

DAILY CURRENT AFFAIRS

By



SOURCES



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Important News Articles

GS II

1. Iran increasing production of enriched uranium, says IAEA report - Indian Express

Relevance: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

News:

- **Iran has increased the rate** at which it is **producing near weapons grade uranium** in recent weeks

Key Highlights

- Iran had previously slowed down the rate at which **it was enriching uranium to 60% purity**.
- **Uranium enriched at 60% purity** is just a short, technical step away from weapons-grade levels of 90%.
- **Enriching uranium** means **increasing the percentage of uranium-235**, the isotope of uranium that can be used in nuclear fission.

Nuclear energy

- It is a form of energy that is **released from the nucleus, or core, of atoms**.
- Nuclear energy is known for its **high energy density**, meaning that a relatively small amount of nuclear fuel can produce a large amount of energy.
- There are **two primary methods** of harnessing nuclear energy:

Nuclear Fission

- This is the process of **splitting the nucleus of an atom into two smaller nuclei**, releasing a large amount of energy in the process.
- Nuclear power plants use this method, **primarily using uranium-235 or plutonium-239 as fuel**.
- When the nucleus of these **heavy isotopes is bombarded with neutrons**, it becomes **unstable and splits into two or more smaller nuclei**, along with a few neutrons.
- This **chain reaction can release a significant amount of heat**, which is used to generate steam and drive turbines, ultimately producing electricity.

Nuclear Fusion

- This is the process of **combining the nuclei of two light atoms** to form a heavier nucleus.
- This is the process that **powers the sun and other stars**.
 - While it holds great potential for **clean and virtually limitless energy**, it is extremely challenging to achieve controlled nuclear fusion on Earth.

Prelims Takeaway

- Nuclear Fusion
- Nuclear Fission

2. On the occasion of Good Governance Day, Union Minister Dr Jitendra Singh launches the Extended Version of Mission Karmayogi - PIB

Relevance: Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

News:

- On Good Governance Day, the Union Minister launched the **Extended Version of Mission Karmayogi in New Delhi**.
- The initiative aims to groom civil servants for the future, making them more technology-enabled, innovative, progressive, and transparent.

Key Features Launched

- Three new features were introduced on the iGOT Karmayogi platform:
 - My iGOT
 - Blended Programs
 - Curated Programs

Prelims Takeaway

- Mission Karmayogi
- VIKAS

- 12 domain-specific capacity building **e-learning courses were launched**, along with a new blended learning program called VIKAS (Variable & Immersive Karmayogi Advanced Support).

Good Governance Week/Day:

- The Union Government has been celebrating 'Good Governance Week/Day' since 2014 to promote citizen-centric, efficient, and transparent governance.

Details of New Features on Mission Karmayogi

- **My iGOT:** Provides **targeted training courses** addressing individual officers' unique capacity building needs, ensuring personalized learning experiences.
- **Blended Programs:** Integrates traditional offline classroom courses with online components, offering equitable access to training methodologies.
- **Curated Programs:** Designed to cater to diverse learning needs, allowing course providers to curate tailored learning journeys.

Domain-specific Courses and VIKAS

- Twelve domain-specific e-learning courses were **developed for the Department of Personnel and Training (DoPT)**
 - as part of the Annual Capacity Building Plan.
- **VIKAS is a blended learning program** for middle management civil servants in the Central Secretariat, focusing on functional, behavioral, and technological competencies.

GS III**3. India, Oman free trade agreement likely in January - Indian Express**

Relevance: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

News:

- Negotiations for the **Comprehensive Economic Partnership Agreement (CEPA), a free trade agreement (FTA)** between India and Oman, are advancing rapidly.
- The pact is expected to be signed in January 2024, **with both sides expressing eagerness to conclude the deal.**

Prelims Takeaway

- Gulf Cooperation Council
- Oman

Oman as a Key Trading Partner

- **Oman is India's third-largest export destination** among Gulf Cooperation Council (GCC) countries.
- The proposed FTA aims to enhance economic ties and boost Indian exports to Oman
 - where over 80% of goods currently face import duties averaging 5%, with few trade barriers.

Potential Impact on Exports

- Indian goods, including **gasoline, iron and steel, electronics, and machinery**, worth USD 3.7 billion, are expected to receive a significant boost in Oman post the FTA.
- Export sectors like motor gasoline, iron and steel products, electronics, machinery, textiles, plastics, boneless meat, essential oils, and motor cars are projected to benefit from duty elimination.

