

## ~ (QUESTION: 02) ~

### ~ (PART: A) ~

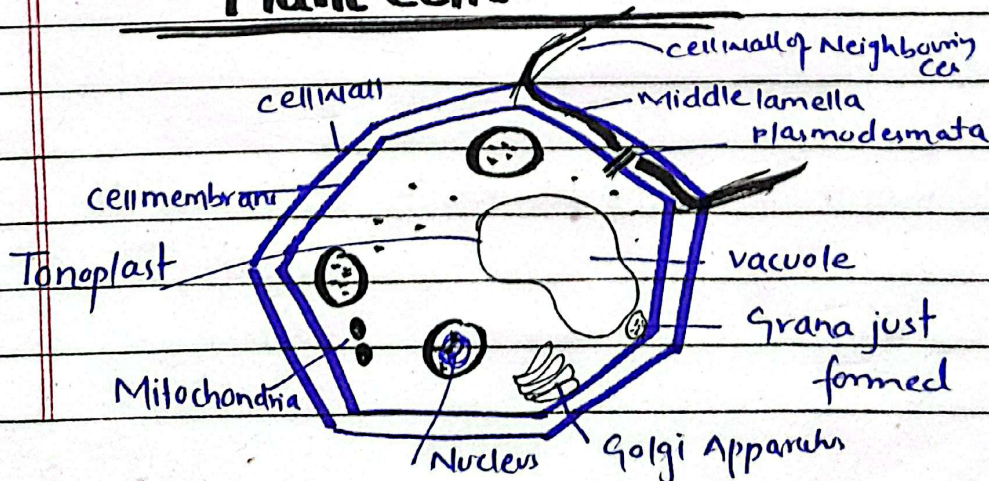
## 7 Differentiate in between plant and animal cell

### I. Introduction: Animal and Plant Cell

Plants and animal cell are the type of the eukaryotic cell having well-defined nucleus. However, certain morphological and physiological variations exist in both type of cells. These differences help them to perform their functions properly. Following are the key major differences between the animal and plant cells.

### II. Difference Among Various Dimensions of Animal and Plant cells

#### Diagrammatic Representation of Plant Cell:

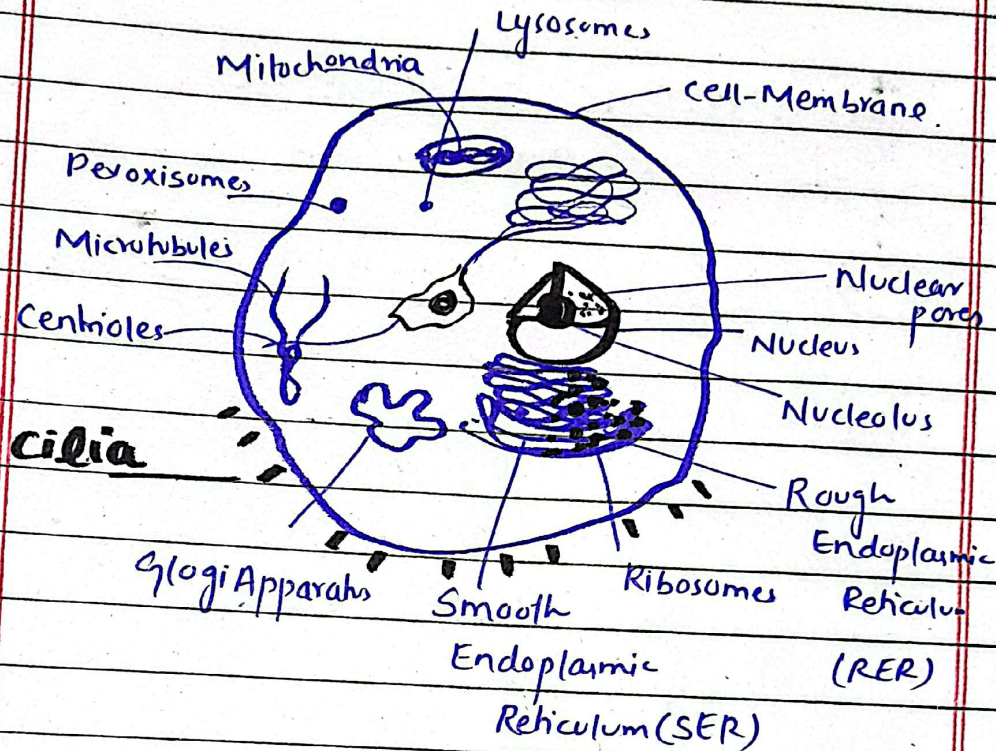




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## Diagrammatic Representation of Animal cell



