Q:- What is Sun? What are the parts and atmosphere of the Sun?

Q What is Planet? Discuss the eight Planets?

Q: Write short note on dwarf planet Pluto?

Q:- What is asteroid, comet, and meteoroid?

7. What is solar system? Discuss the different parts of solar system.

Solar System :-

The Solar System consists of the sun, planets, dwarf planets, moons, an asteroid belt / asteroids, comets, 200 moons, more than meteors / meteoroids etc. The words 'solar system' refers to the Sun and all the objects that travel around it. The Solar system is around 4.5 billion years old. It formed out of a huge cloud of gas and dust called the solar nebula {A nebula / nebulae is a distinct body of interstellar clouds - consist of cosmic dust, hydrogen, helium, molecular clouds; possibly as ionized gases. } {Examples of Nebula: Cat's Eye Nebula, The Omega Nebula, The Horsehead Nebula}. Under gravity, the cloud collapsed and the material formed the Sun and a disc of matter in which the planets were born.

Give main heading first

PLANET :-

Planet is the term used for a body orbit around the Sun. The word comes from the Greek "planetes", which means "wanderers". Our solar system has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Pluto, which was considered a planet some years ago, is now classified as dwarf planet.

Mercury, Venus, Earth and Mars are the planets closest to the Sun. They are called the inner planets, and also called rocky or terrestrial planets because they are made up mostly of rocks. They are very small in size as compared to the outer planets, called inferior planets. Jupiter, Saturn, Uranus and Neptune are outer planets also

called Jovian [Jupiter like] planets because these are large in size. All outer planets are also called gaseous planets because they have an atmosphere of hydrogen and helium and they are heavy rings.

Terrestrial Planets	Jovian Planets
Mercury, Venus, Earth and Mars	Jupiter, Saturn, Uranus and Neptune
• Close to Sun	• Far from Sun
• Small masses and radii	• Large masses and radii
• Rocky, solid surfaces	• Gaseous surface
• High ~~desities~~ densities	• Low densities
• Slow rotation	• Fast rotation
• Weak magnetic field	• Strong magnetic field
• No rings	• Many rings
• Few moons	• Many moons

1- Mercury :-

1- Mercury is the nearest planet to the Sun.
2- Its distance from the sun is 0.387 AU [57,900,000 Km].
3- Its diameter is 4880 Km.
4- Its rotation period is 59 earth days.
5- Its year consists of 88 earth days [revolution period].
6- Temperature on the mercury varies from 420°C to -180°C.
7- Its mass is 0.06 times than the mass of the earth.
8- It has no moon.
9- It is the fastest revolving planet.
10- It has no atmosphere.

2- Venus :-

1- Venus is the 2nd planet of solar system.
2- It is also called morning star and twin of the earth.
3- It is the slowest rotating planet and rotation period is 243 earth days.
4- Its distance from the sun is 0.723 AU.
5- Its diameter is 12104 Km.
6- Its year consists of 225 earth days [revolution period].
7- Temperature on the Venus is 464°C.
8- Its mass is 0.8 times than the mass of the earth and it has no moon.
9- It is wrapped in thick clouds of CO_2 and it is the brightest planet of solar system.
10- It is the nearest neighbor of the earth among the solar family.

3- Earth :-

1- Earth is the 3rd planet of solar system.
2- Its distance from the sun is 1 AU [149,600,000 Km].
3- Its diameter is 12756 Km.
4- Its rotation period is 23 hours 56 minutes 4 seconds.
5- Its years consists of 365.25 days [revolution period].
6- Average temperature on the surface of the earth is 15°C and it has one moon.
7- Earth surface is rich in silicon, aluminum, iron, etc.
8- It has atmosphere which consists of Nitrogen, oxygen, etc.
9- It is the 5th largest planet and the only planet where life exists.

4- Mars :-

1- Mars is the 4th planet of solar system and 2nd smallest planet.
2- Its distance from the sun is 1.5 AU [227,900,000 Km]
3- Its diameter is 6794 Km and its rotation period

Keep the description of these headings a bit brief

is 25 hours.
4- Its year consists of 687 earth days {revolution period}.
5- Average temperature on the surface of the Mars is -63 °C.
6- Its mass is 0.11 time than the mass of the earth and it has two moons.
7- Its surface is covered with red dust.
8- It is known as the Red Planet.

5- Jupiter :-

1- Jupiter is the 5th planet of solar system.
2- Its distance from the sun is 5.2 AU {778,400,000}.
3- Its diameter is 140,000 Km, and its rotation period is 10 hours.
4- Its year consists of 4336 earth days {revolution period}.
5- Average temperature on the surface of the Jupiter is -110 °C.
6- Its mass is 318 times than the mass of the earth.
7- Jupiter has ~~79 moons~~ 80 to 95 moons.
8- Its surface is covered with clouds of Hydrogen and Helium.
9- It is the largest planet of solar system.