Gulf Cooperation Council (GCC) Relations

- India implemented a trade agreement with the UAE in May 2022, and **both Oman and the UAE are members of the GCC.**
- **The FTA with Oman aligns with India's strategy** to strengthen economic ties with GCC nations.

Economic Indicators for Oman

- Oman's GDP is approximately USD 115 billion, **with a population of 5 million.**
- The country's **higher per capita income (USD 25,060) compared to India's (USD 2,370)** suggests potential demand for more diversified and higher-value goods and services from India.

Trade Statistics

- **Bilateral trade between India and Oman** reached USD 12.39 billion in 2022-23

4. ICMR initiates steps for non-invasive testing method to tackle anaemia - The Hindu

Relevance: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

News:

- Despite efforts under the Anaemia Mukht Bharat (AMB) program, **anaemia remains a significant public health issue in India.**

Key Highlights

- The Indian Council of Medical Research (ICMR) in Delhi is seeking innovative solutions and has invited Expressions of Interest (EoI) from eligible organizations

Key Initiatives Under AMB

- The AMB program emphasises **testing and treating anaemia through digital methods** and point-of-care treatment, with a particular focus on pregnant women and school-going adolescents.
- The **effective implementation of the test and treat strategy requires a simple, non-invasive hemoglobinometer** acceptable to all, especially young children.

Call for Validation of Devices

- While several **'Make in India' non-invasive hemoglobinometer devices are available**
- The ICMR emphasises **the need for validation to establish accuracy, bias, and precision** before recommending their use in the AMB program.

Prevalence of Anaemia in India

- According to the **National Family Health Survey 5 (2019-21)**, the prevalence of anaemia in various groups is as follows: 25.0% in men (15-49 years), 57.0% in women (15-49 years),

ICMR's Role and Objectives

- ICMR aims to conduct a validation study of non-invasive hemoglobinometer devices** through a hospital-based clinical study, comparing them against the gold standard method of hemoglobin measurement.
- The **organisation will provide technical support**, including study planning, protocol development, results analysis, outcome assessment, and product improvement.

Collaboration and Support

- ICMR, through its institutes, **will facilitate and support the research and development/clinical study** of new technology/products in collaboration with companies/institutions.
- The collaboration details and timelines** will be decided later under the agreement in a professional and mutually agreed-upon manner.

Prelims Takeaway

- National Family Health Survey
- Indian Council of Medical Research

5. Renewable energy investments to surge 83% to \$16.5 billion in 2024 - The Hindu

Relevance: Conservation, environmental pollution and degradation, environmental impact assessment.

News:

- India will witness a more than **83% increase in investments in renewable energy (RE)** projects to about \$16.5 billion in 2024
 - as the country focuses on energy transition to reduce carbon emissions, Power Ministry estimates show.

Prelims Takeaway

- National Green Hydrogen Mission
- solar and wind energy

Key Highlights

- This is in line with **India's ambitious target of having 500 GW** of renewable energy by 2030
- its resolve to reduce overall power **generation capacity from fossil fuels to less than 50%**.
- India has committed a **net zero emission target by 2070**.
- The Union Power and New & Renewable Energy Minister had said **65% of power generation capacity would be from non-fossil fuels by 2030** and that it would be higher than the set target of 50%.
- Apart from solar and wind energy, **India has increased its focus on green hydrogen** in a big way to reduce dependence on fossil fuels

- **India is a diesel-based economy** - most commercial, passenger vehicles and freight services use diesel as their main fuel.
- In January this year, the **Union Cabinet approved the National Green Hydrogen Mission** with an outlay of ₹19,744 crore.

6. India, Russia ink 'key' pacts related to Kudankulam nuclear power plant - The Hindu/ India, Russia sign pacts on future units of Kudankulam plant - Indian Express

Relevance: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Context:

- **India and Russia** bolstered their enduring partnership with the signing of agreements related to the **Kudankulam nuclear power plant**.

Key Agreements

- Agreements encompassed the **construction of future units** at the Kudankulam nuclear power plant, built with Russian technical assistance.
- The signing ceremony included agreements in nuclear power and **extended to areas** such as medicines, pharmaceutical substances, and medical devices.

Kudankulam Nuclear Power Plant

- The Kudankulam nuclear power plant, situated in **Tamil Nadu**, began construction in March 2002 with Russian collaboration.
- The first power unit started operating at its designed 1,000 MW capacity in February 2016, and the plant is expected to **reach full capacity by 2027**.
- It is the **single largest nuclear power station** in India.