### III. Table illustrating the Comparison between both cells

| Features      | Animal cell | Plant cell |
|---------------|-------------|------------|
| Cell wall     | Absent      | Present    |
| Cell Membrane | Present     | Present    |
| Plastids      | Absent      | Present    |



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|                            |                      |                  |
|----------------------------|----------------------|------------------|
| Glyoxysomes                | Absent               | Present          |
| Centrosome<br>(centrioles) | Present              | Absent           |
| Mitotic<br>Apparatus       | Spindles +<br>Asters | Spindles<br>only |
| Cytokinesis                | Inwards              | Outwards         |
| Lysosomes                  | Present              | Absent           |
| Flagella                   | Present              | Absent           |
| Phagocytosis               | Present              | Absent           |
| Nucleus                    | Central              | Peripheral       |
| Vacuoles                   | Small                | Large            |
| Storage Products           | Glycogen             | Starch           |

Animals and plant cells both undergo some important differences. These differences in their shape, structure, cellular organelles and functions help them to distinguish from one another.



## (PART: B)

### QUESTION: 02

**How urine formation takes place in human body?**

Urine is biologically defined as the waste produced by the urinary system. The urine as a waste consists of urea, minerals, salts, metabolites, etc that are filtered and excreted out of kidney from the blood. The excreted waste is then travelled down to the urinary bladder through urethra. From urethra to the bladder and then urine is excreted out of body when bladder is full.

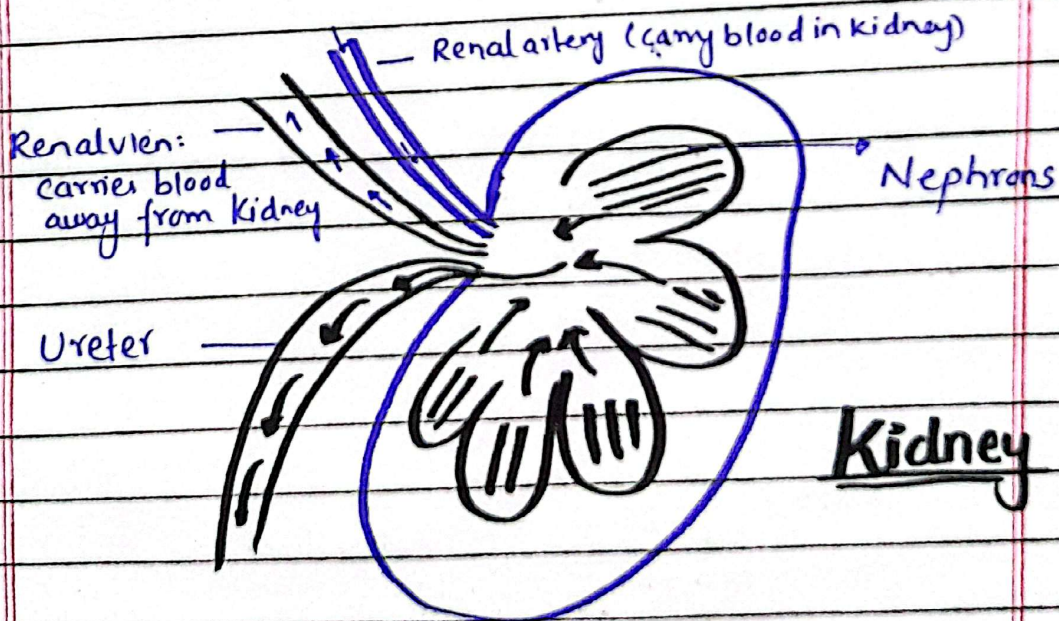
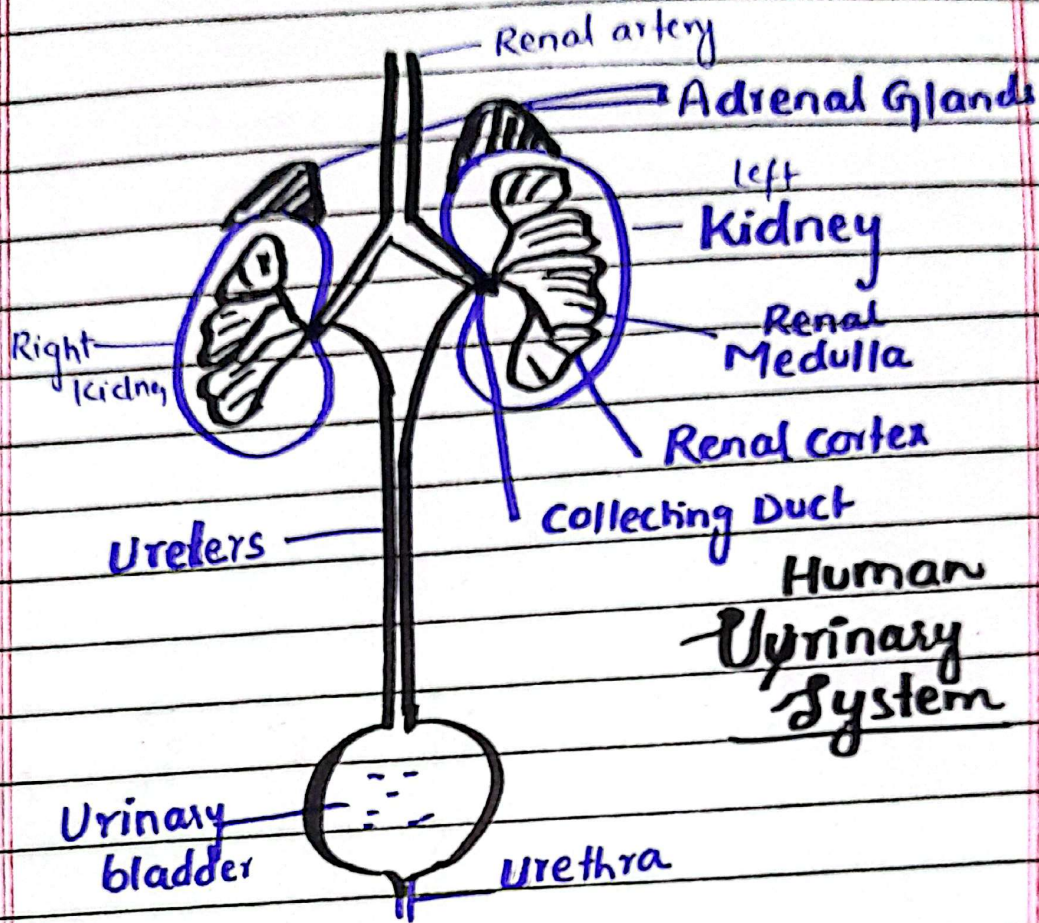
### I. Kidney: Function of Nephron in formation of Urine

