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Of

**May
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1. Geography

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

1. Find the correct statements for Isotherms?

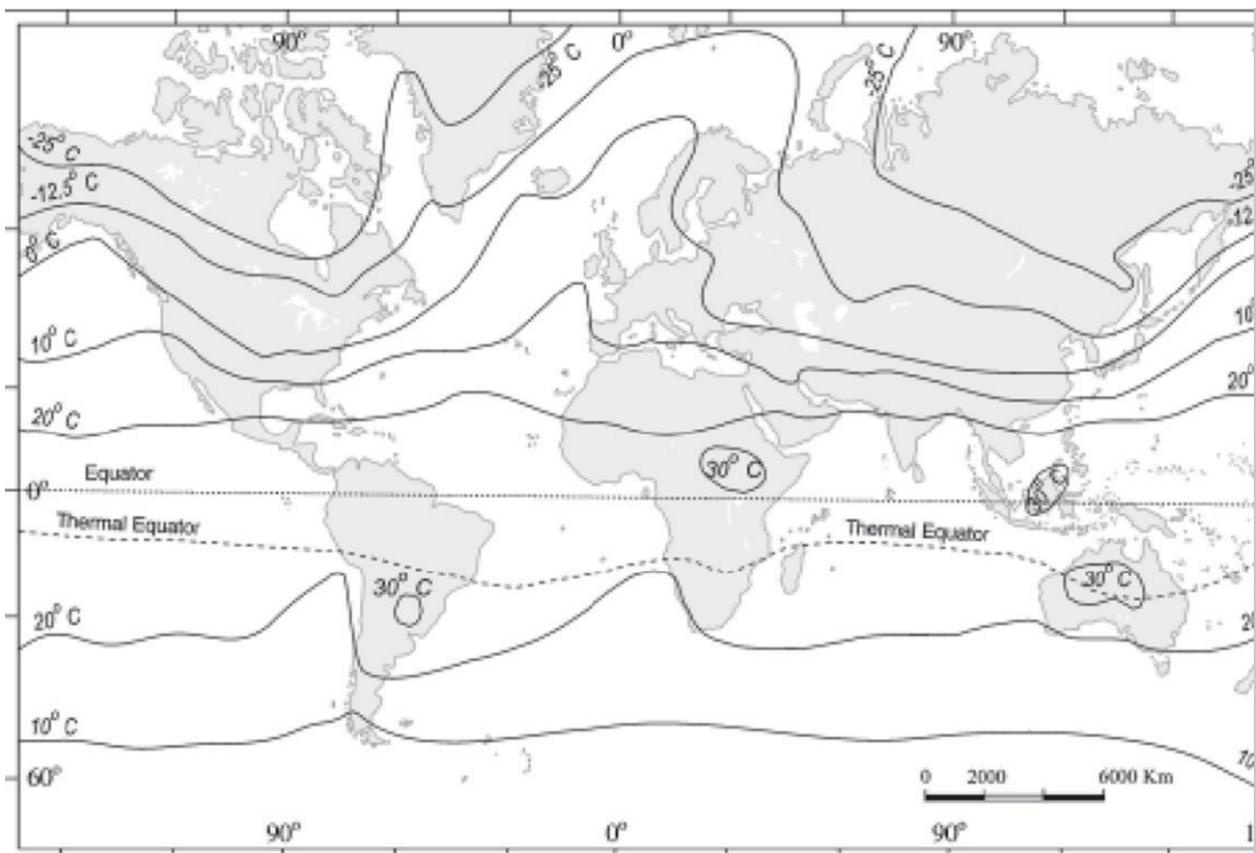
1. Closely spaced isotherms indicate rapid change of temperature.
2. Generally, they are straight but bent at the junctions of continents and oceans.

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation

- Isotherms: A line on a map connecting points having the same temperature at a given time or on average over a given period.
- Closely spaced isotherms indicate rapid change of temperature and vice versa.
- Generally they are straight but bent at the junctions of continents and oceans due to land water contact.



2. Identify the correct statements:

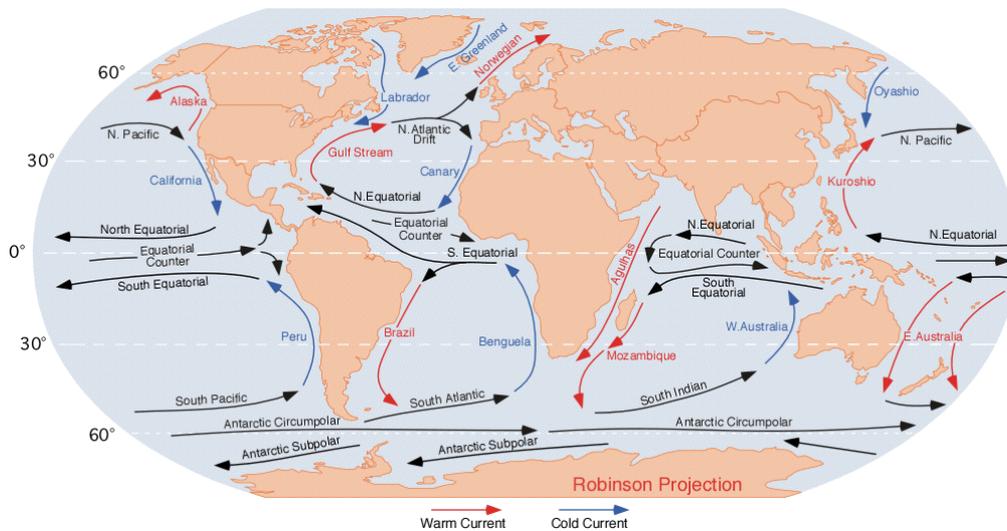
1. Coral reefs are generally present on the western coasts of continents because Western coast of continents have cold currents.
2. They are most commonly found at shallow depths in tropical waters, but deep water and cold-water coral reefs exist on smaller scales in other areas.

