* **Choose the correct alternative from those given below question** [12]

1. What do they call the Moon when it's more than half lit but not full?
   (A) Crescent (B) Gibbous (C) Quarter (D) Eclipse Moon

   Ans. : (B) Gibbous

2. What is the sequence of phases starting from New Moon?
   (A) New Moon → Full Moon → Waxing Crescent → First Quarter
   (B) New Moon → Waxing Crescent → First Quarter → Full Moon
   (C) Full Moon → Waning Gibbous → New Moon
   (D) First Quarter → Full Moon → New Moon

   Ans. : (B) New Moon → Waxing Crescent → First Quarter → Full Moon

3. What causes the phases of the Moon?
   (A) The Earth's rotation
   (B) The Moon's rotation
   (C) The Moon's orbit around the Earth
   (D) The Sun's movement

   Ans. : (C) The Moon's orbit around the Earth

4. How long does one complete cycle of Moon phases take?
   (A) 7 days (B) 15 days (C) 29.5 days (D) 365 days

   Ans. : (C) 29.5 days

5. What is the phase when the entire face of the Moon is visible from Earth?
   (A) First Quarter (B) New Moon (C) Full Moon (D) Waning Crescent

   Ans. : (C) Full Moon

6. Assertion (A): The Moon appears to change shape throughout the month.
   Reason (R): The Earth casts different shadows on the Moon each night.
   (A) Both (A) and (R) are true, and (R) is the correct explanation of (A).
   (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
   (C) (A) is true, but (R) is false.
   (D) (A) is false, but (R) is true.

   Ans. : (C) (A) is true, but (R) is false.

7. Assertion (A): The Full Moon rises at sunset and sets at sunrise.
   Reason (R): The Full Moon is directly opposite the Sun in the sky.
   (A) Both (A) and (R) are true, and (R) is the correct explanation of (A).

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

(C) (A) is true, but (R) is false.

(D) (A) is false, but (R) is true.

Ans.: (A) Both (A) and (R) are true, and (R) is the correct explanation of (A).

8. Why don't we have solar and lunar eclipses every month?

(A) The Moon doesn't always orbit (B) The sun doesn't rise every day

(C) The Moon's orbit is tilted (D) Earth moves too fast

Ans. : self

9. What is the Moon's position during a solar eclipse?

(A) Behind the Earth (B) Between Earth and Sun

(C) Beside the Earth (D) Far away from Earth

Ans. : self

10. Which direction does the Moon rise from?

(A) West (B) North (C) East (D) South

Ans. : self

11. How many major phases does the Moon have?

(A) 2 (B) 6 (C) 4 (D) 8

Ans. : self

12. What is the term for the Moon when it appears to grow larger each night?

(A) Waning (B) Waxing (C) Gibbous (D) Crescent

Ans. : self

*** Fill in the blanks:** **[10]**

13. The Moon does not have its own light; it _____ the sunlight.

Ans. : Reflects

14. The changing shapes of the Moon that we see from Earth are called _____

Ans. : Phases

15. A full cycle of the Moon's phases takes about _____ days.

Ans. : 29.5

16. The phase when the Moon is not visible from Earth is called _____

Ans. : New Moon

17. The Moon appears to grow during the _____ phase.

Ans. : Waxing

18. A _____ eclipse happens when the Earth comes between the Sun and the Moon.

Ans. : self

19. The Moon rises in the _____ and sets in the west.

Ans. : self

20. The _____ Moon phase occurs whenthe Moon is halfway lit and growing.

Ans. : self

21. We do not see eclipses every month because the Moon's orbit is _____ tilted.

Ans. : self

22. The extra bright part of the Moon during waxing or waning is called _____ Moon.

Ans. : self

*** Answer the following questions in short.** **[42]**

23. Have you ever seen the Moon during the day? Why do you think it is sometimes possible when the Sun is up?

Ans. : Yes, the Moon can often be seen during the day, especially in its waxing and waning phases. This happens because the Moon reflects sunlight, and during certain phases, it is high enough in the sky while the Sun is also up, making it visible.

24. Malini saw the Moon overhead in the sky at sunset.
    1. Draw the phase of the Moon that Malini saw.
    2. Is the Moon in the waxing or the waning phase?