Progress Across Multiple Domains

- The External Affairs Minister also highlighted **substantial progress** in trade, finance, connectivity, energy, civil aviation, and nuclear cooperation during the bilateral talks.
- There was an emphasis on **exploring new opportunities** and discussions aimed at achieving a more **balanced and sustainable cooperation** across different dimensions.
- The External Affairs Minister described Russia as a **"special partner" in critical areas** such as defence, nuclear power, and space.

Prelims Takeaway

- Kudankulam Nuclear Power Plant
- Nuclear Energy

7. Ministry sends social media firms advisory to regulate deepfakes - The Hindu

Relevance: Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

News:

- The MeitY recently issued the second advisory to social media platforms urging compliance with the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021**.
- This advisory specifically targets the rise of fabricated **'deepfake'** content generated using Artificial Intelligence.

The Mandate

- The advisory emphasizes the need for social media intermediaries to **take stronger actions** against deepfake content.
- It instructs platforms to clearly and precisely **communicate prohibited content**, especially as outlined in **Rule 3(1)(b) of the IT Rules**, to users.
- The government has been actively engaging with platforms to address concerns related to misinformation and deepfake content.

Deepfakes

- Deepfakes, present since 2017, refer to **manipulated** videos, audios or images created using a form of **artificial intelligence** called deep learning.
- Initially popularised through a Reddit incident, deepfake technology has evolved, enabling even **unskilled individuals** to produce fake content.

Prelims Takeaway

- Deepfakes
- Artificial Intelligence

- They are created using a technique called **generative adversarial networks (GANs)**, which involve **two competing neural networks** viz. a generator and a discriminator.
 - The generator tries to create fake images or videos that look realistic.
 - The discriminator tries to distinguish between the real and the fake ones.
- To ensure that the deepfake created is as close to real as possible, creators use a **large database** of source images.
- **'Unsupervised learning'** makes it challenging for other software to identify deepfakes. A **230% increase** in deepfake usage by cybercriminals and scammers has been observed.

Laws in India Regarding Deepfakes

- India's **IT Rules 2021** mandate the **removal** of reported fake or deepfake content by intermediary platforms **within 36 hours**.
Section 66D of the Information Technology Act of 2000 deems **online impersonation illegal**.
- The rules also prohibit hosting content **impersonating** others.

8. Milli-second burst detected by AstroSat in new high magnetic field neutron star can help understand such stellar entities - PIB

Relevance: Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

Prelims Takeaway

- Magnetars
- AstroSat

News:

- AstroSat recently detected **bright sub-second X-ray bursts** from a newly discovered neutron star known as **SGR J1830-0645**.
- This neutron star belongs to the rare category of **magnetars**, characterised by an ultrahigh magnetic field.

AstroSat

- It is **India's first dedicated multi-wavelength space observatory**.
- **Objective:** To study celestial sources in X-ray, optical, and UV spectral bands simultaneously.
- **Launched by ISRO in September 2015**, AstroSat has played a crucial role in astronomical research.
- It was launched into a **650 km orbit inclined at an angle of 6 degrees to the equator**.
- The minimum useful life of the AstroSat mission is **around 5 years**.
- It carries a total of **five scientific payloads**.
 - It enables imaging and studying the temporal and spectral properties of galactic and extragalactic cosmic sources in a wide range of wavelengths on a common platform.

AstroSat's Contributions

- The **Cadmium Zinc Telluride Imager (CZTI)** on AstroSat has been **pivotal in capturing GRBs**.
- CZTI specializes in **high-energy, wide-field imaging**, covering an energy range from 20 keV to over 200 keV.
- Its capability to **detect Compton scattered events** allows the study of X-ray polarization, enhancing the understanding of GRBs.

Key Findings

- The research identified SGR J1830-0645 as a unique magnetar **displaying an emission line in its spectra**.
- The presence of emission lines in the spectra raises **questions about their origin**.
- It suggests possibilities such as **fluorescence of iron, proton cyclotron line feature** or instrumental effects.
- The energy-dependence observed in SGR J1830-0645 differs from other magnetars, with **two thermal blackbody emission components** originating from the neutron star's surface.

Magnetars

- Magnetars are **neutron stars** with **magnetic fields** over one quadrillion times stronger than Earth's.
- Magnetars also release vast amounts of energy in the form of **flares, X-rays and gamma-ray bursts**.
- They are therefore associated with **extreme events** in the universe, making them perhaps the most bizarre objects in the cosmos next to black holes.
- SGR J1830-0645, discovered in October 2020, is a relatively **young** and **isolated magnetar** with intriguing astrophysical conditions.

