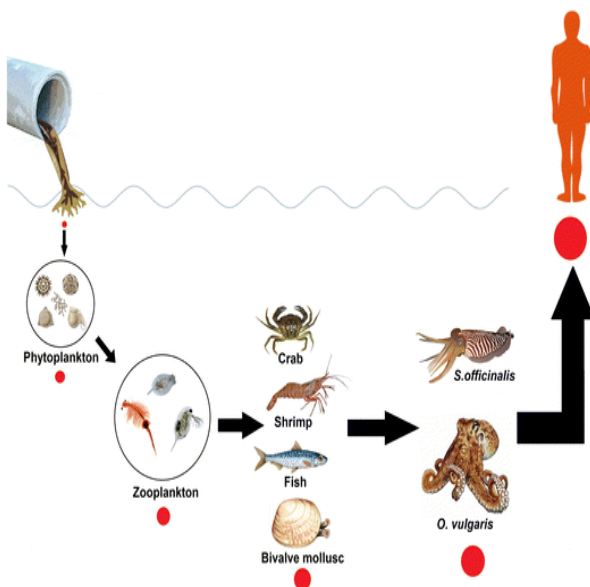
Select the correct code.

- 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. Science & Technology

Click [here](#) to watch the following questions on YouTube

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

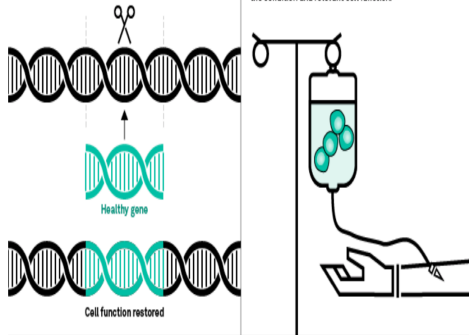
Explanation

- 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.

Gene therapy vs. cell therapy

Gene therapy involves the introduction, removal or change in a person's genetic material to treat or cure a disease. The genetic content is usually transferred via carrier or vector to the appropriate cells of the body.

Cell therapy involves the transfer of intact, live cells into a patient to treat or cure a disease. The cells may be the patient's own (autologous cells) or that of a donor (allogeneic cells). The type of cell administered depends on the condition and relevant cell function.



Some protocols use **both** gene therapy and cell therapy, during which stem cells are genetically modified in tissue culture to express a new gene, expanded to sufficient numbers and then returned to the patient.

Credit: Cat Weeks
Source: American Society of Gene and Cell Therapy

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.