Ans. : 1. At sunset, the Moon is overhead only during the first quarter (a week after New Moon), when the right half is illuminated. So, we need to draw a half Moon (right half bright, left half dark).

2. Waxing phase (because it occurs after New Moon and the bright part is increasing).

25. Scientific studies show that the Moon is getting farther away from the Earth and slower in its revolution. Will luni-solar calendars need an intercalary month more often or less often?

Ans. : Luni-solar calendars will need an intercalary month more often as the Moon moves farther and slower, and it takes longer to complete a cycle. So, a lunar year becomes even shorter compared to the solar year.

26. A total of 37 full Moons happen during 3 years in a solar calendar. Show that at least two of the 37 full moons must happen during the same month of the solar calendar.

Ans. : Yes, at least two full Moons must happen in the same solar month.
- A solar calendar has 12 months × 3 years = 36 months.
- 37 full Moons in 36 months, at least one month must have 2 full Moons.

27. On a particular night, Vaishali saw the Moon in the sky from sunset to sunrise. What phase of the Moon would she have noticed?

Ans. : As the Moon is visible all night long only on a Full Moon, it is a Full Moon.

28. What do we call the Moon when it is more than half lit but not full?

Ans. : self

29. Which phase comes just before the New Moon?

Ans. : self

30. Does the Moon have air and water?

Ans. : self

31. What is the Moon made up of?

Ans. : self

32. Which direction does the Moon rise from?

Ans. : self

33. What causes a lunar eclipse?

Ans. : self

34. What is a Full Moon, and when does it occur?

Ans. : self

35. What is meant by the term “natural satellite”?

Ans. : self

36. Why is there no atmosphere on the Moon?

Ans. : self

37. What are the differences between crescent and gibbous moons?

Ans. : self

38. What happens during the First and Last Quarter phases?

Ans. : self

39. Why does the Full Moon rise at sunset and set at sunrise?

Ans. : self

40. Ravi took photographs of the Moon every night for a month. He noticed that the Moon started as a New Moon, grew into a Full Moon, and then returned to a New Moon.
(a) What is this complete process called?
(b) How long does this cycle take?
(c) Which phase comes just after the Full Moon?

Ans. : self

41. During a beach vacation, Alok noticed the water level on the shore rising and falling twice a day. His father told him this happens because of the Moon.
(a) What is this phenomenon called?
(b) How does the Moon cause it?
(c) During which Moon phases are the tides the highest?

Ans. : self

42. In an ancient village, people tracked the time by watching the Moon. Every time the Moon returned to the same phase, they marked the beginning of a new month.
(a) What type of calendar were they using?
(b) How many days are there in one complete Moon phase cycle?
(c) Why is the Moon useful for tracking time?

Ans. : self

43. Some children say that the Moon gives its own light because it shines at night.
(a) Does the Moon produce its own light?
(b) Then how is it visible to us?
(c) Which other object is responsible for lighting up the Moon?

Ans. : self

*** State whether the following sentences are true or false. Correct the false sentences and rewrite them.** **[14]**

44. We can only see that part of the Moon which reflects sunlight towards us.

Ans. : true: We can only see the part of the Moon that reflects sunlight towards Earth.

45. The shadow of Earth blocks sunlight from reaching the Moon, causing phases.

Ans. : False: The Earth's shadow causes lunar eclipses, not the regular phases of the Moon.

46. Calendars are based on various astronomical cycles which repeat predictably.

Ans. : true: Calendars are based on repeating astronomical events like day-night, Moon phases, and seasons.

47. The Moon can only be seen at night.

Ans. : false: The Moon can also be seen during the daytime, depending on its phase and position in the sky.

48. A lunar eclipse occurs when the Moon comes between the Earth and the Sun.

Ans. : false

49. The Full Moon appears once every lunar cycle.

Ans. : true

50. The Moon's surface is smooth and shiny.

Ans. : false

51. We can sometimes see the Moon during the daytime.

Ans. : true

52. The Moon always shows the same side to the Earth.

Ans. : true

53. New Moon comes just before Full Moon.

Ans. : self

54. The Moon takes about 29.5 days to complete one revolution around the Earth.

Ans. : self

55. The Moon's orbit is perfectly circular.

Ans. : self

56. Solar and lunar eclipses happen every month.

Ans. : self

57. A waxing moon means the visible part is increasing.

Ans. : self

*** Answer the following questions in short.** **[51]**

58. On which periodic phenomenon are the following measures of time based:
(i) day
(ii) month
(iii) year?

Ans. : (i) Day → Earth's rotation
(ii) Month → Moon's revolution (phases of the Moon)
(iii) Year → Earth's revolution around the Sun.