Editorials, Gists and Explainers

1. A new economics for inclusive growth - The Hindu

Relevance: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.

Context:

- The authors of "Breaking the Mould: Reimagining India's Economic Future" propose a **shift in India's economic strategy**.
- **Recommendation:** To abandon the focus on building the manufacturing sector and instead emphasize exporting high-end services.

Current Economic Challenges

- India's past 30 years of attempts to boost manufacturing have yielded poor outcomes, resulting in insufficient jobs and incomes.
- Social and political challenges include farmers demanding better prices and informal sector workers seeking fair wages and social security.
- Approximately 60% of Indians, spanning castes and religions, are classified as "economically weaker sections."

Mismatch in Economic Growth

- The mismatch between skills, jobs, and incomes is hindering India's growth.
- Two decades ago, during the supposedly "India Shining" period, economists believed that India had bypassed the traditional development ladder.
 - Where populations typically transition from agriculture to manufacturing and then to services.
- However, India's pattern of growth, with investments in high-end skills, has not generated enough decent jobs for India's masses.

Overlooking Realities in Economic Models

- Economic theories often overlook the process of "learning" and the essence of "development."
- Whereby citizens learn new skills and increase their incomes, and nations acquire new capabilities.
- "Adjacencies" in work and location in rural areas are the best steps for climbing the skill-income ladder.
- Rural areas can contribute to manufacturing and value-added services, creating dense webs of economic activity.

Inclusive Growth and Sustainable Development

- Targets of trillions of dollars of GDP hinge on achieving inclusive and sustainable economic growth.
- There is a need for a shift in the economic growth pattern, placing emphasis on the significance of local economic activities.
- India cannot afford to neglect its small-scale and informal manufacturing sector.
- Richness of economic activity within local webs will create more sustainable growth.

Challenges of Large-Scale Factories

- Large, capital-intensive factories require more land and financial capital, which are relatively scarce in India.
- Investing in education and skills for the masses is important rather than focusing solely on "high-end" manufacturing and services.

Conclusion

- Policymakers need to reimagine India's growth path, with an emphasis on **inclusive economic growth**.
- India should **make more for India in India**, thus growing both jobs and incomes for India's masses

2. Development led by corporates, not women - The Hindu

Context:

- The G20 Summit in Delhi adopted a Declaration, establishing a "**working group on the empowerment of women.**"

- Past "working groups" have shown **limited implementation**, raising questions about the efficacy of such initiatives.
- The Declaration itself admits, "At the midway point to 2030, the global progress on SDGs is off-track with only **12% of the targets on track.**"

Gender Equality

- The Declaration emphasizes the importance of women's participation and commitment to addressing global challenges.
- However, the term "women-led development" introduced by the Government of India lacks clarity in its meaning.

Critique of Development Models

- Development models in democracies, especially in developed countries, have led to significant global, intra-country, and gender-based inequalities.
- The core of these models relies on the "trickle-down theory," which privileges big business.
- The G20 Declaration reaffirms the importance of private enterprise in driving sustainable economic transformations.
- However, alignment of "women-led development" with the existing macro development model is questioned.

Women-led Development Schemes

- Women-led development schemes conceal the reality of decreasing government investment in projects and schemes meant for women's development.
- The Gender Budget, meant to prioritise women's development, has seen a decrease in its total allocation and a skewed distribution between Part A and Part B.
 - Part A includes schemes which are 100% for women.
 - Part B includes all government schemes where at least one-third of the expenditure is supposedly for women.
- In 2023-24, the expenditure in Part A was at its lowest at around 39% of the total, while Part B made up 61% of expenditure of the Gender Budget.

Economic Independence Challenges

- Economic independence is crucial for women's development, but India has seen a decline in women's share in regular waged work.
- According to an analysis of the Periodic Labour Force Survey (PLFS), the share of women in regular waged work fell in India, from 21.9% in 2018-2019 to 15.9% in 2022-2023.
- Over 95% of women work in the unorganised sector, with no job and income insecurity.
- Budgetary cuts in rural work projects negatively impact women, particularly in states where women constitute a significant portion of the workforce.
- Women, especially Dalits and Adivasis, bear the brunt of economic policies favouring the richest 1%.



