

ANSWERS TO TEXTBOOK QUESTIONS

Objective Questions *Science Mission 8 Chpt7 Stars and the Solar System solution*

A. Multiple choice questions.

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|-------|-------|-------|-------|-------|
| 1. c | 2. a | 3. d | 4. a | 5. a |
| 6. a | 7. a | 8. c | 9. b | 10. a |
| 11. d | 12. b | 13. d | 14. d | 15. b |
| 16. b | 17. c | 18. b | 19. b | 20. d |

B. Match the following:

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|------|------|------|------|-------|
| 1. i | 2. g | 3. h | 4. c | 5. f |
| 6. b | 7. a | 8. e | 9. d | 10. j |

C. State whether 'true' or 'false'.

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|----------|----------|----------|----------|-----------|
| 1. False | 2. False | 3. False | 4. True | 5. False |
| 6. True | 7. True | 8. True | 9. False | 10. False |
| 11. true | | | | |

D. Give one word answers.

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|-------------------|-------------------|-------------|---------------|
| 1. Universe | 2. Moon | 3. Planet | 4. satellite |
| 5. Alpha centauri | 6. terrestrial | 7. Jovian | 8. Jupiter |
| 9. Venus | 10. Mercury | 11. Neptune | 12. Meteoroid |
| 13. Crater | 14. Saturn | 15. Venus | 16. Saturn |
| 17. Telescope | 18. Constellation | 19. Orbit | |

Theoretical Questions

A. Short answer type questions.

- a. 28000°C. b. 6000°C. c. 3000°C.
- Sun is a medium sized star (mini star) its colour being light yellow (yellow-white).
- The little bear
- Ursa major, Ursa minor, etc.
- Nearly 88 constellations
- 8 minutes 20 seconds.
- No. Moon is a non-luminous body. The Moonlight is the reflected sunlight from the surface of the Moon.
- Jupiter and Saturn. Both are Jovian (gaseous) planets.
- Distance from Sun to the Earth is 150 million kilometre. From Moon to Earth is 384,400 km.
- a. The rock material orbiting the sun at a high speed of 20 to 70 km per second in the space is called a meteoroid. Meteoroids (may also be called Asteroids) are the fragments from big planets that might have collided and got broken up into pieces which are orbiting around the Sun in the space between the orbits of Mars and Jupiter.
b. When a meteoroid accidentally approaches the Earth it gets pulled by the gravitational pull of the Earth. As it enters the atmosphere around the Earth it gets heated due to friction to a burning temperature which may as high as 2200°C. The heat makes the meteoroid to burn and glow which is seen by the people on Earth as a streak of light and is termed as the shooting star or a meteor.
c. At times, some unburnt residual matter from a large meteor may fall on the Earth's surface. This residual matter which falls on the Earth is termed as meteorite.
- Venus and Mars are two neighbouring planets of the Earth.
- Planets revolve around the Sun in their own fixed, almost circular (slightly elliptical) path called orbits.