- A. Only 1
B. Both 1 and 2
C. Only 2
D. Neither 1 nor 2

Answer: C

Explanation

- Coral reefs do not flourish where there are cold currents because of the upwelling of the cold water from depths that cools the warm surface water.
- They are most commonly found at shallow depths in tropical waters, but deep water and cold-water coral reefs exist on smaller scales in other areas.



3. Which of the following is/are true in context with Cropping Intensity?

1. Higher cropping intensity implies higher productivity per unit of arable land during one cropping season.
2. The present cropping intensity of 136% in India has registered an increase of only 25% since independence.

Which of the given statements are correct?

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

D. Neither 1 nor 2

Answer: B

Explanation

- Cropping intensity refers to raising of a number of crops from the same field during one agricultural year; it can be expressed through a formula- $\text{Cropping Intensity} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$.
- For instance, suppose a farmer owns five hectares of land, and gets the crop from these five acres during the kharif season and, again, during the rabi season he raises a crop from three hectares. He, thus, gets the effective produce from eight hectares, although he owns only five hectares physically. Had he raised crop from five hectares totally, his cropping intensity would have been 100 per cent, while now it is 160 per cent.
- Thus, higher cropping intensity means that a higher proportion of the net sown area is being cropped more than once during one agricultural year. This also implies higher productivity per unit of arable land during one agricultural year.
- Around 51% of India's geographical area is already under cultivation as compared to 11% of the world average.
- The present cropping intensity of 136% has registered an increase of only 25% since independence.

4. Minsk Group has been associated with

- A. Nagorno-Karabakh region
- B. Domeira Islands
- C. Kuril Islands
- D. None of the above

Answer: A

Explanation

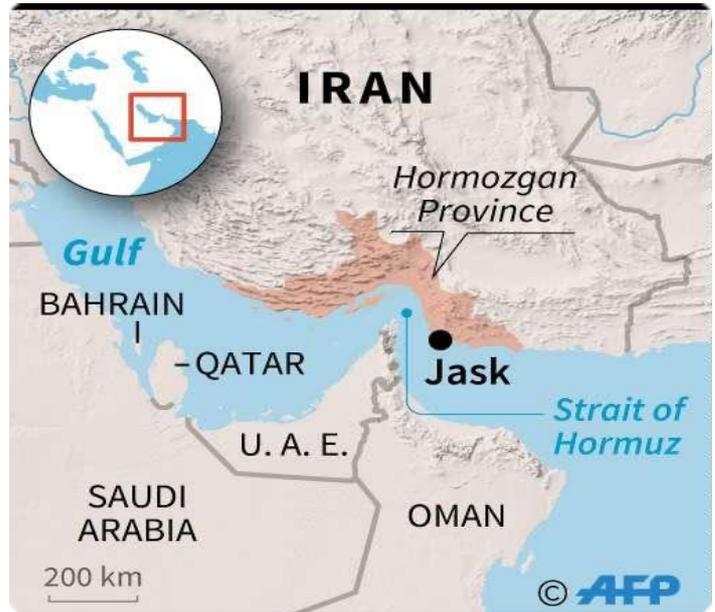
- The OSCE Minsk Group was created in 1992 by the Conference on Security and Cooperation in Europe (CSCE), (now Organization for Security and Co-operation in Europe (OSCE)) to encourage a peaceful, negotiated resolution to the conflict between Azerbaijan and Armenia over Nagorno-Karabakh.