Quick Look

1. Fiscal Deficit

- Fiscal deficit is the difference between the government's total expenditure and its total revenue (excluding borrowings).
- It is an indicator of the extent to which the government must borrow in order to finance its operations and is expressed as a percentage of the country's GDP.
- A high fiscal deficit can lead to inflation, devaluation of the currency and an increase in the debt burden.
- While a lower fiscal deficit is seen as a positive sign of fiscal discipline and a healthy economy.

2. Current Account Deficit

- Current account deficit (CAD) is when the value of a country's imports of goods and services is greater than its exports.
- CAD and fiscal deficit together make up twin deficits that can impact the stock market and investors.
- The CAD is significant because it affects the economy, stock markets, and people's investments.
- A lower CAD can boost investor sentiment and make the country's currency more attractive to investors.
- A surplus in the current account indicates that money is flowing into the country, which can boost foreign exchange reserves and the value of the local currency.

3. OSIRIS-APEX

- OSIRIS-REx, the spacecraft that delivered asteroid samples from Bennu, has embarked on a new mission, and NASA has renamed it as OSIRIS-APEX.
- OSIRIS-APEX is a mission to study the physical changes to asteroid Apophis that will result from its rare close encounter with Earth in April 2029.
- Objective: To observe the physical changes induced by Earth's gravitational pull during Apophis' flyby.
- These changes could include alterations in the asteroid's orbit, rotation speed, and surface features such as earthquakes or landslides.
- Additionally, the OSIRIS-APEX spacecraft will dip toward the surface of Apophis.

4. MedTech Mitra portal

- Recently, the Union Minister of Health and Family Welfare launched the MedTech Mitra portal.
- It is an online portal that aims to assist medtech innovators in clinical evaluation, regulatory facilitation, and uptake of new products.
- The portal will be coordinated collaboratively by the Indian Council of Medical Research (ICMR) and the Central Drugs Standard Control Organisation (CDSCO), under the guidance of NITI Aayog's Atal Innovation Mission.
- The MedTech Mitra platform, along with the recent medical devices policy and the production-linked incentive scheme, will together provide a boost to the medical devices sector and encourage domestic manufacturing of these devices.

5. Chandra River

- It is one of the two rivers (other being the Bhaga River) that merge to form the Chenab River in the Lahaul region of Himachal Pradesh.
- It rises in the snows lying at the base of the main Himalayan range in the Lahaul and Spiti districts, Himachal Pradesh.
- It flows for a considerable distance along the base of this range in a southeasterly direction before turning completely and taking a south-westerly course in the Spiti Valley.

- It flows on to merge with the Bhaga River downstream of Keylong.
- The beautiful Chandra Tal Lake has formed at its source.

6. Qiantang River

- It is a southeast Chinese River that originates on the borders of Anhui and Jiangxi provinces.
- It runs for 459 kilometres through Zhejiang, passing through the capital city - Hangzhou and Yanguan Town, Haining, Jiaxing City before flowing into the East China Sea via Hangzhou Bay.
- The river is also the southern terminal of the ancient Grand Canal that links five major rivers in China from north to south, enabling traffic north to Beijing from Hangzhou via the Canal.
- It is encircled by a group of economically booming cities, including Shanghai, the leading industrial and commercial hub of the country, and Ningbo, one of China's leading port cities.
- The spectacular Qiantang River Tidal Bore is known as one of the largest tidal bores in the world. The highest tidal bore can reach up to 9 metres (30 feet) high.

7. AS-24 Killjoy

- It is the western reporting name of the Kh-47M2 (Kinzhal), a nuclear-capable, Russian air-launched hypersonic ballistic missile.
- It was one of six “next generation” weapons unveiled by Russian President Vladimir Putin during a speech in March 2018.
- It can reach speeds of up to Mach 10(12,350 km/hr).
- It can carry both conventional and nuclear warheads with a payload of up to 480 kg and a thermonuclear option with a 10-50 kt warhead.
- It has a reported range of 1,500-2,000 km.
- It has a length of 8 m, a body diameter of 1 m, and a launch weight of approximately 4,300 kg.
- It is designed to be launched from MiG-31 fighter jets at altitudes of about 18 km (59,000 ft).
- This missile manoeuvres during all stages of its flight to overcome hostile air defence systems.

