Daily MCQs: 30-09-2024

1. Consider the following statements about Global Innovation Index, 2024
1) It is published by the World Intellectual Property Organization (WIPO).
2) India has recorded a degradation in its ranking from 2023.
3) India is ranked 1st among lower-middle-income economies.

Which of the statements given above is/are correct?
A. 1 only
B. 1 and 2 only
C. 1 and 3 only
D. 3 only

2. Which of the following is/are lending mechanisms of the International Monetary Fund (IMF) to aid economies under trouble?
1) Extended Credit Facility
2) Flexible Credit Line
3) Stand-by Agreement

Select the correct answer using the codes given below
A. 1 and 2 only
B. 1 and 3 only
C. 2 and 3 only
D. 1, 2 and 3

3. Consider the following statements about straits.
1) The Taiwan Strait connects the East China Sea to the South China Sea.
2) The Bosphorus Strait connects the Marmara Sea to the Aegean Sea.
3) The Dardanelles Strait connects the Black Sea to the Marmara Sea.

How many of the above statements is/are correct?
A. 1 only
B. 1 and 3 only
C. 1 and 2 only
D. 2 and 3 only

4.Consider the following statements about Cruise Missiles.
1) Cruise missiles are typically only initially guided during launch but mostly unpowered and unguided in later phases.

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2) Supersonic cruise missiles travel at speeds exceeding the speed of sound.
3) Nirbhay is a supersonic cruise missile developed by India.

Which of the statements given above is/are *incorrect*?
   A. 1 and 2 only
   B. 1 and 3 only
   C. 2 and 3 only
   D. 1, 2 and 3

5. Prime Minister Narendra Modi recently launched three PARAM Rudra supercomputers under the National Supercomputing Mission (NSM). Consider the following statements about Supercomputers.

   1) Supercomputers use parallel processing for speeding up operations.
   2) Typically, the performance of a supercomputer is measured in floating-point operations per second (FLOPS).
   3) Indigenously developed supercomputers have been deployed in Pune, Delhi, and Kolkata.

Which of the statements given above is/are correct?
   A. 1 and 2 only
   B. 1 and 3 only
   C. 2 and 3 only
   D. 1, 2 and 3

Solutions:

1. Answer: C

Explanation
- Global Innovation Index (GII) is published annually by the **World Intellectual Property Organization (WIPO),** a specialized agency of the United Nations. Hence, **statement 1 is correct.**
- GII **ranks global economies according to their innovation capabilities**, using **80+ indicators**.
- The metrics include institutions, human capital and research, infrastructure, market sophistication and business sophistication, knowledge and technology outputs and creative outputs.

- Over the years, the GII has established itself as a policy tool for various governments and helped them to reflect upon the existing status quo.

Why in News?

- WIPO has published its Global Innovation Index for the year 2024.

Highlights of the Index

- India has ranked **39th out of 133 economies**. This marks an improvement from last year, when the country was ranked 40th. Hence, **statement 2 is incorrect.**
- **India ranks first among the 10 economies in the Central and Southern Asia region**. India also ranked **1st among lower-middle-income economies**. Hence, **statement 3 is correct.**

2. Answer: D

Explanation

- The International Monetary Fund (IMF) has approved a $7bn loan to cash-strapped Pakistan.
- The new programme "will require sound policies and reforms" to stabilise and help make the economy more resilient.
- The country has relied on IMF loans to meet its needs for decades and continued to struggle after years of financial mismanagement.

Mandate of IMF

- The IMF was set up in **1945** out of the **Bretton Woods conference.** The **primary goal** of the IMF back then was to bring about **international economic coordination** to prevent competing currency devaluation by countries trying to promote their own exports.
- Eventually, the IMF evolved to be a **lender of last resort to governments of countries that had to deal with severe currency crises.**

Why do nations seek an IMF bailout?

- Countries seek help from the IMF usually when their **economies face a major macroeconomic risk**, mostly in the form of a **currency crisis**.
- In such a scenario, many countries are forced to seek help from the IMF to meet their external debt and other obligations, to purchase essential imports, and also to prop up the exchange value of their currencies.

How does the IMF help countries?