5. Find the incorrect one

- A. Pratas Islands : South China Sea
- B. Bandar e jask : Iran
- C. Port Said : Suez Canal
- D. Manus Islands : Atlantic Ocean

Answer: D

Explanation



2. History

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

1. The word 'Hindu' as reference to the people of Hind (India) was first used by : (1995) Select the correct answer -

- A. The Greeks
- B. The Romans
- C. The Chinese
- D. The Arabs

Answer: D

Explanation

Various Names in Ancient India

- Meluha - Oldest name used in the association with the Indian subcontinent was Meluha that was mentioned in the texts of ancient Mesopotamia in 3 millennium BCE, to refer to the Indus Valley Civilisation.
 - ✓ The records of Sumerian and Akkadian texts also mention the imports from Meluha such as timbers, carnelian, Ivory etc. which also matches with the resources of Harappan realm.
- Bharat/Bharatvarsha - The roots of this name are traced to Puranic literature, and to the Hindu Epic Mahabharata.
 - ✓ Bharat at that times referred to the "supraregional and subcontinental territory where the Brahmanical system of society prevails".
 - ✓ Geographically, the Puranas mentioned Bharata to be situated between the 'sea in the south and the abode of snow in the north.
- Jambudvipa - The name 'Jambudvipa' or the 'land of the Jamun trees' has also appeared in several Vedic texts, and is still used in a few Southeast Asian countries to describe the Indian subcontinent.
- Aryavarta' - as mentioned in the Manusmriti, referred to the land occupied by the Indo-Aryans in the space between the Himalayas in the north and the Vindhya mountain ranges in the south

Nabhivarsa - Jain literature

- Hindustan - The name 'Hindustan' was the first instance of a nomenclature having political undertones. It was first used when the Persians occupied the Indus valley in the seventh century BCE.
- Hindu was the Persianised version of the Sanskrit Sindhu, or the Indus river, and was used to identify the lower Indus basin.
- From the first century of the Christian era, the Persian suffix, 'stan' was applied to form the name 'Hindustan'.
- Indus- The Greeks who had acquired knowledge of 'Hind' from the Persians, transliterated it as 'Indus'.

✓ By the time the Macedonian ruler Alexander invaded India in the third century BCE, 'India' had come to be identified with the region beyond the Indus.

2. In Sanskrit plays written during the Gupta Period women and Sudras speak - (1995) Select the correct answer using the code below -

- A. Sanskrit
- B. Prakrit
- C. Pali
- D. Saurseni

Answer: B

Explanation

Language in Use during the Gupta Period

- In Sanskrit plays written during the Gupta period women and sudras speak Prakrit.
- At that there was a division of class in the Gupta Society where women and Sudras spoke Prakrit and the Elite spoke Sanskrit.
- The poetry and prose in Sanskrit were encouraged on a lavish scale through royal patronage Example- Kalidasa was the outstanding writer who wrote famous works of Shakuntalam, Meghadutam etc.
- During the Gupta age -Bhasa, Sudraka, Kalidasa, Visakhadatta and Bharavi flourished.
- Literature in Prakrit also had its patronage outside the court circle and the Prakrit literature was mainly written by Jainas.

3. The term 'Yavanpriya' in Ancient Sanskrit texts denoted .Select the correct answer using the code below -

- A. A fine variety of Indian Muslin
- B. Ivory
- C. Damsels sent to Greek court for dance performance
- D. Pepper

Answer: D

Explanation

Yavanapriya

- Yavanas was the term which was used to denote Indo-Greeks/Romans. They liked pepper, that is why pepper is known as Yavanapriya.
- They liked pepper very much and hence the name 'Yavanapriya'.

4. The concept of Anuvrata was advocated by (1995) - Choose the correct statement -

- A. Mahayana Buddhism
- B. Hinayana Buddhism
- C. Jainism
- D. The Lokyata School

Answer: C

Explanation

Jainism

- The path or Dharma (truth, teaching) that Mahavira advocated was one of strict asceticism, renunciation and moral cultivation. He instructed his followers to cultivate the three jewels of:
 - ✓ Right belief
 - ✓ Right knowledge
 - ✓ Right conduct
- Emerging from these three jewels and relating to right conduct are the five abstinences, which are the vows of:
 - ✓ Ahimsa (non-violence)
 - ✓ Satya (truthfulness)
 - ✓ Asteya (not stealing)
 - ✓ Aparigraha (non-acquisition)
 - ✓ Brahmacharya (chaste living)
- Emerging There are two forms of the five vows:
 - ✓ Mahavrata: the 5 great vows followed by Jain monks and nuns.
 - ✓ Anuvrata: the lesser vows followed by Jain lay people. These are less strict version of the great vows.

5. According to Mimamsa School of Philosophy, liberation is possible by means of - Choose the correct statement -

- A. Jnana
- B. Bhakti
- C. Yoga
- D. Karma

Answer: D

Explanation

Mimamsa School of Philosophy

- In literal terms it means - Reflection or Critical Investigation.
- It is probably the earliest of all the 6 schools of Indian Philosophy.
- It is fundamental to Vedanta, another of the six systems, and has deeply influenced the formulation of Hindu Law.
- The aim of Mimamsa is to give rules for the interpretation of the Vedas, and to provide a philosophical justification for the observance of Vedic rituals.
- It is basically concerned with earlier parts of the Vedas (called Karmakanda).
- It is also referred to by the name of Purva Mimamsa (Prior Study) or Karma- Mimamsa.
- Vedanta which deals with the latter portion of the Vedas Literature called Upnishads is called Uttar Mimamsa or Posterior Study or Jnana Mimamsa (Study of Knowledge)

3. Polity & Governance

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1. Which of the following statements are correct about National Capital Territory Amendment Act 2021?