The urinary system of human body consists of kidneys, urethra and bladder (Urinary). The human body consists of two kidneys: right and left kidney. Each kidney consists of 10M nephron. Nephron is the basic structural and functional unit of kidney.



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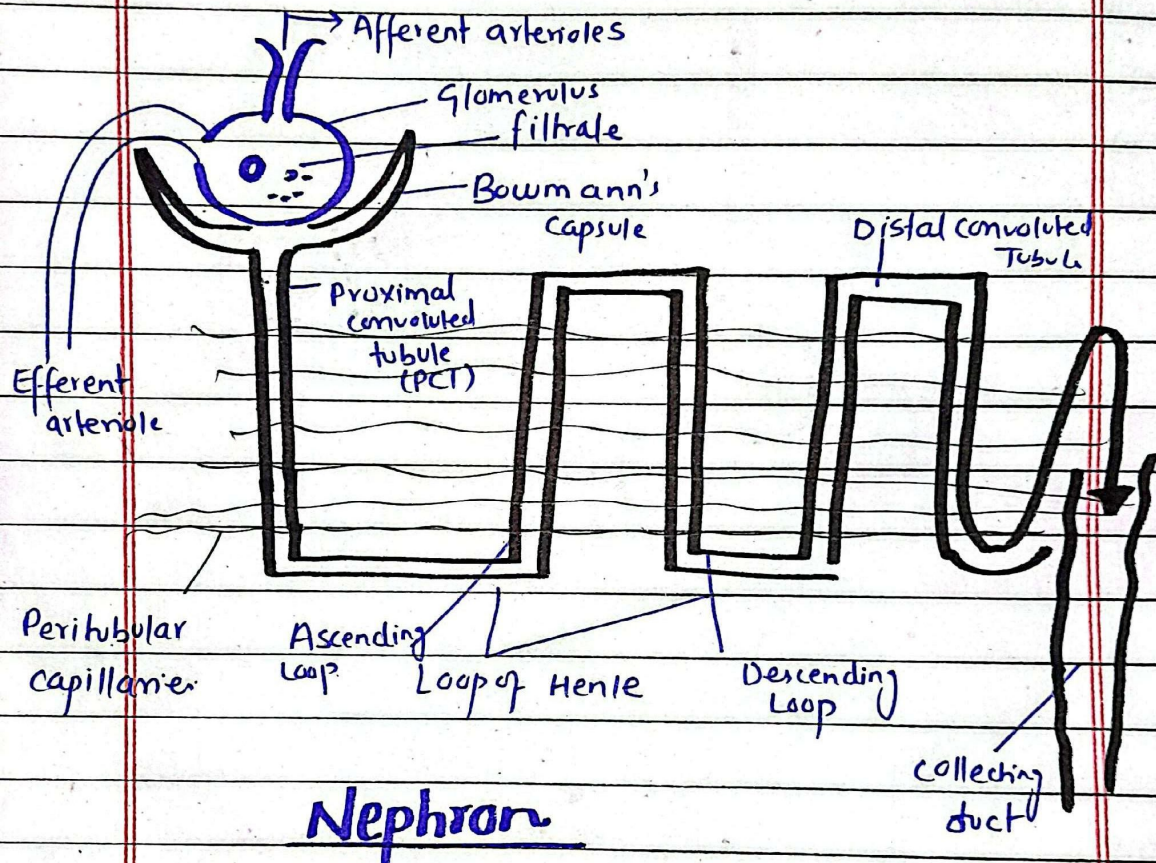
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Nephrons which are the functional unit of kidneys are mainly responsible for the