6- Saturn :-

1- Saturn is the 6th planet of solar system.
2- Its distance from the sun is 9.5 AU {142,000,000}.
3- Its diameter is 120,000 Km, and its rotation period is 11 hours.
4- Its year consists of 10760 earth days {revolution period}.
5- Average temperature on the surface of the Saturn is -140 °C.
6- Its mass is 95 times than the mass of the earth, and it has 146 moons in its orbit.
7- Its main feature is its rings, which have the appearance of a large extremely thin and circular sheet.
8- It is the 2nd largest planet of solar system.

7- Uranus :-

1- Uranus is the 7th planet of solar system, and it is also known as green planet.
2- Its distance from the sun is 19.18 AU {2871,000,000 Km}.
3- Its diameter is 51,118 Km, and rotation period is 17 hours.
4- Its year consists of 30681 earth days {revolution period}.
5- Average temperature on the surface of ~~Jupiter is~~ Uranus is -[illegible]°C.
6- Its mass is 14.5 times than the mass of the earth, and it has 27 moons.
7- Its surface is covered with Helium and Hydrogen.

8- Neptune :-

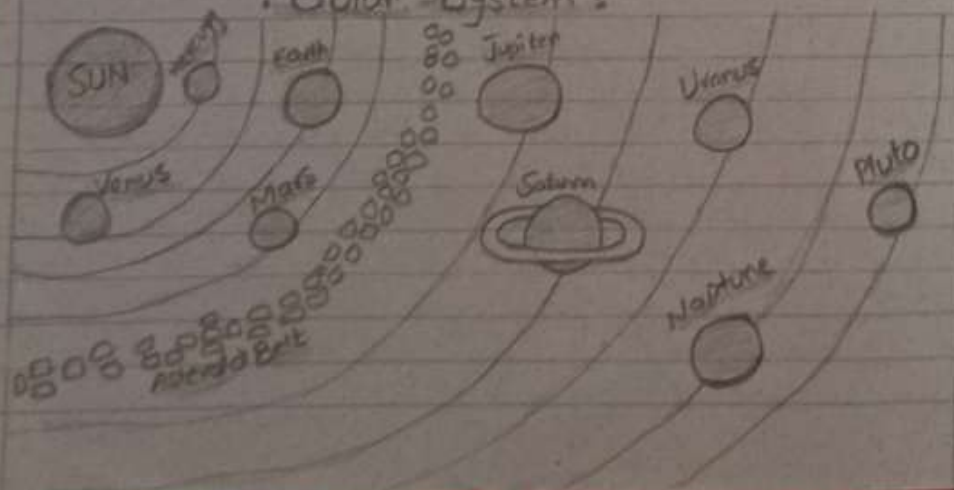
1- Neptune is the 8th planet of solar system, and it is the slowest revolving planet.
2- Its distance from the sun is 30 AU {4,498,000,000Km}.
3- Its diameter is 49530 Km and rotation period is 16 hours.
4- Its year consists of [illegible] earth days {revolution period}.
5- Average temperature on the surface of the Neptune is -200 °C.
6- Its mass is 17.2 times than the mass of the earth.
7- Neptune has 14 moons.
8- It is known as the twin of Uranus due to diameter

and mass similarities.

9- Pluto :-

1- Pluto is now considered a dwarf planet, which also makes it the largest dwarf planet.
2- Another unique observation is that one of its moon, Charon, is considerably big [in ratio] as compared to the planet itself.
3- Pluto spends a small time [around 20 earth years] of its 248 earth years orbit, inside that of Neptune, thereby making it closer to the sun than Neptune.
4- Pluto also have a substantial amount of Moons [5], considering it is so tiny itself.
5- Since its discovery in 1930, it yet has to complete a single orbit around the Sun.
6- It has more water [in the form of ice] than all of the oceans on Earth combined, and also smaller than a number of moons, including Earth's.
7- It's one of the few planets to have been discovered, way before being actually observed. It was thought to have existed because of the slight deviations in the orbits of Uranus and Neptune.

: Solar System :



2- Comets :-

A comet is a celestial body that orbits around the sun. It is made up of a nucleus [solid frozen ice, gas and dust], a gaseous coma [frozen vapour, CO_2 and other gases] and a tail [dust and ionized gases]. Its long tail of gase and dust always points away from the sun, because of the force of the solar wind. The tail can be up to 250 million km long.

Comets are only visible when they are near the sun in their highly eccentric orbits. When comets are farthest from sun, they are named dirty snowball. Halley's Comet is a periodic comet that orbits around the sun. Edmund Halley was the first person to recognize that it is periodic. It was last seen in 1986 and will be seen next in the 2061; its period is 75 years.

3- Meteoroids :-

A meteoroid is a small body travelling through space. These bodies typically originate from comets and asteroids. There is no well defined size range for a meteoroid. However, we usually refer to meteoroid as a piece of matter, which when it strikes the Earth's atmosphere produces the visual phenomenon called a meteor. A fragment that survives to hit the ground is known as a meteorite.