1. It amends the Sixty-ninth Constitution Amendment Act, pertaining to the powers and function of the Delhi government and the Lieutenant Governor.
2. The Amendment allows the Legislative Assembly to make Rules to regulate the procedure and conduct of business in the Assembly.

- A. 1 Only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- The Government of National Capital Territory of Delhi (Amendment) Act 2021 amends the Government of National Capital Territory of Delhi Act, 1991 which was provided to provide details to the sixty ninth constitution amendment act that added Article 239 AA.
- It mends certain powers and responsibilities of the Legislative Assembly and the Lieutenant Governor. The Amendment provides that the term “government” referred to in any law made by the Legislative Assembly will imply Lieutenant Governor (LG).
- While the 1991 Act allowed the Legislative Assembly to make Rules to regulate the procedure and conduct of business in the Assembly, the amendment provides that such Rules must be consistent with the Rules of Procedure and Conduct of Business in the Lok Sabha.

2. Which of the following is correct about the Arbitration & Conciliation (Amendment) Act, 2021?

1. It allows that stakeholder parties to seek an unconditional stay on enforcement of arbitral awards in cases where the arbitration agreement or contract is induced by fraud or corruption.
2. It provides for the 8th Schedule of the Act that contains the necessary qualifications for accreditation of arbitrators.

- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- The seeks to amend the Arbitration and Conciliation Act, 1996 so as to (i) enable automatic stay on awards in certain cases and (ii) specify by regulations the qualifications, experience and norms for accreditation of arbitrators.
- Seeks to ensure that stakeholder parties can seek an unconditional stay on enforcement of arbitral awards in cases where the “arbitration agreement or contract is induced by fraud or corruption.”
- Also does away with the 8th Schedule of the Act that contained the necessary qualifications for accreditation of arbitrators. It further added a proviso in Section 36 of the Arbitration Act and will come into effect retrospectively from October 23, 2015.
- As per this amendment, if the Court is satisfied that a prima facie case is made out that the arbitration agreement or contract which is the basis of the award was induced or effected by fraud or corruption, it will stay the award unconditionally pending disposal of the challenge made to the award under Section 34.

3. Which of the following statements are incorrect about the Mines and Minerals (Development and Regulation) Amendment Act, 2021?

1. It empowers the central government to reserve any mine to be leased through an auction for a particular end-use.
 2. It allows captive mines, other than atomic minerals, to sell up to 50% of their annual mineral production in the open market after meeting their own needs.
- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- The Mines and Minerals (Development and Regulation) Amendment Act, 2021 amends the Mines and Minerals (Development and Regulation) Act, 1957. The Act regulates the mining sector in India.
- The 1957 Act empowers the central government to reserve any mine (other than coal, lignite, and atomic minerals) to be leased through an auction for a particular end-use (such as iron ore mine for a steel plant). Such mines are known as captive mines. The Amendment provides that no mine will be reserved for particular end-use.
- The amendment provides that captive mines (other than atomic minerals) may sell up to 50% of their annual mineral production in the open market after meeting their own needs. The central government may increase this threshold through a notification. The lessee will have to pay additional charges for mineral sold in the open market.

4. Which of the following is correct about the Code on Occupational Safety, Health and Working Conditions, 2020?
1. The Code is applicable on all all establishments where any hazardous activity is carried out regardless of the number of workers.
 2. The Code fixes the maximum daily work hour limit at eight hours per day.
 3. The Code prohibits the employment of women for undertaking dangerous operations.
- A. 2 only
B. 1 and 2 only
C. 3 only
D. 2 and 3 only

Answer: B

Explanation

- The Code on Occupational Safety, Health and Working Conditions, 2020 is one of the three codes that seek to consolidate 29 central laws on labour.
- The 2020 Code unlike its 2019 version, includes all establishments where any hazardous activity is carried out regardless of the number of workers.
- While the 2019 Bill allowed the appropriate government to notify the maximum daily work hours for workers, the 2020 Code fixes the maximum limit at eight hours per day.
- The 2019 Bill allowed the appropriate government to prohibit employment of women for undertaking dangerous operations. The 2020 Code however, provides that women will be entitled to be employed in all establishments for all types of work. It also provides that in case they are required to work in hazardous or dangerous operations, the government may require the employer to provide adequate safeguards prior to their employment.