B. Long answer type questions.

1. Mercury is the planet nearest to the Sun. Although Venus is the planet next to Mercury and not closest to the Sun, its dense atmosphere full of carbon dioxide with traces of water traps tremendous heat. As a result, temperature on Venus reaches 465 degrees Celsius, higher than that of Mercury (temperature on Mercury goes upto 400°C (Heat from Sun being trapped by the atmosphere full of carbon dioxide around Venus is the same as Greenhouse effect on the Earth).
2. Earth is one of the unique planets in the solar system. Earth has water and it is enveloped in an atmosphere of all the gases suitable to sustain life. The temperature on it varies from 15°C to 55°C making it most suitable for life to exist.
3. Mars is a terrestrial (rocky) planet very much similar to the Earth in structure and has a very thin atmosphere with little water, carbon dioxide and oxygen. Temperature on it is too low to support life.
4. Celestial bodies in the Space (universe) are placed farther away. It is difficult to express such long distances in kilometers so, we express the celestial distances in another unit, the 'light year' (symbol: ly). Light travels a distance of 9.46 trillion km in one year and this distance is termed as 1 ly.
5. The Sun is at a distance of about 150,000,000 km (150 million km) from the Earth. It takes about 8 minutes and 20 seconds for the light from the Sun to reach the Earth, the speed of light being about 300,000 km per second. Thus, the distance of the Sun from the Earth can also be expressed as 8 minutes 20 seconds light minutes.
6. Besides Sun, next nearest stars to the Earth are Alpha Centauri and Proxima Centauri. These two stars are at a distance of more than 40,000,000,000,000 km from the Earth.
7. Mercury is the nearest planet and Neptune the farthest planet to the Sun. (See chart given on page 250 showing the distance of the planets from the Sun).
8. Inner planets are terrestrial planets with rocky surface and are revolving along the inner orbits to the Sun. Outer planets are gaseous planets and are revolving round the Sun in far away orbits from the inner planets.
9. Asteroids are going round the Sun along the space between Mars and Jupiter. Mars is a terrestrial (rocky) planet and Jupiter is a gaseous planet.
10. To locate an artificial planet moving in the sky watch carefully the sky on a dark night in early hours of the night. You may find a feeble star like body moving through the other stable stars. This moving star is the artificial satellite.
11. A comet orbits around the Sun like a planet in a highly elliptical orbit, extending beyond the orbits of the planets may be beyond the limits of known solar system. Their period of revolution round the Sun is long, may be many years in some cases. There may be many comets going round the Sun but only a few have been identified.
Most famous comet is the Halley's Comet named after Edmund Halley. A big comet appeared going round the Sun regularly after a gap of many years. On every visit this comet seen going around the Sun was considered a different one. It was Halley who predicted on the basis of his calculations that the same comet appears around the Sun every 76 years.
12. Ursa Major includes seven stars (hence also called Saptrishi in Hindi) named as 'Great Bear, arranged in a typical shape of a '?' mark or the shape of a ladle.
13. The visible shape of the Moon, as being seen from the Earth changes from night to night and from day to day because it is in inclined orbit around the Earth. Different shapes of the Moon as seen from the Earth are called the phases of the Moon.
14. Artificial satellites serve us for: (i) communications, such as working of the mobile phones); (ii) mapping the Earth; (iii) showing route to the travelers on Earth; (iv) for safety purpose to keep watch on activities on the Earth; (v) for military purpose to trace the location and movements of enemy; (vi) Collecting information regarding mineral wealth under the surface of the Earth; (vii) tracing and

keeping a watch on space rockets ; (viii) learning about weather and forecasting weather at a place on the Earth.

15. Differentiate between:

- (i) The Sun and a Star: both are stars though Sun is a mini star and many others may be huge stars. Main difference is that the Sun is known to be having planets going round it and that one of the planets, such as Earth, has life upon it.
 - (ii) Sun is a luminous body with high gravitational force keeping non-luminous planets going around it.
 - (iii) A planet is a natural body going round the Sun in its orbit. Artificial satellite is man-made body placed in an orbit around the Earth with the help of spaceship. Planet goes round the Sun and satellite goes round the Earth.
 - (iv) Planet is a body going round the Sun in its almost circular orbit. Comet orbits around the Sun like a planet in a highly elliptical orbit extending beyond the orbits of the planets going round the Sun.
 - (v) A comet visits the Sun in many years in elliptical orbit whereas meteor is the piece of rock (meteoroid) which has come out of its orbit between Mars and Jupiter and has entered the atmosphere around the Earth with a great speed. While passing through the atmosphere around the Earth the meteoroid gets heated to a burning temperature and so it glows like a shooting star in the sky.
 - (vi) Meteoroid is one of the pieces of rocks orbiting round the Sun in between the orbits of Mars and Jupiter. Meteor is one of the meteoroid which has been pulled towards the Earth and is passing through the atmosphere of the Earth where due to friction between the meteoroid and the air it gets up heated to a burning temperature and as such it glows and is seen as a shooting star from the Earth.
 - (vii) Meteor is the shooting star (a burning piece of meteoroid passing through the atmosphere of the Earth) and meteorite is the piece of unburnt meteor which has fallen upon the Earth.
 - (viii) Jovian planet is a gaseous planet going round the Sun in far away orbit and hence also called outer planet. Terrestrial planet has rocky surface going round the Sun in closer orbit to the Sun and is also called the inner planet.
 - (ix) Meteor is a shooting star which is one of the asteroids passing through the atmosphere of the Earth in burning condition and is seen from the Earth as a shooting star.
Tailed star is a comet with a head like body which on coming face to face with the Sun gets heated releasing gases and may be other materials, which forms its tail. The tail on the comet is seen only when it is near the Sun going round it.
 - (x) Dark and light spots on the surface of the Moon are the valleys and the bulging spots on the surface of the Moon. Bulge reflects sunlight and as such is seen as bright spot whereas a valley being deep reflects less light and seen shaded or dark spots on the surface of the Moon.
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