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Daily MCQs: 10-08-2024

1. Which of the following is/ are the advantages of supercapacitors?

- 1) High capacitance
- 2) High power density
- 3) Quick charging capability

Select the correct answer using the codes given below

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

2. With reference to the Rashtriya Gokul Mission, consider the following statements.

1. It aims at development and conservation of indigenous bovine breeds.
2. Under the mission, Integrated cattle development centers known as 'Gokul Grams' are established.

Which of the statements given above is/are correct?

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

3. Consider the following statements about the Government e-Marketplace

- 1) It is a 100 percent government-owned company setup under the aegis of the Ministry of Commerce and Industry.
- 2) As per existing mandate, GeM is available for use by private sector buyers.

Which of the following statements given above is/are correct?

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

4. Consider the following statements about the Thirty Meter Telescope (TMT).

1. TMT is a 30-meter diameter primary mirror optical and infrared telescope.
2. It is being established at Mauna Kea, Hawaii.
3. India is a Founder-Member Partner in this international collaboration project.

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

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

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5. Exercise Maitree is a joint military exercise conducted between which two countries?

- A. India and Myanmar
- B. India and Thailand
- C. India and Sri Lanka
- D. India and Malaysia

Solutions:

1. Answer: D

Explanation

- A supercapacitor is a capacitor which serves the purpose of **high energy storage** compared to normal capacitors. They are also known as **ultracapacitors**.
- In the energy-power spectrum, supercapacitors take an **intermediate** place between **batteries and capacitors**, delivering higher power densities than the former and higher energy densities than the latter.
- It has advantages such as **high capacitance, high power density, and quick charging capability. Hence all the statements are correct.**

Applications of Supercapacitors

- **Transportation:** A significant application of supercapacitors in this field is seen in hybrid buses, combining with batteries to enhance battery life and reduce the size.
- **Electronic devices:** Tablets, laptops, smartphones and other memory devices are developed using supercapacitors. They are also used in LED Flash units.
- **Medical Field:** Supercapacitors find applications in portable devices (ECG monitors, blood pressure monitors), ultrasound machines and in drug delivery systems.
- Supercapacitors are also used in the field of **renewable energy**. They are used to supply power to pitch control of blades in the wind energy.
- They are also used in the **automotive industry** to provide stored energy to vehicles in a few seconds.

2. Answer: C

Explanation

- **Statement 1 is correct:** The Rashtriya Gokul Mission (RGM) is being implemented for **development and conservation of indigenous bovine breeds** since 2014.
- The scheme is important in **enhancing milk production and productivity of bovines** to meet growing demand of milk and making dairying more remunerative to the rural farmers of the country.
- The RGM will result in enhanced productivity and benefit of the programme, percolating to all cattle and buffaloes of India especially with small and marginal farmers.
- This programme will also **benefit women in particular** since over 70% of the work involved in livestock farming is undertaken by women.

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- **Statement 2 is correct:** Under RGM, **Integrated cattle development centers**, known as '**Gokul Grams**' are established with the aim of conservation and development of indigenous bovine breeds in a scientific and holistic manner.
- It is implemented by the **Department of Animal Husbandry and Dairying** under the **Ministry of Fisheries, Animal Husbandry & Dairying**.

Objectives

- To **enhance productivity of bovines and increase milk production** in a sustainable manner using advanced technologies.
- To propagate **use of high genetic merit bulls for breeding purposes**.
- To **enhance Artificial insemination coverage** through strengthening breeding network and delivery of Artificial insemination services at farmers doorstep.
- To **promote indigenous cattle & buffalo rearing and conservation** in a scientific and holistic manner.