5. Which one of the following is correct about the National Bank for Financing Infrastructure and Development (NaBFID) Act, 2021?
1. The Act establishes the National Bank for Financing Infrastructure and Development (NBFID) with both financial as well as developmental objectives.
 2. DFIs along with accepting deposits from people, provide long-term finance for such segments of the economy where the risks involved are beyond the acceptable limits of commercial banks and other ordinary financial institutions.
- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- The National Bank for Financing Infrastructure and Development Act, 2021 seeks to establish the National Bank for Financing Infrastructure and Development (NBFID) as the principal development financial institution (DFIs) for infrastructure financing.
- DFIs are set up for providing long-term finance for such segments of the economy where the risks involved are beyond the acceptable limits of commercial banks and other ordinary financial institutions. Unlike banks, DFIs do not accept deposits from people.
- They source funds from the market, government, as well as multi-lateral institutions, and are often supported through government guarantees.
- NBFID will be set up as a corporate body with authorised share capital of one lakh crore rupees. Shares of NBFID may be held by: (i) central government, (ii) multilateral institutions, (iii) sovereign wealth funds, (iv) pension funds, (v) insurers, (vi) financial institutions, (vii) banks, and (viii) any other institution prescribed by the central government. Initially, the central government will own 100% shares of the institution which may subsequently be reduced up to 26%.
- NBFID will have both financial as well as developmental objectives. Financial objectives will be to directly or indirectly lend, invest, or attract investments for infrastructure projects located entirely or partly in India. Central government will prescribe the sectors to be covered under the infrastructure domain. Developmental objectives include facilitating the development of the market for bonds, loans, and derivatives for infrastructure financing.

4. Economy

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1. Which of the following statements are correct about Compulsory Licensing?

1. Compulsory licenses are authorizations given to a third-party by the Controller General to make, use or sell a particular product or use a particular process which has been patented, without the need of the permission of the patent owner.
 2. This concept is recognised at national level only as there is no international mention of it.
- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: A

Explanation

- CL is the grant of permission by the government to entities to use, manufacture, import or sell a patented invention without the patent-owner's consent.
- Patents Act (of India) also deals with CL.
- CL is permitted under the WTO's TRIPS (IPR) Agreement provided conditions such as 'national emergencies, other circumstances of extreme urgency and anti-competitive practices' are fulfilled.
- CL is problematic for foreign investors who bring technology as they fear misuse of CL to replicate their products.
- Compulsory licensing is a special provision granted to governments when the TRIPS agreement was moved forward to regulate IP regime throughout the world.
- It grants governments powers to USE, MANUFACTURE or SELL a patented invention.
The application for a compulsory license can be made any time after 3 years from the date of sealing of a patent.
- It is permitted only during:
 - ✓ National emergency
 - ✓ Extreme urgency
 - ✓ Ensuring supply of essential medicines
 - ✓ In India, it can also be used to promote Green Technology
- In fact the generic medicine industry of India more or less thrives on this provision. It is given under Indian Patent Act, 1970.

2. Which of the following statements about Ways and Means Advances (WMA) are correct?

1. WMA is a mechanism used by the RBI to fund centre to help it to tide over temporary mismatches in cash flows.
2. WMA limits are revised periodically and the previous utilisation rates are considered while determining revised limits.
3. The interest levied for special WMAs could be lower than the repo rate due to the backing of government securities.

- A. 3 only
B. 1 and 3 only
C. 2 and 3 only
D. All of the above

Answer: C

Explanation

- WMA is a mechanism used by the RBI to fund States to help them to tide over temporary mismatches in cash flows.
- When managing money, we know that cash outflows often overshoot inflows. When businesses face this, they approach banks to get working capital loans.
- But State governments in India either go for market borrowings by issuing securities or seek short-term funding from the RBI.
- Borrowings through WMA are to be repaid within three months and usually offered at the repo rate.
- There are two types of WMAs – normal Ways and Means Advances; and Special Drawing Facilities against government securities held by States as collateral.
- Any amount drawn by a State in excess of the normal WMA is an overdraft. There is a State-wise limit for the funds that can be availed via WMA.
- These limits depend on many factors, including total expenditure, revenue deficit and fiscal position of the State.
- WMA limits are revised periodically and the previous utilisation rates are considered while determining revised limits.
- The rate of interest applicable for normal WMA funding from RBI is the repo rate, while overdrafts are given at repo plus 2 per cent respectively.
- The interest levied for special WMAs could be lower than the repo rate due to the backing of government securities.
- A look back at the usage of WMA reveals that while few States availed WMA/ overdrafts from the RBI frequently, some resorted to WMA only occasionally.
- Recently, as a part of its Stimulus 2.0 to deepen the availability of credit, India's Central bank recently announced an increase in the Ways and Means Advances (WMA) limits to States.

3. Which of the following statements are correct about Agriculture Infrastructure Fund?

1. It is a Centrally Sponsored Scheme meant for setting up storage and processing facilities, which will help farmers, get higher prices for their crops.
2. Under the scheme, Rs. 1 Lakh Crore will be provided by banks and financial institutions as loans with interest subvention of 3% per annum.
3. It will provide credit guarantee coverage under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) for loans up to Rs. 2 Crore.