59. Documenting Changes in the Moon's Appearance

Table Documenting changes in the Moon's appearance

Day	Date	Moon seen at	Appearance of the Moon in the sky	Size of the bright portion compared to the previous day	Moon and Sun separation in the sky compared to the previous day
1.		Sunrise/Sunset	◯	—	—
2.		Sunrise/Sunset	◯	Increased/ Decreased	Closer/Farther
3.		Sunrise/Sunset	◯	Increased/ Decreased	Closer/Farther

Q.1. Did the Moon appear different each day?
Q.2. Was the Moon visible on all days?
Q.3. Did the Moon appear at the same position in the sky as on the previous day?

Ans. : 1. Yes, its visible shape (phase) changed daily.
2. Yes, during these three days, it was visible at sunrise.
3. No, it appeared closer to the Sun and lower in the sky each day.

60. Imagine you lived on the Moon instead of Earth. What would you mean by a day, a month, or a year?

Ans. : • A day on the Moon (from one sunrise to the next) would be about 29.5 Earth days.
• A month might be defined by one complete orbit around Earth (which is also about 27.3 Earth days).
• A year is the time the Earth to complete one orbit around the Sun, which you could still observe from the Moon in about 365 Earth days.

61. Amol was born on the 6th of May on a full Moon day. Does his birthday fall on the full Moon day every year? Explain your answer.

Ans. : No, Amol's birthday does not fall on a full Moon Day every year. This is because the Moon's phases follow a lunar cycle of about 29.5 days, while the calendar year follows the solar cycle of about 365 days. So, the date of the full Moon changes each year in the Gregorian calendar.

62. Ravi said, "I saw a crescent Moon, and it was rising in the East when the Sun was setting." Kaushalya said, "Once I saw the gibbous Moon during the afternoon in the East." Who out of the two is telling the truth?

Ans. : Kaushalya is telling the truth because gibbous Moons can be seen in the East during the afternoon. Ravi's statement is incorrect because Crescent Moons do not rise in the East at sunset. A crescent Moon appears just after the New Moon (waxing crescent) or just before the New Moon (waning crescent). Waxing crescent is visible

after sunset in the western sky, not rising in the east, and waning crescent rises just before sunrise, not at sunset.

63. If we stopped having leap years, in approximately how many years would the Indian Independence Day happen in winter?

Ans. : One leap year adds ~1 day every 4 years.
Without leap years, the calendar shifts by 1 day every 4 years.
There are roughly 183 days between 15 August (monsoon) and winter (mid-February).
183 days × 4 = 732 years
In approximately 730-732 years, 15 August would occur in winter.

64. What is the purpose of launching artificial satellites?

Ans. : Artificial satellites are launched for:
• Communication
• Navigation
• Weather monitoring
• Scientific research
• Disaster management
• Earth observation

65. What is the difference between the waxing and waning phases of the Moon?

Ans. : Waxing means the Moon is growing; the lit portion is increasing. It occurs between New Moon and Full Moon. Waning means the Moon is shrinking; the lit portion is decreasing. It occurs between Full Moon and New Moon.
- Waxing phases: Waxing Crescent, First Quarter, Waxing Gibbous,
- Waning phases: Waning Gibbous, Last Quarter, Waning Crescent.

66. Compare and contrast a Full Moon and a New Moon.

Ans. : - Full Moon: The Moon is fully visible from Earth. Earth is between the Sun and the Moon. It occurs midway in the lunar month.
- New Moon: The Moon is not visible from Earth. The Moon is between the Earth and the Sun. It marks the beginning of the lunar month.
- In both cases, the Moon is aligned with the Earth and Sun, but from opposite directions.

