11 Keeping Time with the Skies

Fill in the Blanks

1. The changing shapes of the Moon are called _____.
2. A full cycle of Moon phases takes about _____ days.
3. The increasing bright portion of the Moon is called _____.
4. The decreasing bright portion is called _____.
5. A lunar year has _____ days.
6. A solar year has _____ days.
7. The Indian National Calendar begins on _____.
8. Human-made objects orbiting Earth are called _____.
9. The _____ is an extra month added in luni-solar calendars.
10. _____ is responsible for launching Indian satellites.

True or False

1. The Moon emits its own light.
2. The phases of the Moon are caused by Earth's shadow.
3. A lunar month lasts for about 29.5 days.
4. The Gregorian calendar is a lunar calendar.
5. Artificial satellites can be seen as moving points of light.
6. Artificial satellites revolve around the Sun.
7. A leap year has 366 days.
8. Lunar calendars have months based on Moon phases.
9. Diwali always falls on the same date in the Gregorian calendar.
10. The Indian National Calendar is a solar calendar.

Multiple Choice Questions (MCQs)

1. The changing shapes of the Moon are called:
(a) Shadows (b) Eclipse (c) Reflections (d) Phases

2. The period when the Moon's bright part decreases is called:
(a) Waning (b) Waxing (c) Eclipse (d) Rotation

3. A lunar month is approximately:
(a) 15 days (b) 28 days (c) 31 days (d) 29.5 days

4. The Gregorian calendar is based on:
(a) Moon's revolution (b) Earth's revolution (c) Sun's rotation (d) Star positions

5. An extra month in a luni-solar calendar is called:
(a) Leap month (b) Adhika Maasa (c) Solar month (d) Interchange month

6. ISRO's satellite for mapping Earth is:
(a) AstroSat (b) Cartosat (c) Aditya-L1 (d) Mangalyaan

7. The Indian National Calendar starts from:
(a) 1 January (b) 21 March (c) 22 March (d) 15 April

8. Which phenomenon defines a day?
(a) Earth's revolution (b) Earth's rotation (c) Moon's revolution (d) Sun's rotation

Short Answer Questions

Q1. Why do we see only part of the Moon?

Q2. What causes Moon phases?

Q3. Define waxing and waning.

Q4. Why doesn't the Moon rise at the same time daily?

Q5. How is a day measured?

Q6. What is a leap year?

Q7. What is an intercalary month?

Q8. Why does Eid change dates every year?

Q9. Name any three ISRO satellites.

Long Answer Questions

Q1. Explain why the Moon shows different phases.

Q2. Describe the waxing and waning phases of the Moon.

Q3. How did calendars come into existence?

Q4. Differentiate between lunar, solar, and luni-solar calendars.

Q5. How are festivals related to astronomical phenomena?

Q6. Why are artificial satellites launched? Explain their importance.

Answers

Fill in the Blanks

1. phases of the Moon	2. 29.5	3. waxing	4. waning	5. 354
6. 365¼	7. 22 March	8. artificial satellites	9. Adhika Maasa	10. ISRO

True or False

1. False	2. False	3. True	4. False	5. True
6. False	7. True	8. True	9. False	10. True

Multiple Choice Questions (MCQs)

1. (d) Phases
2. (a) Waning
3. (d) 29.5 days
4. (b) Earth's revolution
5. (b) Adhika Maasa
6. (b) Cartosat
7. (c) 22 March
8. (b) Earth's rotation

Short Answer Questions

Q1. Why do we see only part of the Moon?
Ans. Because the Moon reflects sunlight, and only the illuminated part facing Earth is visible.

Q2. What causes Moon phases?
Ans. The changing position of Moon relative to Earth and Sun.

Q3. Define waxing and waning.
Ans. Waxing: Bright part increases.
Waning: Bright part decreases.

Q4. Why doesn't the Moon rise at the same time daily?
Ans. It moves ahead in its orbit; Earth needs ~50 extra minutes to face it again.

Q5. How is a day measured?
Ans. Time between the Sun's highest position on two consecutive days.

Q6. What is a leap year?
Ans. A year with 366 days to adjust for the extra ¼ day in Earth's revolution.

Q7. What is an intercalary month?
Ans. An extra month added in luni-solar calendars every 2–3 years.

Q8. Why does Eid change dates every year?
Ans. Because it follows a purely lunar calendar.

Q9. Name any two ISRO satellites.
Ans. AstroSat, Cartosat, Chandrayaan-3.

Long Answer Questions

Q1. Explain why the Moon shows different phases.

Ans:

The Moon revolves around the Earth and reflects sunlight. Only half of the Moon is illuminated by the Sun at any time. As the Moon changes its position with respect to the Sun and Earth, different portions of its illuminated part become visible from Earth.

When the illuminated side fully faces Earth, we see a full Moon. When the illuminated side faces away, we see a new Moon. Intermediate positions produce crescent, half, and gibbous phases. Hence, the phases occur due to the Moon's revolution, not due to Earth's shadow.

Q2. Describe the waxing and waning phases of the Moon.

Ans:

- After a new Moon, the illuminated part of the Moon gradually increases. This period is called the waxing phase and ends at the full Moon.
- After the full Moon, the illuminated part starts decreasing. This period is called the waning phase and ends at the next new Moon.
- Together, one waxing and one waning phase complete a lunar month of about 29.5 days.

Q3. How did calendars come into existence?

Ans: Calendars were developed based on natural periodic events observed in the sky:

- The rotation of Earth gives a day.
- The revolution of the Moon gives a month.
- The revolution of Earth around the Sun gives a year.
- Ancient people observed these regular patterns and created calendars to keep track of time, seasons, agricultural activities, and festivals.

Q4. Differentiate between lunar, solar, and luni-solar calendars.

Ans:

Lunar Calendar	Solar Calendar	Luni-Solar Calendar
Based on Moon's phases	Based on Earth's revolution	Based on Moon & Sun
354 days in a year	365 days in a year	Adjusts lunar months
Seasons shift	Seasons fixed	Seasons adjusted
Example: Islamic calendar	Example: Gregorian calendar	Indian traditional calendars

Q5. How are festivals related to astronomical phenomena?

Ans: Many Indian festivals are based on Moon phases or solar positions.

- Lunar or luni-solar festivals like Diwali, Holi, and Eid depend on Moon phases and hence change dates every year.
- Solar festivals like Makar Sankranti occur on nearly the same date each year.

Thus, the dates of festivals are closely linked to the movements of the Moon and the Sun.

Q6. Why are artificial satellites launched? Explain their importance.

Ans:

Artificial satellites are launched to orbit the Earth and perform important functions such as:

- Communication (TV, mobile phones, internet)
- Weather forecasting and cyclone warnings
- Navigation (GPS)
- Mapping and disaster management
- Scientific research and space exploration

They play a vital role in modern life and national development.