3. Answer: A

Explanation

- **Statement 1 is correct:** Launched in 2016, the Government e-Marketplace (GeM) is a **100 percent government-owned company** setup under the aegis of the **Ministry of Commerce and Industry**.
- It is a completely paperless, cashless and system driven e-market place that **enables procurement of common use goods and services** with minimal human interface.
- GeM aims to enhance transparency, efficiency and speed in public procurement.
- GeM was developed with the technical support of the **National eGovernance Division** under the Ministry of Electronics and Information Technology.
- In 2017, the government made it **mandatory** for all the departments and ministries to source goods and services from the GeM.
- At present, the platform is open for procurement by **all government buyers**: central and state ministries, departments, public sector enterprises, autonomous institutions, local bodies, etc.
- In 2022, the government gave its approval for expanding the mandate of GeM to **allow procurement by Cooperatives as buyers on GeM**.
- **Statement 2 is incorrect:** As per existing mandate, **GeM is not available for use by private sector buyers. Suppliers (sellers) can be from across all segments: government or private.**

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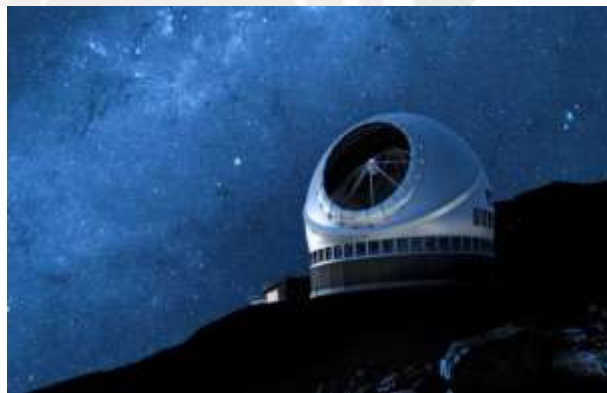
Did you know?

GeM SAHAY app is an initiative to facilitate small sellers to avail of credit financing from various integrated lenders for the orders received on GeM Portal.

4. Answer: C

Explanation:

- **Statements 1 & 2 are correct:** Thirty Meter Telescope (TMT) is a **30-meter diameter primary mirror optical and infrared telescope** being established at **Mauna Kea, Hawaii, USA**.
- TMT is a new class of **extremely large telescopes** that will allow us to **see deeper into space and observe cosmic objects with unprecedented sensitivity**.
- At the heart of the telescope is the **segmented mirror**, made up of 492 individual segments. Precisely aligned, these segments will work as a single reflective surface of 30m diameter.



- This will provide unparalleled resolution with TMT images more than 12 times sharper than those from **NASA's Hubble Space Telescope** (launched in 1990 into a low-Earth orbit).
- Once it is built, the TMT will become the **world's largest ground-based telescope operating at optical and infrared wavelengths**, allowing astronomers to study the outer reaches of the universe and study distant stars and **exoplanets** in much greater detail than is currently possible.

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- *An exoplanet, or extrasolar planet, is a planet outside of our solar system that usually orbits another star in our galaxy.*

Who is building TMT?

- The Thirty Meter Telescope is being designed and developed by the **TMT International Observatory LLC (TIO)**.
- The TIO is an **international collaboration** of research institutions and national governments including **the USA, Japan, China, India and Canada**.
- **Statement 3 is correct: India is a Founder-Member Partner** in this project which aims to open new windows to the universe through optical and infrared astronomy.

Benefits of TMT

- It will allow astronomers to **explore the mysterious period in the life of the universe** when the first stars and galaxies were formed.
- One of its key uses will be the **study of exoplanets**, many of which have been detected in the last few years, and whether their atmospheres contain water vapour or methane — the signatures of possible life.
- TMT will also observe the **formation and development of the large-scale structures** by looking at faint **distant galaxies** and the intergalactic medium.
- It has the capability to detect and investigate **black holes** that reside in the center of many distant galaxies, as well as study in detail the black hole in the center of our own Milky Way.

5. Answer: B

Explanation

- The 13th edition of **India- Thailand joint military Exercise MAITREE** was recently held in Thailand.
- Aim of Exercise MAITREE is to foster Military Cooperation between India and Thailand.