- A. 2 and 3 only
 B. 1 and 3 only
 C. 1 and 2 only
 D. All of the above

Answer: A

Explanation

- It is a Central Sector Scheme meant for setting up storage and processing facilities, which will help farmers, get higher prices for their crops.
- It will support farmers, PACS, FPOs, Agri-entrepreneurs, etc. in building community farming assets and post-harvest agriculture infrastructure.
- These assets will enable farmers to get greater value for their produce as they will be able to store and sell at higher prices, reduce wastage and increase processing and value addition.
- The AIF is a medium – long term debt financing facility for investment in viable projects for post-harvest management infrastructure and community farming assets through interest subvention and credit guarantee.
- The duration of the scheme shall be from FY2020 to FY2029 (10 years).

PM Modi Launches Agriculture Infrastructure Fund

- To provide debt financing facility** for post-harvest management Infrastructure & community farming assets
- Corpus of ₹1 lakh crore** for FPOs, SHGs, PACS*, Startups, Agri-entrepreneurs, for other farm processing-based activities
- Interest subvention of 3% per annum** up to ₹2 crore for a max. period of 7 years
- Moratorium for repayment from **6 months up to 2 yrs**
- Scheme to be implemented** from August 2020

#AatmaNirbharKrishi *Primary Agri Credit Societies Date: 8 August, 2020

- Under the scheme, Rs. 1 Lakh Crore will be provided by banks and financial institutions as loans with interest subvention of 3% per annum.
- It will provide credit guarantee coverage under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) for loans up to Rs. 2 Crore.

4. Which of the following statements about PM CARES Fund are correct?

- 1. It was set up as a Public charitable trust.**
- 2. Prime Minister is the ex-officio Chairman of the PM CARES Fund.**

- A. 1 only
 B. 2 only
 C. Both 1 and 2
 D. Neither 1 nor 2

Answer: C

Explanation

- PM-CARES was set up as a public charitable trust with the trust deed registered on March 27, 2020.
- It can avail donations from the foreign contribution and donations to fund can also avail 100% tax exemption.
- PM-CARES is different from the Prime Minister’s National Relief Fund (PMNRF)
- Prime Minister is the ex-officio Chairman of the PM CARES Fund and Minister of Defence, Minister of Home Affairs and Minister of Finance, Government of India are ex-officio Trustees of the Fund.
- Recently, The PM CARES Fund has approved allocation of funds for setting up 551 Pressure Swing Adsorption medical oxygen generation plants at public health facilities across the country.

	PM CARES FUND	PMNRF Fund
Full form	Prime Minister’s Citizen Assistance and Relief in Emergency Situations Fund	Prime Minister National Relief Fund
Established	2020	1948
Used for	To undertake assistance relating to a public health emergency calamity or distress either man-made or natural, including the creation of healthcare or pharmaceutical facilities, funding relevant research or any other type of support.	To provide immediate relief to families of those killed in natural calamities like floods, cyclones and earthquakes, etc. and to the victims of the major accidents and riots
Headed by	Prime Minister	Prime Minister
Members	Defence Minister, Home Minister and Finance Minister and three eminent persons nominated by PM in relevant fields	Administered on an Honorary basis by Joint Secretary to the Prime Minister as Secretary of the fund.
Contributions	voluntary contributions from individuals/organizations and does not get any budgetary support	Consists entirely of public contributions and does not get any budgetary support
Income Tax	It would qualify for 80G benefits for 100% exemption under the Income Tax Act, 1961	Exempt under the Income Tax Act, 1961 under Section 10 and 139 for return purposes
CSR	Contributions can be counted against a company’s corporate social responsibility (CSR) obligations.	Contributions can be counted against a company’s corporate social responsibility(CSR) obligations under companies Act,2013
Foreign Donations	Accepts Foreign Donations and exempted from the Foreign Contribution (Regulation) Act, 2010	It has also received foreign contributions as a public trust since 2011.

5. Which of the following is/are part of 'Production Tax'?

1. Stamps and goods registration fees
2. Goods and services tax
3. Tax on profession

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 2 only

Answer: C

Explanation

- Production taxes or production subsidies are paid or received with relation to production and are independent of the volume of actual production.
- Some examples of production taxes are land revenues, stamps and registration fees and tax on profession.
- Some production subsidies include subsidies to Railways, input subsidies to farmers, subsidies to village and small industries, administrative subsidies to corporations or cooperatives, etc.
- Product taxes or subsidies are paid or received on per unit of product.
- Some examples of product taxes are excise tax, sales tax, service tax and import and export duties. Product subsidies include food, petroleum and fertilizer subsidies, interest subsidies given to farmers, households, etc. through banks.

