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## Science and Technology UPSC CSE 2025

### 1. Consider the following statements regarding Quantum Technology in India:

1. National Quantum Mission aims to develop quantum computers with 50–1000 physical qubits.
2. India has launched its first quantum satellite in 2024 for secure communication.
3. Quantum Key Distribution (QKD) is a classical method of data encryption.

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

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2, and 3

✓ **Answer:** (b) 1 and 2 only

*Statement 3 is incorrect. QKD is a quantum, not classical, method.*

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### 2. What is the primary purpose of the LVM3 rocket used by ISRO?

- (a) Launching nano-satellites for academic research
- (b) Sending crew modules into orbit under Gaganyaan
- (c) Deploying military satellites in geostationary orbit
- (d) Conducting suborbital space tourism flights

✓ **Answer:** (b) Sending crew modules into orbit under Gaganyaan

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### 3. Which of the following pairs is/are correctly matched?

Technology	Application
mRNA vaccine	Cancer therapy
LiDAR	Forest mapping
CRISPR-Cas9	Genome editing

### Select the correct answer using the code below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (d) 1, 2 and 3

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**4. 'Sagar Sampark' recently seen in the news is:**

- (a) A naval surveillance satellite
- (b) A coastal radar network by DRDO
- (c) An indigenous real-time vessel traffic service system
- (d) A new ocean data buoy system for tsunami warning

✓ **Answer:** (c) An indigenous real-time vessel traffic service system

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**5. Which of the following is/are characteristic of 6G technology?**

- 1. Terahertz frequency communication
- 2. Ultra-low latency
- 3. Satellite-integrated communication

**Select the correct code:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (d) 1, 2 and 3

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**6. The term "Neural Radiance Fields (NeRF)" recently seen in the context of AI refers to:**

- (a) AI-based forecasting of radiation levels
- (b) Deep learning model for 3D scene reconstruction
- (c) Algorithm for quantum image compression
- (d) Software for simulating radiative heat transfer in space

✓ **Answer:** (b) Deep learning model for 3D scene reconstruction

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**7. With reference to the Chandrayaan-3 mission, consider the following:**

- 1. It carried a lander and a rover named Vikram and Pragyan, respectively.
- 2. The mission was unsuccessful in achieving a soft landing.

3. It was launched using PSLV.

**Which of the statements is/are correct?**

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (a) 1 only

✦ *It was launched using LVM3 and successfully soft-landed on Moon.*

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**8. The term "Digital Twin" refers to:**

- (a) A backup server system
- (b) A real-time virtual replica of a physical entity
- (c) A quantum processor clone
- (d) An AI chatbot replicating human cognition

✓ **Answer:** (b) A real-time virtual replica of a physical entity

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**9. Which Indian city was selected as the hub for the IndiaAI Mission launched in 2024?**

- (a) Hyderabad
- (b) Bengaluru
- (c) Pune
- (d) Gurugram

✓ **Answer:** (b) Bengaluru

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**10. Consider the following statements about DNA computing:**

- 1. It uses DNA, biochemistry, and molecular biology to solve problems.
- 2. It is expected to be faster and more efficient than traditional silicon-based computing for specific problems.
- 3. India's first DNA computer was developed in 2024.

**Which of the statements is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only

- (c) 1 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (a) 1 and 2 only

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**11. Concerning the Aditya-L1 mission, consider the following statements:**

1. It is India's first dedicated solar observatory.
2. It was placed in a Low Earth Orbit (LEO).
3. The mission aims to study the solar corona and solar wind.

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

- (a) 1 and 3 only
- (b) 2 and 3 only
- (c) 1 and 2 only
- (d) 1, 2 and 3

✓ **Answer:** (a) 1 and 3 only

★ *It is positioned at Lagrange Point L1, not in Low Earth Orbit.*

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**12. Which of the following satellites are associated with climate or environmental monitoring?**

1. INSAT-3D
2. Megha-Tropiques
3. RISAT-1A
4. Oceansat-3

**Select the correct answer using the code below:**

- (a) 1 and 2 only
- (b) 1, 2 and 4 only
- (c) 2 and 3 only
- (d) 1, 2, 3 and 4

✓ **Answer:** (b) 1, 2, and 4 only

★ *RISAT-1A is a radar satellite used mainly for all-weather surveillance.*

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**13. What is the significance of the NISAR satellite?**

- (a) First Indian satellite to orbit the Sun
- (b) A climate satellite jointly developed by ISRO and JAXA
- (c) An Earth observation satellite developed jointly by ISRO and NASA
- (d) A communication satellite for rural broadband

✓ **Answer:** (c) An Earth observation satellite developed jointly by ISRO and NASA

✦ *NISAR stands for NASA-ISRO Synthetic Aperture Radar.*

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**14. Which of the following is/are true about GSAT-24?**

- 1. It is a commercial communication satellite.
- 2. It was launched aboard an Ariane 5 rocket from French Guiana.
- 3. It is owned and operated by NewSpace India Ltd (NSIL).

**Select the correct code:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (d) 1, 2 and 3

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**15. Consider the following statements regarding Chandrayaan-3:**

- 1. It is the first mission to land near the Moon's south pole.
- 2. The lander Vikram carried a seismometer called ILSA.
- 3. It failed to establish communication with the orbiter after landing.

**Which of the statements is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

✓ **Answer:** (a) 1 and 2 only

✦ *Communication with the orbiter was not a failure; they functioned as planned.*

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**16. Which of the following are Low Earth Orbit (LEO) satellites?**

1. Cartosat-3
2. RISAT-1A
3. GSAT-11
4. Microsat-R

**Select the correct code:**

- (a) 1, 2 and 3
- (b) 2 and 4 only
- (c) 1, 2 and 4
- (d) 1 and 3 only

✓ **Answer:** (c) 1, 2 and 4

★ *GSAT-11 is a geostationary satellite.*

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**17. What is the primary function of the IRNSS/NavIC system?**

- (a) Weather forecasting
- (b) Maritime surveillance
- (c) Regional satellite navigation
- (d) Launch vehicle telemetry

✓ **Answer:** (c) Regional satellite navigation

★ *NavIC is India's indigenous navigation system, similar to GPS.*

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**18. XPoSat, recently launched by ISRO aims to study:**

- (a) Polar climate and sea-ice thickness
- (b) X-ray polarization from celestial sources
- (c) Solar flares and geomagnetic storms
- (d) Gamma-ray bursts in deep space

✓ **Answer:** (b) X-ray polarization from celestial sources

★ *XPoSat = X-ray Polarimeter Satellite.*

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**19. The 'INSAT' series of satellites are primarily used for:**

- (a) Oceanographic studies
- (b) Meteorology and telecommunications

- (c) Cartographic mapping
- (d) Defence surveillance

✓ **Answer:** (b) Meteorology and telecommunications

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**20. Which of the following satellites are used for Earth Observation (EO)?**

1. EOS-07
2. Cartosat-2E
3. GSAT-6
4. RESOURCESAT-2A

**Select the correct answer using the code below:**

- (a) 1, 2 and 4 only
- (b) 1, 3 and 4 only
- (c) 2 and 3 only
- (d) 1 and 4 only

✓ **Answer:** (a) 1, 2, and 4 only

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