

Modern Timekeeping and Calendars

Chapter 11: Keeping Time with the Skies · Topic 2

Key Concept

Modern clocks now use extremely precise atomic clocks, which measure time based on the vibrations of atoms (typically caesium), accurate to within a fraction of a second over millions of years — far more precise than any mechanical or natural method. Calendars, though based on astronomical cycles, are also shaped by cultural and religious traditions, which is why different calendar systems (like the lunar Islamic calendar or lunisolar Hindu calendar) exist alongside the widely used solar Gregorian calendar.

Quick Revision Notes

- A day is based on Earth's rotation (24 hours); a year is based on Earth's revolution (~365.25 days).
- A leap year (366 days) corrects the extra quarter-day that accumulates every four years.
- Atomic clocks measure time using atomic vibrations, extremely precise.
- Different calendar systems (solar, lunar, lunisolar) exist based on cultural and religious traditions.

Practice Questions

- 1 Explain why we have a leap year every four years.
- 2 Why are atomic clocks considered more accurate than mechanical clocks?
- 3 Name one calendar system other than the Gregorian calendar and describe its basis.