5. Environment

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1. An ecological succession that started life on newly exposed coastal sand is termed as

- A. Lithosere
- B. Hydrosere
- C. Psammosere
- D. Halosere

Answer: C

Explanation

- A psammosere is an ecological succession that started life on newly exposed coastal sand.
- In addition, sand dune systems are the dynamic elements of the landscape and they're the most common psammoseres.
- Also, what defines the growth of the sand dunes is the interrelationship between the sand and the vegetation.
- In a psammosere, the organisms nearest to the ocean are pioneer species, salt-tolerant species.
- For instance, littoral algae and glasswort with marram grass stabilize the dunes. The natural successions of dunes are determined by the progressing inland.
- For example, as the land becomes more compact and has better soils, the drainage slows down, the proportion of seashell fragments diminishes, pH drops and the total amount of humus augments.
- Furthermore, birch, willow or rowan are typically the first trees that emerge from the ground.
- With time, however, they will get replaced by slow-growing, bigger trees such as oak and ash.
- This is also known as the climax community, explained as the point where a plant succession does not evolve any further because it has reached equilibrium with its surroundings, peculiarly the climate.
- In a flawless coastal psammosere model, the pH of the soil is regularly alkaline/neutral with a pH of 7.0/8.0 at the seaward border of the sand dune, where shell fragments spare a meaningful component of the sand.
- On top of that, at the climax, mature podsols develops with a pH of 3.5-5.4, followed by a tracking inland across the dunes with a pH of 5.0/4.0.

2. Which of the following characteristics are related to persistent Organic Pollutants (POP'S)?

1. Synthetically produced organic chemicals
2. Potential for long range Transport
3. Ability to Biomagnify and bio accumulate in the ecosystem

- A. 1 and 2 only
- B. 3 only
- C. 2 and 3 only
- D. All of the above

Answer: D

Explanation

- Persistent organic pollutants (POPs) are organic compounds that, to a varying degree, resist photolytic, biological and chemical degradation.
- Due to persistence, the pollutants are capable of long-range transport, bioaccumulation and biomagnification.
- Most of the POPs include pesticides, Industrial solvents, polyvinyl chloride, and pharmaceuticals.
- The Other words used are PBTs (Persistent, Bioaccumulative and Toxic) or TOMPs (Toxic Organic Micro Pollutants.)
- The persistent Organic Pollutants generally have -
 - ✓ Low Water solubility
 - ✓ High lipid solubility - This property leads them to bioaccumulation in animal tissues.
 - ✓ Semi volatile - The property of their physico-chemical characteristics that permit these compounds to occur either in the vapour phase or adsorbed on atmospheric particles, thereby facilitating their long range transport through the atmosphere
 - ✓ The POPs with higher Molecular weights are more toxic and more persistent generally.
 - ✓ Most of the POPs are halogenated and many have Chlorine as a component.

3. Which among the following are the outcomes of Eutrophication?

1. Algal Bloom
 2. Depletion of Coral Reefs
 3. Formation of Swamps
- A. 1 and 3 only
 - B. 1 only
 - C. 2 and 3 only
 - D. 1, 2 and 3

Answer: D

Explanation

- Eutrophication derives from the Greek word eutrophos, meaning nourished or enriched.

- Eutrophication refers to the addition of artificial or non- artificial substances, such as nitrates and phosphates, through fertilizers or sewage, to a fresh water system.
- It can be anthropogenic or natural. It leads to an increase in the primary productivity of the water body or “bloom” of phytoplankton.
- The overgrowth causes the loss of oxygen in the water leading to severe reductions in fish and other animal populations.

4. Which of the following Ramsar sites is a man made lake?

- A. Rudrasagar Lake
- B. Bhoj Wetland
- C. Chilika Lake
- D. Loktak Lake

Answer: B

Explanation

Bhoj Wetland

- The Bhoj Wetland consists of two lakes located in the city of Bhopal.
- The two lakes are the Bhojtal and the Lower Lake, which lie to the west of the city centre.
- It is a manmade reservoir.
- A total of more than 20,000 birds are observed annually.
- The Upper Lake acts as the lifeline of the city supplying 40% of its potable water.
- White storks, black-necked storks, bar-headed geese, spoonbills, etc., that have been rare sightings in the past, have started appearing.
- A recent phenomenon is the gathering of 100-120 sarus cranes in the lake. The largest bird of India, the sarus crane (*Grus antigone*) is known for its size, majestic flight and lifetime pairing.

5. Which of the following can be an effective source of blue Carbon sink in preventing Ocean acidification?

- 1. Sea Grass
- 2. Marshes
- 3. Mangroves

- A. 1, 2 and 3
- B. 1 and 3 only
- C. 2 and 3 only

D. 1 and 2 only

Answer: A

Explanation

- Carbon Sequestration is the process of capture and long-term storage of carbon dioxide, either from the atmosphere or directly from the point of production (e.g. carbon capture and storage).
- When this process is involved in coastal ecosystem through the mangrove forests, seagrass meadows or intertidal salt marshes, then the stored carbon is known as 'Blue Carbon'.
- Carbon is stored in the soils or the sediments below the vegetation.
- As compare to the rates of terrestrial carbon sequestration, coastal ecosystem sequestration is lower and the deposition of carbon dioxide can continue over a span of 1000 years but it can store carbon for. Along period. Earth surface is covered by two third of water.
- Hence, Coastal ecosystem becomes more relevant for carbon sink.
 - ✓ It reduces the negative impact of climate change because coastal ecosystem can trap carbon for long periods of time.
 - ✓ It assimilates pollutants like heavy metals, nutrients and suspended matter which will be helpful for improving water quality.
 - ✓ It prevents eutrophication (Excessive nutrients in a lake or other body of water, usually caused by runoff of nutrients).
 - ✓ It provides jobs and income to local people by improving the health of fisheries ecosystem.
 - ✓ It will improve tourism industry, as well as materials for building or ingredients for medicines.
 - ✓ it can store carbon for a long period.

