

**MCQs**

**1. On what date did Indian astronaut Group Captain Shubhanshu Shukla return to Earth?**

- a) July 14, 2025
- b) July 15, 2025
- c) July 16, 2025
- d) July 17, 2025

**Correct Answer:** b) July 15, 2025

**Explanation:** The news states, "Indian astronaut Group Captain Shubhanshu Shukla returned safely to Earth on July 15, 2025..."

**2. How many major microgravity experiments did Group Captain Shubhanshu Shukla conduct during his ISS stay?**

- a) Five
- b) Six
- c) Seven
- d) Eight

**Correct Answer:** c) Seven

**Explanation:** The news states, "During his ISS stay, Shukla conducted seven major microgravity experiments..."

**3. What is the estimated cost of Group Captain Shubhanshu Shukla's mission to the Indian government?**

- a) Approximately Rs 400 crore
- b) Approximately Rs 450 crore
- c) Approximately Rs 500 crore
- d) Approximately Rs 550 crore

**Correct Answer:** d) Approximately Rs 550 crore

**Explanation:** The news states, "The mission is reported to have cost the Indian government approximately Rs 550 crore (about \$59 million)."

**4. Which ISRO missions are now incorporated into the new NCERT Class 8 Science textbook, "Curiosity"?**

- a) Only Chandrayaan-3 and Aditya-L1
- b) Chandrayaan 1, 2, and 3, Aditya-L1, and Mangalyaan
- c) Gaganyaan and Bharatiya Antariksha Station
- d) Only Mangalyaan and Chandrayaan-1

**Correct Answer:** b) Chandrayaan 1, 2, and 3, Aditya-L1, and Mangalyaan

**Explanation:** The news states, "The new NCERT Class 8 Science textbook, "Curiosity," now incorporates different ISRO missions like Chandrayaan 1, 2, and 3, Aditya-L1, and Mangalyaan..."

**5. On what date did SpaceX launch the first of three missions for Amazon's Project Kuiper broadband internet constellation?**

- a) July 14, 2025
- b) July 15, 2025
- c) July 16, 2025
- d) July 17, 2025

**Correct Answer:** b) July 15, 2025

**Explanation:** The news states, "On July 15, 2025, SpaceX launched the first of three missions for Amazon's Project Kuiper..."

**6. What is the estimated width of the newly confirmed interstellar object 3I/ATLAS (C/2025 N1)?**

- a) Approximately 5 km
- b) Approximately 10 km
- c) Approximately 20 km
- d) Approximately 50 km

**Correct Answer:** c) Approximately 20 km



## Space & Astronomy

### I. India's Human Spaceflight Program

**Group Captain Shubhanshu Shukla's Return:** Indian astronaut Group Captain Shubhanshu Shukla returned safely to Earth on **July 15, 2025**, after completing an 18-day scientific mission aboard the International Space Station (ISS) as part of the **Axiom Mission 4 (Ax-4)**. He splashed down in the Pacific Ocean off the coast of California.

**Post-Mission Rehabilitation:** Group Captain Shukla is currently undergoing a **week-long rehabilitation program** in Houston, supervised by Axiom's flight surgeon and with participation from ISRO's flight surgeon. This program focuses on cardiovascular assessments, musculoskeletal tests, and psychological debriefs to help him readjust to Earth's gravity.

**Scientific Contributions:** During his ISS stay, Shukla conducted seven major microgravity experiments designed by Indian scientific institutions under ISRO's Human Space Flight Centre. These experiments included studies on:

- Tardigrade survivability
- Muscle development (Myogenesis)
- Seed germination (moong and methi)
- Cyanobacteria research for life support
- Microalgae growth for food and fuel
- Cognitive performance in space
- Material science in microgravity

**Historical Significance & Future Plans:** Shukla's mission marks a significant milestone, making him the **first Indian astronaut to travel to the ISS** and India's second national astronaut in space since 1984. The Union Cabinet passed a resolution hailing his mission as a "beacon for youth" and a source of inspiration, noting its contribution to India's future human spaceflight goals, including the Gaganyaan mission and the

proposed Bharatiya Antariksha Station. The mission is reported to have cost the Indian government approximately Rs 550 crore (about \$59 million).

**NCERT Textbook Update:** The new NCERT Class 8 Science textbook, "Curiosity," now incorporates different ISRO missions like Chandrayaan 1, 2, and 3, Aditya-L1, and Mangalyaan to make students aware of India's scientific legacy.

### II. International Space Missions & Discoveries

**SpaceX Launches for Amazon's Project Kuiper:** On **July 15, 2025**, SpaceX launched the first of three missions for Amazon's Project Kuiper broadband internet constellation. A Falcon 9 rocket successfully deployed 24 Kuiper satellites from Cape Canaveral Space Force Station. Amazon is required by the FCC to have at least 50% of its planned 3,236-satellite constellation in operation by July 30, 2026.

**Interstellar Object 3I/ATLAS Confirmed:** Astronomers have confirmed the discovery of **3I/ATLAS (C/2025 N1)**, which is only the third known interstellar object to pass through our solar system, following 'Oumuamua and 2I/Borisov. Detected by NASA's ATLAS survey, this comet is remarkable for its size (approximately 20 km wide), making it much larger and brighter than its predecessors. Its hyperbolic trajectory and icy composition offer a rare opportunity to study material from beyond our solar system.