8. South China Sea

- It is an arm of the western Pacific Ocean that borders the Southeast Asian mainland.
- It is bordered by China, Taiwan, the Philippines, Malaysia, Indonesia, Brunei, and Vietnam.
- The southern boundary of the South China Sea is a rise in the seabed between Sumatra and Borneo
 - the northern boundary stretches from the northernmost point of Taiwan to the coast of Fujian province, China, in the Taiwan Strait.
- It is connected by the Taiwan Strait with the East China Sea and by the Luzon Strait with the Philippine Sea (both marginal seas of the Pacific Ocean).
- The South China Sea and the East China Sea together form the China Sea.

Prelims Track Question

Q1. Consider the following statements about nuclear fission:

1. It is a process in which a nucleus splits into two or more smaller nuclei, releasing a large amount of energy.
2. The most common isotope used in nuclear fission reactions is uranium-238.
3. The byproducts of these reactions include radioactive isotopes that can pose environmental and health risks.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Q2. Which of the following statements about Mission Karmayogi

1. It aims to enhance the skills and capacities of civil servants through technology-enabled and innovative programs.
2. It was launched to focus exclusively on the training of senior-level bureaucrats in the Indian Administrative Service (IAS).
3. The program emphasizes a traditional learning approach, with a focus on classroom training for skill development.

How many of the statements given above is/are incorrect?

- A. Only one
- B. Only two
- C. All three
- D. None

Q3. Consider the following statements about the Comprehensive Economic Partnership Agreement (CEPA)

1. CEPA is a type of trade agreement that focuses solely on tariff reductions between participating countries.
2. CEPA negotiations often cover a wide range of areas, including trade in goods, services, investment, intellectual property, and other economic cooperation.
3. CEPA agreements are primarily bilateral and involve only two countries.

4. CEPA is a regional trade agreement that is limited to a specific geographic area.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. Only three
- D. All four

Q.4 Consider the following statements about Anaemia Mukht Bharat (AMB)

1. It is a nationwide initiative aimed at eliminating anaemia among women and children in India.
2. The program focuses on providing iron and folic acid supplements to pregnant women and children to address micronutrient deficiencies.
3. It is implemented by the Ministry of Health and Family Welfare in collaboration with state governments and other stakeholders.
4. The initiative aims to achieve its goals through awareness campaigns, capacity-building, and the use of technological interventions.
5. AMB primarily targets urban populations, given the higher prevalence of anaemia in urban areas.

How many of the statements given above is/are correct?

- A. Only two
- B. Only three
- C. Only four
- D. All Five

Q5. Consider the following statements about the National Green Hydrogen Mission

1. The Mission aims to promote the production and use of green hydrogen in India.
2. Green hydrogen is produced using renewable energy sources, such as wind or solar power, through a process called electrolysis.
3. The mission is implemented by the Ministry of Petroleum and Natural Gas.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Q6. Consider the following statements

1. The Treaty on Outer Space prohibits countries to test nuclear weapons in orbit or on celestial bodies like the moon.
2. The Nuclear Non-Proliferation Treaty (NPT) requires countries to give up any plans to build nuclear weapons in return for access to peaceful uses of nuclear energy.
3. India is not a party to both the Treaty on Outer Space and the Nuclear Non-Proliferation Treaty (NPT).

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Q7. With reference to Deepfakes, consider the following statements

1. Deepfakes refer to manipulated videos, audios or images created using a form of artificial intelligence called deep learning.
2. Creators use a large database of source images to ensure that the deepfake created is as close to real as possible.
3. 'Unsupervised learning' makes it challenging for other software to identify deepfakes.
4. India's IT Rules 2021 mandate the removal of reported fake or deepfake content by intermediary platforms within 36 hours.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. Only three
- D. All four

Q8. With reference to magnetar, consider the following statements

1. They are neutron stars with magnetic fields weaker than Earth.
2. They release vast amounts of energy in the form of flares, X-rays and gamma-ray bursts.
3. SGR J1830-0645, seen in the news recently, is a relatively young and isolated magnetar.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Q9. The Lorenz curve is associated with which of the following?

- A. Unemployment rate
- B. Income distribution
- C. Inflation rate
- D. GDP growth

Q10. With reference to Gender Budgeting, consider the following statements

1. Gender Budgeting seeks to create a separate budget and seeks affirmative action to address specific needs of women.
2. The government publishes a Gender Budget Statement (GBS) every year along with the Union Budget.
3. Part A of the Gender Budget Statement reflects those schemes which have at least 30% of the allocation for women.