6. Science & Technology

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1. Which of the following statements about Python-5 Missile are correct?

1. It is 5th generation Surface-to-Air Missile (SAM).
2. The missile comes with a 5G imaging seeker.
3. It features a new electro-optical infrared seeker with high off-boresight capability.

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above

Answer: B

Explanation

- DRDO has conducted the maiden trial of Python-5 Missile from Tejas aircraft
- It is 5th generation Air-to-Air Missile (AAM) which can be launched from very short to beyond visual ranges with greater kill probability, excellent resistance to countermeasures, irrespective of evasive target manoeuvres or deployment of countermeasures.
- The missile comes with a 5G imaging seeker.
- It is manufactured by Rafael Advanced Defense Systems (Israel).
- It incorporates the aerodynamic airframe of the Python-4 missile and also retains the inertial navigation system (INS), rocket motor, warhead and proximity fuse of its predecessor.
- It is a dual use missile suitable for air-to-air and surface-to-air missions.
- It integrates a fifth-generation imaging seeker, modern software, advanced infrared counter-countermeasure (IRCCM) and flight control systems.
- It features a new electro-optical infrared seeker with high off-boresight capability.

2. Indian Army's First Green Solar Energy harnessing plant in set up in

- A. Sikkim
- B. Rajasthan
- C. Gujrat
- D. West Bengal

Answer: A

Explanation

- The Indian Army recently launched the first Green Solar Energy harnessing plant in Sikkim built at an altitude of 16,000 feet, which uses Vanadium based battery technology.
- It was completed in collaboration with IIT Mumbai.
- In January 2021, Vanadium was discovered in Arunachal Pradesh. This was the first discovery of Vanadium in India.
- India consumes 4% of global vanadium production in the world.
- It is found in sixty different minerals and ores that includes carnotite, vanadate, roscoelite, patronite.
- Vanadium is used in making steel alloys, space vehicles, nuclear reactors, etc. It is also used in making girders, piston rods. Vanadium redox batteries are used in superconducting magnets. They are also used to create reliable renewable sources of energy.
- The colour of Vanadium is silver. It is a transitional metal, that is, a good conductor of heat and electricity.

3. Varuna-2021 is a naval exercise between India and

- A. USA
- B. Israel
- C. France
- D. Russia

Answer: C

4. Which of the following statements about 'The NEO-1', recently in news is/are incorrect ?

1. It is the world's first mining space Robot.
 2. The mission is a preliminary assessment, to field- test technologies aimed at the eventual mining of asteroids.
- A. 1 only
 - B. 2 only
 - C. Both 1 and 2
 - D. Neither 1 nor 2

Answer: D

Explanation

- Origin Space, a private Chinese company, is all set to send out the world's first mining robot into space by November 2021.
- Despite being called an 'asteroid mining robot', it's not going to do any actual mining.

- The mission is a preliminary assessment, to field-test technologies aimed at the eventual mining of asteroids.
- The NEO-1 will most probably be launched as a secondary payload on a Chinese Long March rocket.
- The spacecraft is quiet light by spacecraft standards at 30 kg.
- It will enter at an orbit around the earth at 500 km altitude.
- The actual progress that can be made by the NEO-1 mission is subject to speculations, as it has never been attempted before.
- The project, if successful, can open up a trillion-dollar industry.

5. Which of the following statements about Tianhe module are correct?

- 1. It is the first module of China's planned space station.**
 - 2. The core module, currently the smallest spacecraft developed by China, was launched into low earth orbit by a Long March-5B rocket, marking the first step of China's efforts to build its own station in two years.**
 - 3. The Tianhe module will act as the management and control hub of the space station**
- A. 1 only
B. 2 and 3 only
C. 1 and 3 only
D. None of the above

Answer: C

Explanation

- The Tianhe module will act as the management and control hub of the space station Tiangong, meaning Heavenly Palace, with a node that could dock with up to three spacecraft at a time for short stays, or two for long
- Tianhe has a total length of 16.6 meters, a maximum diameter of 4.2 meters and a take-off mass of 22.5 tonnes, and is the largest spacecraft developed by China.
- The space station will be a T shape with the core module at the centre and a lab capsule on each side.
- The station will operate in the low-Earth orbit at an altitude from 340 km to 450 km. It has a designed lifespan of 10 years, but experts believe it could last more than 15 years with appropriate maintenance and repairs.

China's Space Station

- The new, 66-tonne, 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.
- It forms the main living quarters for three crew members in the Chinese space station.

- The Tianhe launch is the first of 11 missions needed to complete the space station, which will orbit Earth at an altitude of 340 to 450 km.
- In the later missions, China will launch the two other core modules, four manned spacecraft and four cargo spacecraft.