67. Explain how the Moon's phases affect its visibility and position in the sky.

Ans. : The Moon's position in the sky and the timing of its rise and set depend on its phase.
- New Moon rises and sets with the Sun; not visible.
- The First Quarter is visible in the afternoon and early evening.
- Full Moon rises at sunset and sets at sunrise.
- Last Quarter is visible late at night and in the morning.

- As the Moon moves through its orbit, its angle with the Earth and Sun changes, which affects how much of it we see and when.

68. What are the main differences between solar and lunar eclipses?

Ans. :

Feature	Solar Eclipse	Lunar Eclipse
Occurs When	The Moon comes between the Earth and the Sun.	Earth comes between the Sun and the Moon.
Moon Phase	New Moon	Full Moon
Visibility	Only from certain areas on Earth.	Visible from anywhere it's night.
Frequency	Less frequent in a given place.	More frequent and longer-lasting.
Type of Shadow	Moon's shadow falls on Earth.	Earth's shadow falls on the Moon.

69. How do shadows help explain Moon phases and eclipses?

Ans. : Phases of the Moon happen due to the changing angle of sunlight on the Moon as it orbits Earth, not Earth's shadow.
Eclipses, however, are directly related to shadows:
- A solar eclipse occurs when the Moon's shadow falls on Earth.
- A lunar eclipse occurs when the Earth's shadow falls on the Moon.

70. Anita kept a Moon observation diary for a week. On Day 1, she saw a thin crescent on the right side. By Day 4, half of the Moon was visible. By Day 7, almost the full Moon was visible.
Q.1. Which phase did Anita observe on Day 1?
Q.2. What is the name of the phase on Day 4?
Q.3. Was the Moon waxing or waning during these days?

Ans. : (1) Waxing Crescent
(2) First Quarter
(3) Waxing

71. On a school day, students gathered to observe a solar eclipse. Teachers advised them to wear special glasses and explained that the Moon was between the Earth and the Sun at that time.
Q.1. What type of eclipse were the students observing?
Q.2. Which Moon phase is required for this eclipse to occur?
Q.3. Why were students told to wear special glasses?

Ans. : (1) Solar eclipse,
(2) New Moon,
(3) To protect their eyes from harmful sunlight

72. A group of students watched a solar eclipse with their teacher using proper eye protection.
Q.1. What causes a solar eclipse?
Q.2. Which Moon phase is required for a solar eclipse to occur?
Q.3. Why is it dangerous to look at a solar eclipse without protection?

Ans. : 1. A solar eclipse is caused when the Moon comes between the Sun and the Earth, casting a shadow on Earth.
2. It happens only during a New Moon phase.
3. Looking directly at a solar eclipse can damage the eyes because the Sun's harmful rays can cause permanent blindness. Special filters or glasses are required for safe viewing.

73. Sahil notices that on one particular night, the Moon looks completely round and bright.
Q.1. What is this phase of the Moon called?
Q.2. What causes the entire face of the Moon to be visible from Earth during this phase?
Q.3. How many days after a New Moon does a Full Moon usually occur?

Ans. : (1) The phase is called the Full Moon.
(2) The Earth is between the Sun and the Moon, and the entire sunlit side of the Moon faces Earth.
(3) A Full Moon usually occurs about 14 to 15 days after a New Moon.

74. Meena saw the Moon clearly in the sky during the early morning hours, even though the Sun was already up. She was surprised and asked her teacher why the Moon was visible during the day.
Q.1. Is it possible to see the Moon during the daytime?
Q.2. During which Moon phases is daytime visibility more likely?
Q.3. Why is the Moon visible even when the Sun is out?

Ans. : (1) Yes, the Moon is often visible during the day, depending on its position.
(2) The Moon is usually visible during First Quarter, Waning Gibbous, and sometimes Waxing Crescent phases.
(3) The Moon is visible because sunlight reflects off its surface, and it can appear in a different part of the sky than the Sun.

*** Answer the following questions in details [4 marks]** **[16]**

75. What would happen if Earth had two moons instead of one? How would that change the night sky?

Ans. : If Earth had two moons:
- The night sky would be brighter and more dynamic.
- There could be more frequent eclipses.
- The gravitational pull on Earth would be different, possibly affecting tides and even

weather patterns.

• The two moons might cross paths, creating fascinating views or even risks of collision over long periods.