- The IMF basically lends money, often in the form of **special drawing rights (SDRs),** to troubled economies that seek the lender's assistance.
- The IMF carries out its lending to troubled economies through a **number of lending programs** such as the **extended credit facility, the flexible credit line, the stand-by agreement, etc.** Hence, **answer is option D.**

3. Answer: A

Explanation

- The **Taiwan Strait** connects the **East China Sea** to the **South China Sea**, separating the island of **Taiwan** from the mainland of **China**. Hence, **statement 1 is correct.**

- The **Bosphorus Strait** connects the **Black Sea** to the **Sea of Marmara**, and also separates **Asia** and **Europe.** Hence, **statement 2 is incorrect.**

- The Dardanelles Strait connects the Aegean Sea and the **Sea of Marmara** in **Turkey.** Hence, **statement 3 is incorrect.**

4. Answer: B

Explanation

	Cruise Missile
Flight Path	Flies at a relatively low altitude, following a straight or level flight path using aerodynamic lift, much like an airplane.
Propulsion	Jet Powered
Speed	Typically subsonic (below the speed of sound), but some variants can reach supersonic speeds.
Range	Usually has a shorter range compared to ballistic missiles but can still cover significant distances.
Guidance	Highly precise, guided by GPS, inertial navigation systems, or terrain-mapping systems throughout its flight. Hence, **statement 1 is incorrect.**

Use	Designed for precision strikes against specific targets such as military installations, ships, or infrastructure, and can carry conventional or nuclear warheads.

Cruise Missiles:

- **Subsonic Cruise Missiles:** These missiles fly at speeds below the speed of sound (subsonic) and are often used for precision strikes against ground or naval targets. **Eg: Nirbhay.** Hence, **statement 3 is incorrect.**
- **Supersonic Cruise Missiles:** Supersonic cruise missiles travel at speeds exceeding the speed of sound (supersonic) and offer enhanced speed and maneuverability. **Eg: Brahmos.** Hence, **statement 2 is correct.**

5. Answer: D

Explanation

- A supercomputer is an **exceptionally powerful computer** that can perform complex calculations and process massive amounts of data at incredibly high speeds.
- Supercomputers use **parallel processing** to divide problems and solve them simultaneously, **speeding up tasks** by using thousands of processors. Hence, **statement 1 is correct.**

How do supercomputers work?

- Supercomputer architectures are made up of **multiple central processing units (CPUs).**
- These CPUs have **groups** composed of **compute nodes and memory.**
- Supercomputers can contain thousands of nodes that use **parallel processing** to communicate with one another to solve problems.
- The performance of a supercomputer is measured in **floating-point operations per second (FLOPS).** Hence, **statement 2 is correct.**

Applications of supercomputers

- Supercomputers find applications in various fields where substantial computational power is required such as **scientific research, enabling simulations of physical phenomena, climate modeling, and molecular dynamics.**
- Supercomputers are also extensively used in **industries such as aerospace engineering, oil exploration, financial modeling, and healthcare for tasks like computational fluid dynamics, seismic analysis, risk assessment, and drug discovery.**

Supercomputers in India

- The **first indigenously built supercomputer** under the **National Supercomputing Mission** was **Param Shivay** at Indian Institute of Technology, BHU, Varanasi in 2019.

- **Airawat PSAI**, stands as India's largest and fastest AI supercomputing system with a speed of 13,170 teraflops.

Why in News?

- Prime Minister Narendra Modi launched **three PARAM Rudra supercomputers,** a significant step in India's push for scientific and technological advancement under the **National Supercomputing Mission (NSM).**
  - *PARAM is a series of Indian supercomputers designed and assembled by the Centre for Development of Advanced Computing (C-DAC) in Pune.*
- The supercomputers, **developed indigenously** at a cost of ₹130 crore, have been deployed in **Pune, Delhi, and Kolkata** to **drive pioneering research across multiple scientific disciplines.** Hence, **statement 3 is correct.**
- The PARAM Rudra supercomputers, part of India's goal of achieving self-reliance in high-performance computing (HPC), will support advanced scientific research in various fields.

National Supercomputing Mission

- NSM was launched in **2015** with the goal to **provide the country with supercomputing infrastructure** to meet the increasing computational demands of academia, researchers, MSMEs, and startups
- This mission is steered jointly by the Department of Science and Technology (DST) and Ministry of Electronics and IT (MeitY) and implemented by the Centre for Development of Advanced Computing (C-DAC), Pune and the Indian Institute of Science (IISc), Bengaluru.
- The main **objectives** of the mission are:
  - **Make India a world leader** in High Performance Computing (HPC) and to enhance the national capability in solving grand challenge problems of national and global relevance
  - **Empower scientists & researchers** with state-of-the-art compute facilities for their cutting-edge research in respective Domains
  - **Reduce redundancies** and avoid duplication of efforts and investments
  - Create an ecosystem for positioning India as a major power for supercomputing and attain **global competitiveness and self-reliance** in HPC.