**NASA's Mars Curiosity Rover:** The Curiosity rover continues to operate on Mars. A new study using its data suggests that Mars experienced only brief periods of habitability, with climate cycles quickly returning it to a deep freeze.

**Exoplanet Breakthroughs:** The direct imaging of exoplanets is advancing, with the James Webb Space Telescope (JWST) leading the way. The discovery of exoplanets in debris disks and their interactions with



host stars provides new insights into planetary system evolution. ESA's Cheops mission revealed that exoplanet HIP 67522 b is triggering powerful, destructive flares from its young host star.

**Quantum Communications in Space:** SpeQtral and Thales Alenia Space have signed an agreement to develop and demonstrate quantum communications between space and Earth, laying the groundwork for a future quantum internet.

**Wildfire Detection Satellite:** Muon Space's FireSat Protoflight satellite is scanning the entire Earth every 20 minutes using advanced infrared sensors to detect wildfires as small as 5 meters. The constellation aims to expand to over 50 satellites by 2030.

**European Earth Observation:** ESA's Sentinel-4 instrument, launched aboard the Airbus-built MTG-S1 satellite, is delivering high-resolution data on atmospheric composition, aiding air quality monitoring.

**Artemis Program Funding:** The US Congress has allocated nearly \$10 billion in additional funding for NASA's Artemis program, reversing proposed cuts and extending support for the Space Launch System (SLS), Orion crew capsule, and Lunar Gateway.

**New Distant Solar System Object "Ammonite":** An international research team, including astronomers from ASIAA, used CFHT's MegaCam to trace the orbit of a new distant object in our Solar System, named Ammonite, confirmed on July 15, 2025.

**NASA's Chandra X-ray Observatory:** New data from NASA's Chandra X-ray Observatory reveals a star unleashing X-rays that are causing a closely-orbiting, young planet to shrink at an astonishing rate.

### III. Upcoming Launches & Celestial Events (July 2025)

**NASA Wallops Support for Launch Operations:** NASA's Wallops Flight Facility in Virginia is supporting sounding rocket launch operations during a window extending from July 17-31, 2025.

**SpaceX Falcon 9: Starlink 17-3 Launch:** A SpaceX Falcon 9 rocket launched a batch of Starlink satellites into low-Earth orbit (LEO) from Vandenberg Space Force Base, California, on July 16, 2025.

**Full Moon (Buck Moon):** The first full moon of July, known as the "Buck Moon," was visible on July 10, 2025.

**Moon Occulting the Pleiades:** On July 20, 2025, skywatchers in North America can witness the Moon pass in front of the Pleiades star cluster.

**Mercury at Greatest Eastern Elongation:** Mercury reached its greatest eastern elongation on July 4, 2025, offering a good viewing opportunity shortly after sunset.

**Delta Aquariid Meteor Shower:** This meteor shower is usually active from July 18 to August 12, with its peak likely overnight on July 29-30, 2025, offering up to 25 meteor sightings per hour.

**Perseid Meteor Shower:** The Perseids will be visible from July 17 until August 24, with numbers steadily increasing towards a peak on August 12.

**Pluto at Opposition and Perigee:** On July 25, 2025, Pluto will be directly opposite the Sun and closest to Earth, making it the best time to attempt to sight the dwarf planet with a powerful telescope.

**Moon-Mars Conjunction:** The Moon is set to closely pass Mars in the Taurus constellation on July 29.





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**Explanation:** The news states, "this comet is remarkable for its size (approximately 20 km wide)..."

**7. Which ESA mission revealed that exoplanet HIP 67522 b is triggering powerful, destructive flares from its young host star?**

- a) Gaia mission
- b) Euclid mission
- c) Cheops mission
- d) Planck mission

**Correct Answer:** c) Cheops mission

**Explanation:** The news states, "ESA's Cheops mission revealed that exoplanet HIP 67522 b is triggering powerful, destructive flares from its young host star."

**8. How much additional funding has the US Congress allocated for NASA's Artemis program?**

- a) Nearly \$5 billion
- b) Nearly \$7 billion
- c) Nearly \$10 billion
- d) Nearly \$12 billion

**Correct Answer:** c) Nearly \$10 billion

**Explanation:** The news states, "The US Congress has allocated nearly \$10 billion in additional funding for NASA's Artemis program..."

**9. What is the name of the new distant object in our Solar System, confirmed on July 15, 2025?**

- a) Comet Halley
- b) Oort Cloud object
- c) Sedna
- d) Ammonite

**Correct Answer:** d) Ammonite

**Explanation:** The news states, "...a new distant object in our Solar System, named Ammonite, confirmed on July 15, 2025."

**10. What is the peak date for the Delta Aquariid Meteor Shower in July 2025?**

- a) July 20-21
- b) July 25-26
- c) July 29-30
- d) August 1-2

**Correct Answer:** c) July 29-30

**Explanation:** The news states, "Delta Aquariid Meteor Shower: This meteor shower... with its peak likely overnight on July 29-30, 2025..."

**11. When will Pluto be at opposition and perigee, making it the best time to attempt to sight it?**

- a) July 20, 2025
- b) July 25, 2025
- c) July 29, 2025
- d) August 12, 2025

**Correct Answer:** b) July 25, 2025

**Explanation:** The news states, "On July 25, 2025, Pluto will be directly opposite the Sun and closest to Earth..."