76. If we didn't have clocks or calendars, how else could we measure time?

Ans. : We could measure time by:

• Observing the position of the Sun (sunrise, noon, sunset).

• Using the phases of the Moon to count months.

• Tracking stars and constellations that change with the seasons.

• Using natural events, like plant flowering or animal behaviour, to mark the passage of time.

77. Name two things that are incorrect in the Figure.

Ans. : Two incorrect things are:

• Stars are shown near the Moon during the daytime, which is incorrect because stars are not visible in the daytime sky.

• The Moon's dark part is shaded incorrectly to show a phase. The shadow in the figure suggests it's caused by Earth's shadow, which is not true for regular Moon phases; they are caused by the Moon's position relative to the Earth and Sun, not a shadow.

78. Look at the pictures of the Moon in the figure, and answer the following questions.

Q.1. Write the correct panel number corresponding to the phases of the Moon shown in the pictures above.

Picture label (e.g. A, B, C, etc.)	Phase of Moon
	Three days after New Moon
	Full Moon
	Three days after the Full Moon
	A week after the Full Moon
	Day of New Moon

Q.2. List the picture labels of the phases of the Moon that are never seen from Earth.

Ans. : 1.

Picture label	Phase of Moon
C	Three days after New Moon
E	Full Moon
F	Three days after the Full Moon
A	A week after the Full Moon
B	Day of New Moon

2. Picture B (New Moon phase) is never seen from Earth because the illuminated side of the Moon is facing away from us.

*** Answer the following questions in on sentence** **[17]**

79. What is the natural satellite of Earth?

Ans. : The Moon

80. Name the phase when the Moon is fully visible.

Ans. : Full Moon

81. What is the duration of one complete cycle of Moon phases?

Ans. : About 29.5 days.

82. Which phase comes after New Moon?

Ans. : Waxing Crescent

83. In which phase is the Moon not visible at all?

Ans. : New Moon

84. What shape is the Moon's orbit?

Ans. : Elliptical

85. What is the term for the Moon appearing to shrink?

Ans. : Waning

86. Which eclipse happens when the Moon comes between the Sun and Earth?

Ans. : Solar Eclipse

87. Can the Moon be seen during the day?

Ans. : Yes, during some phases.

88. What is the visible shape of the Moon during a First Quarter?

Ans. : Half Moon (right half visible).

89. Name all eight phases of the Moon in order.

Ans. : New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter, Waning Crescent.

90. Why does the Moon appear to change shape every night?

Ans. : Because as the Moon revolves around the Earth, different portions of its sunlit side are visible from Earth.

91. What causes a solar eclipse?

Ans. : A solar eclipse occurs when the Moon comes between the Sun and Earth, blocking sunlight.

92. Why do we always see the same side of the Moon?

Ans. : Because the Moon takes the same time to rotate on its axis as it does to revolve around the Earth.

93. What is a New Moon, and when does it occur?

Ans. : A New Moon occurs when the Moon is between the Earth and the Sun, and the side facing the Earth is not lit

94. How does the Moon affect tides on Earth?

Ans. : The Moon's gravity pulls on Earth's oceans, causing high and low tides.

95. Describe the appearance of a Crescent Moon.

Ans. : A Crescent Moon appears as a thin curved sliver, either waxing or waning, with only a small part lit.

*** Match the Following.** **[8]**

96.

Column A	Column B
Q.1. Full Moon	(a) The Moon is not visible
Q.2. New Moon	(b) Earth between Sun and Moon
Q.3. Lunar Eclipse	(c) The entire face of the Moon is visible
Q.4. Waxing	(d) The Moon appears to grow

Ans. :

Column A	Column B
1. Full Moon	(c) The entire face of the Moon is visible
2. New Moon	(a) The Moon is not visible
3. Lunar Eclipse	(b) Earth between Sun and Moon
4. Waxing	(d) The Moon appears to grow

97.

Clounm A	Column B
Q.1. Solar Eclipse	(i) More than half, but not full
Q.2. Gibbous Moon	(ii) The Moon appears thinner each night
Q.3. Moon reflects sunlight	(iii) Moon between Earth and Sun

Q.4. First Quarter	(iv) Reason we can see the Moon
	(v) Half of the Moon is visible (right)

Ans. : self

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