filtration of blood. When renal artery takes unfiltered blood into the kidney then blood is distributed between millions of nephrons for filtration.



## Nephron

### III. Functions of Different Components of Nephron: Urine Formation

#### A. Afferent Arteriole:

Through it blood (unfiltered) enters into nephron.



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**B. Efferent Arteriole:** The blood that is filtered from the glomerulus is travelled by the efferent arteriole.

### C. Glomerulus:

Glomerulus is the main part of nephron where filtration of blood takes place.

**D. Bowman's Capsule:** It collects the filtrate from the glomerulus. It creates a collecting space for this filtered fluid.

### E. PCT:

The proximal convoluted tubule (PCT) do the reabsorption of water from the <sup>early</sup> filtrate.

**F. Loop of Henle:** Both ascending and descending loop of Henle is concerned with the reabsorption of NaCl salts and minerals etc.

### G. DCT:

DCT is spiral in shape and concerned with the reabsorption of minerals.

### H. Peritubular Capillaries:

Peritubular capillaries containing filtered blood helps in the reabsorption of water, salt and other minerals.

### I. Collecting Duct:

The waste from each ~~the~~ nephron is collected inside the collecting duct from where it is transported to the ureter. From ureter the filtrate enters urinary bladder and then expelled out of body from urethra.



That waste is known as urine.

## QUESTION: 02

### PART: C

**What is DRM? Highlight the weaknesses in DRM of Pakistan.**

DRM (Disaster Risk Management) refers to the systematic process of using administrative decisions, organizational skills, policies and capacities to reduce the adverse impacts of natural and human-made hazards. It covers the full disaster cycle:



### I. Goal of DRM

The main goal of DRM is to reduce the vulnerability and risk before the disaster comes. It also ensures to respond to disasters effectively and efficiently.



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## II. Weakness in DRM of Pakistan

### A- Weak Institutional Capacity:

The limited technical expertise and trained human resource at local and district levels. The poor coordination between federal, provincial and local disaster management bodies. The overlapping roles and unclear responsibilities among institutions have also weakened the DRM practice of Pakistan.

### B- Reactive Rather Than Preventive Approach:

The greater focus on post-disaster relief instead of risk reduction and mitigation. Moreover, the insufficient investment in long-term planning, hazard mapping and resilience building is also hindering the success of DRM practices in Pakistan.

### C- Inadequate Early Warning System:

Weak dissemination of warnings of the remote and vulnerable communities, lack of community-based early warning mechanism and delays in communication and response during floods, earthquakes and heat waves results in weakness in DRM of Pakistan.



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## D. Poor Urban Planning and Infrastructure

The unregulated construction in flood plains and seismic zones, weak enforcement of building codes especially in earthquake prone areas and poor drainage system have resulted in the weaknesses in DRM of Pakistan.

## E. Insufficient Financial Resources

Heavy dependence on international aid after disasters, limited allocation of funds for disaster prevention and preparedness and delays in fund disbursement during emergency is the one of contributing factor behind weak DRM in Pakistan.