How many of the statements given above is/are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Prelims Track Answer

Answer 1 Option B is correct

Explanation

- Nuclear fission is indeed a process in which the nucleus of an atom, typically a heavy element like uranium or plutonium, is split into two or more smaller nuclei.
- This process releases a significant amount of energy.
- The energy release is due to the conversion of a small fraction of the nuclear mass into energy, following Einstein's famous equation, $E=mc^2$. **Hence, statement 1 is correct**
- The most common isotope used in nuclear fission reactions is uranium-235, not uranium-238.
- Uranium-235 is fissile, meaning it can sustain a chain reaction, while uranium-238 is typically used in breeder reactors or converted into fissile plutonium-239. **Hence, statement 2 is incorrect**
- The byproducts of nuclear fission reactions include radioactive isotopes, which can indeed pose environmental and health risks.
- These byproducts, often called nuclear waste, need proper handling and disposal to prevent contamination and potential harm.
- Managing nuclear waste is a significant challenge associated with nuclear energy production. **Hence, statement 3 is correct**

Answer 2 Option B is correct

Explanation

- Mission Karmayogi indeed aims to enhance the skills and capacities of civil servants. It focuses on making them more technology-enabled, innovative, progressive, and transparent.
- The program seeks to groom civil servants for the future by introducing modern training methods and incorporating the latest technologies. **Hence, statement 1 is correct**
- Mission Karmayogi is not exclusively focused on senior-level bureaucrats in the IAS.
- It is designed to benefit civil servants across all levels, promoting continuous learning and development throughout their careers. The program recognizes the need for capacity building at various levels within the

bureaucracy. **Hence, statement 2 is INcorrect**

- Mission Karmayogi does not emphasize a traditional learning approach with a focus on classroom training alone. It introduces a blended learning approach that integrates traditional offline (in-person) classroom courses with online learning components.
- This allows officers to benefit from both face-to-face interactions and the flexibility of online courses. **Hence, statement 3 is Incorrect**

Answer 3 Option A is correct

Explanation

- CEPA goes beyond focusing solely on tariff reductions.
- While tariff reductions may be part of the agreement, CEPA negotiations typically cover a broad spectrum of areas, including trade in goods, services, investment, intellectual property, and other aspects of economic cooperation. **Hence, statement 1 is incorrect**
- CEPA negotiations often cover a wide range of areas to facilitate comprehensive economic cooperation. The goal is to create a framework that addresses multiple facets of economic interaction between the participating countries, fostering a deeper and more integrated economic relationship. **Hence, statement 2 is correct**

Hence, statement 2 is correct

- CEPA agreements can be bilateral (between two countries), plurilateral (involving several countries), or regional (involving a specific geographic region). The number of countries involved in a CEPA can vary, and it is not limited to only bilateral agreements. **Hence, statement 3 is incorrect**

- CEPA is not limited to a specific geographic area; it can be regional or involve countries from different regions. The scope and participants in CEPA negotiations are determined based on the mutual interests and agreements of the involved countries. **Hence, statement 4 is incorrect**

Answer 4 Option C is correct

Explanation

- Anaemia Mukht Bharat is indeed a nationwide initiative with the goal of eliminating anaemia among women and children in India. It emphasizes preventive measures, awareness, and effective

interventions to address anemia-related challenges. **Hence, statement 1 is correct**

- The program focuses on providing iron and folic acid supplements to pregnant women and children, recognizing the importance of addressing micronutrient deficiencies that contribute to anaemia. **Hence, statement 2 is correct**
- Anaemia Mukh Bharat is implemented by the Ministry of Health and Family Welfare in collaboration with state governments and various stakeholders. The collaborative approach ensures a concerted effort to tackle anaemia at both the national and regional levels. **Hence, statement 3 is correct**
- The initiative employs a multifaceted approach, including awareness campaigns, capacity-building initiatives, and the integration of technological interventions to achieve its objectives. This comprehensive strategy aims to address anaemia from various angles. **Hence, statement 4 is correct**
- Anaemia Mukh Bharat does not primarily target urban populations; it is designed to address anaemia challenges across rural and urban areas, recognizing that anaemia affects populations from diverse socioeconomic backgrounds. **Hence, statement 5 is incorrect**

Answer 5 Option B is correct

Explanation

- The National Green Hydrogen Mission indeed aims to promote the production and use of green hydrogen in India. Green hydrogen is considered a clean and sustainable alternative to conventional hydrogen production methods. **Hence, statement 1 is correct**
- Green hydrogen is produced through a process called electrolysis, where water is split into hydrogen and oxygen using electricity.
- When this electricity comes from renewable sources like wind or solar power, the hydrogen produced is termed "green hydrogen. **Hence, statement 2 is correct**
- The National Green Hydrogen Mission is not implemented by the Ministry of Petroleum and Natural Gas.
- It is an initiative led by the Ministry of New and Renewable Energy (MNRE) in India.