4- Sun :-

1- The Sun is the largest object in the solar system and contains more than 99.8% of the total mass of the Solar System.
2- The Sun has 78% hydrogen, 28% helium and 2% metals.
3- Its radius is 432,450 miles {696,000 Km}, which makes its diameter about 864,938 miles {1.392 million Km}.
4- The Sun's circumference is about 2,715,396 miles {4,370,006 Km}. [Space.com, How big is the sun?, Jan 21, 2022]

Not required

: PARTS OF SUN :

1- Core :

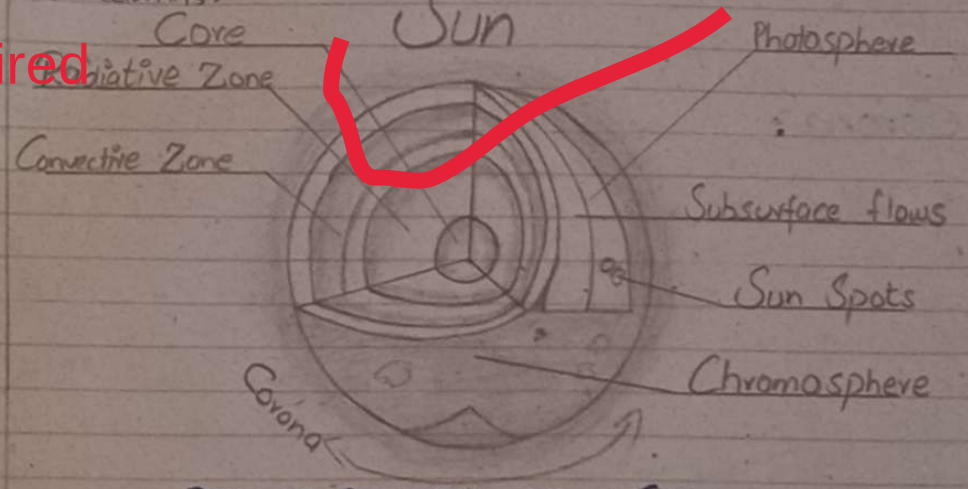
1- The core is at the center. It is the hottest region, where the nuclear fusion reactions that power the Sun occur.
2- The core of the sun is considered to extend from the centre to about 25% of the solar radius.
3- It has a density of about 150 times the density of water.
4- The core is the only section of the sun that produces heat through fusion and the temperature is 15 million degree Celsius.

2- The Radiative Zone :

1- Its name is derived from the way energy is carried outward through this layer, carried by photons as thermal radiation.
2- It is from 25% to 70% of the solar radius.
3- The radiative material is hot and dense enough that thermal radiation transfers the intense heat of the core outwards.

3- Convective or Convection Zone :

1- The convection zone is the outer-most layer of the interior.
2- It comprises about 2% of the Sun's mass, and it occupies nearly 2/3rds of the volume.
3- At the surface, the temperature drops to about 5700 degrees Kelvin {9800 degrees F} and has a density of approximately 0.2 g/m³.
4- These region also called the small magnetic fields over the surface of the sun due to the differential convection of the columns.



ATMOSPHERE OF SUN

1- Photosphere :

1- The photosphere, the sun's innermost layer observable directly, emits most energy, aptly named "sphere of light," with sunlight taking eight minutes to reach Earth.
2- Photosphere's temperature : 11,000 to 10,460 Degrees ~~Fra~~ Fahrenheit {6,125 - 4,125 °C}, cooler than sun's core, reaching 27 million F {15 million C} per NASA.
3- Photosphere : 300 miles thick, a fraction of the sun's vast 435,000 mile radius. [Space.com, the sun's atmosphere : Photosphere, Chromosphere and corona, Jun 21, 2022]

2- Chromosphere :

1- Chromosphere is a reddish and glowing layer of gas.
2- It is actually transition between corona and the photosphere.
3- It is about 2,000 to 3,000 Km deep, located immediately above the photosphere and just below the corona.
4- The chromosphere can be only seen during a complete solar eclipse.
5- Chromosphere's temperature ranges from 6,000 to 20,000 degree Celsius. {economictimes.com, What is Chromosphere}

3- Corona :

1- The highest part of the solar ~~system~~ atmosphere is called corona.
2- The corona starts around 10,000 Km above the solar ~~at~~ photosphere.
3- At 20,000-25,000 Km away from the solar surface the corona has an average temperature of 1,000,000 to 2,000,000 million degree Celsius.
4- The density very low; about 1 billion times less dense than water.
5- A coronal hole is an area on the outer atmosphere where the solar magnetic field opens up and allows high-speed solar wind to escape into space.

This is too lengthy answer. Shorten it or will greatly affect your time management. 2-3 pages are enough for a single answer.

Asteroid :

Asteroids are small rocky body that orbits the Sun, non-planetary and non-Lunar objects in the solar system. Most asteroids are found in the asteroid belt, a region between Mars and Jupiter. These objects are larger than 100 metres in diameter and less than 1000 Km in diameter. In size they can range from the size of a pebble to bodies as large as dwarf planets. Asteroids entering Earth's atmosphere, surviving the journey, and landing on Earth are called meteorites. The largest asteroid is Ceres, with a diameter of 950 Km.