MNRE is responsible for the promotion and development of renewable energy sources, including green hydrogen. **Hence, statement 3 is incorrect**

Answer 6 Option B is correct

Explanation

- The Limited Ban Treaty allows nuclear tests only underground and thus, prohibits the nuclear experiments on ground, underwater and in outer space.
- India has also ratified the treaty.
- Treaty on Outer Space prohibits countries to test nuclear weapons in orbit or on celestial bodies like the moon. **Hence, statement 1 is correct.**
- India is a party to the Outer Space Treaty. **Hence, statement 3 is incorrect.**
- The Nuclear Non-Proliferation Treaty (NPT) requires countries to give up any present or future plans to build nuclear weapons in return for access to peaceful uses of nuclear energy. **Hence, statement 2 is correct.**
- Three main objectives of the treaty are non-proliferation, disarmament, and the right to peacefully use nuclear technology.
- India is one of the only five countries that either did not sign the NPT or signed but withdrew.

Answer 7 Option D is correct

Explanation

- Deepfakes, present since 2017, refer to manipulated videos, audios or images created using a form of artificial intelligence called deep learning. **Hence, statement 1 is correct.**
- Initially popularised through a Reddit incident, deepfake technology has evolved, enabling even unskilled individuals to produce fake content.
- They are created using a technique called generative adversarial networks (GANs), which involve two competing neural networks viz. a generator and a discriminator.
- To ensure that the deepfake created is as close to real as possible, creators use a large database of source images. **Hence, statement 2 is correct.**
- 'Unsupervised learning' makes it challenging for other software to identify deepfakes. **Hence, statement 3 is correct.**
- India's IT Rules 2021 mandate the removal of reported fake or deepfake content by

intermediary platforms within 36 hours.

Hence, statement 4 is correct.

- Section 66D of the Information Technology Act of 2000 deems online impersonation illegal.

Answer 8 Option B is correct

Explanation

- AstroSat recently detected bright sub-second X-ray bursts from a newly discovered neutron star known as SGR J1830-0645.
- This neutron star belongs to the rare category of magnetars, characterised by an ultrahigh magnetic field.
- SGR J1830-0645, discovered in October 2020, is a relatively young and isolated magnetar with intriguing astrophysical conditions. **Hence, statement 3 is correct.**
- Magnetars are neutron stars with magnetic fields over one quadrillion times stronger than Earth's. **Hence, statement 1 is incorrect.**
- Magnetars also release vast amounts of energy in the form of flares, X-rays and gamma-ray bursts. **Hence, statement 2 is correct.**
- They are therefore associated with extreme events in the universe, making them perhaps the most bizarre objects in the cosmos next to black holes.

Answer 9 Option B is correct

Explanation

- A Lorenz curve is a graphical representation of income inequality or wealth inequality. **Hence, option B is correct.**

- The graph plots percentiles of the population on the horizontal axis according to income or wealth.
- The Lorenz Curve is the source of the Gini Coefficient.
- The degree of income inequality is measured through the Gini Coefficient.

Answer 10 Option A is correct

Explanation

- Gender Budgeting (GB) is a powerful tool for achieving gender mainstreaming so as to ensure that benefits of development reach women as much as men.
- Does not seek to create a separate budget but seeks affirmative action to address specific needs of women. **Hence, statement 1 is incorrect.**
- Monitors expenditure and public service delivery from a gender perspective.
- The government publishes a Gender Budget Statement (GBS) every year along with the Union Budget. **Hence, statement 2 is correct.**
- Gender Budget Statement (GBS) was first introduced in the Indian Budget in 2005-06.
- This GB Statement comprises two parts viz.
 - Part A reflects Women Specific Schemes, i.e. those which have 100% allocation for women. **Hence, statement 3 is incorrect.**
 - Part B reflects Pro Women Schemes, i.e. those where at least 30% of the allocation is for women.
- Gender Budgeting Cells (GBC) as an institutional mechanism have been mandated to be set up in all Ministries/Departments.

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+91 9999 057869
www.mentorshipindia.com

A-92, Third Floor, Hari Nagar
Delhi - 110064

 @mentorship.india