## F. Climate Change Challenges

Increasing frequency and intensity of floods, heatwaves, droughts, and glacial lake outburst floods (GLOFs) are intensifying around the globe with each passing year. Moreover, the DRM policies not fully integrated with climate change adaptation strategies.



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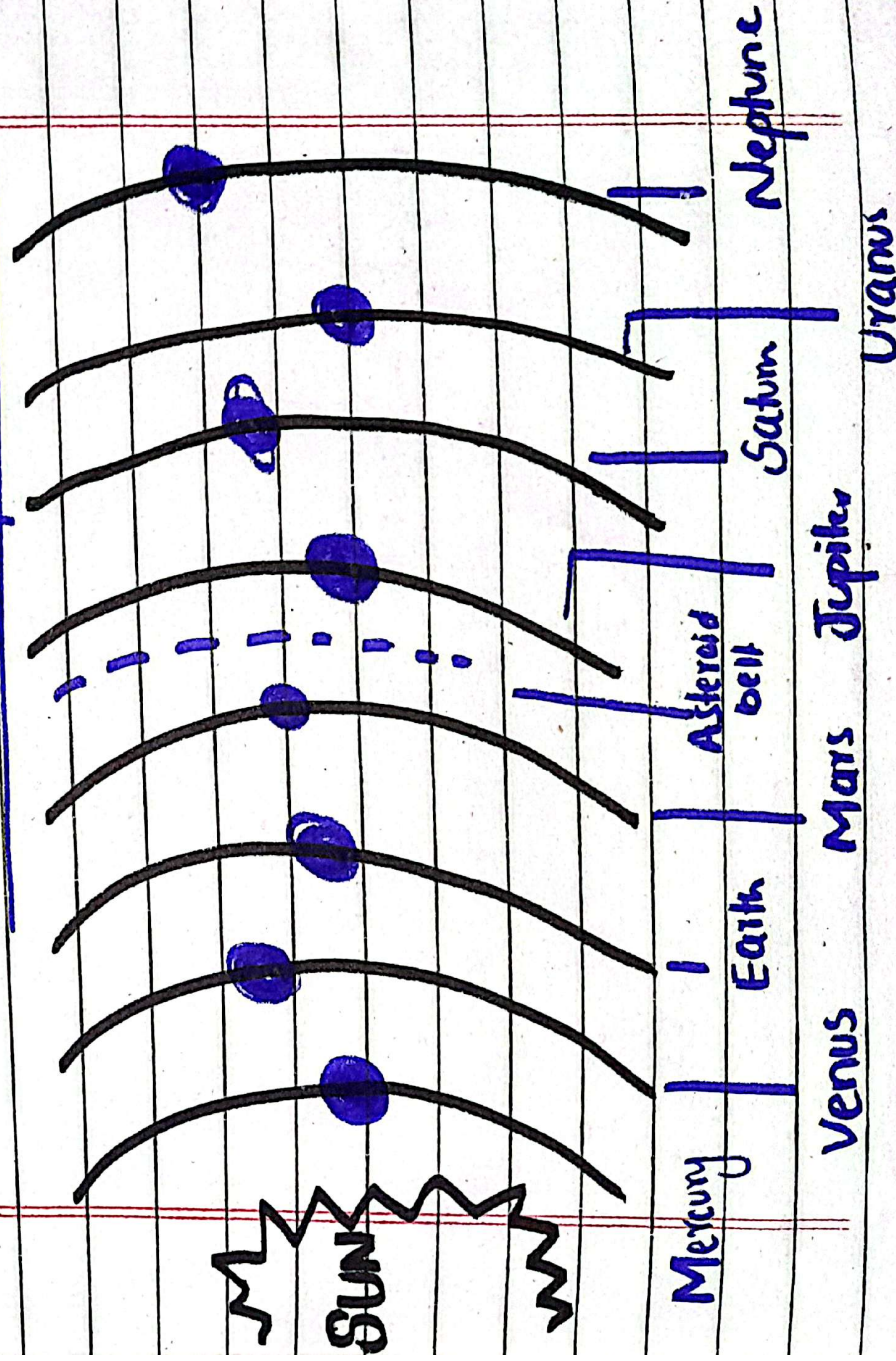
QUESTION: 03

(Part: B)

Explain the Solar System.

Solar system is defined as the smallest part of the Milkyway galaxy that consists of sun, eight planets, comets, interplanetary gas, interplanetary dust particles and plasma. The sun, eight planets, asteroids, meteoroids all other things that are revolving with it constitutes the solar system.

T. Solar System: Diagrammatic Representation

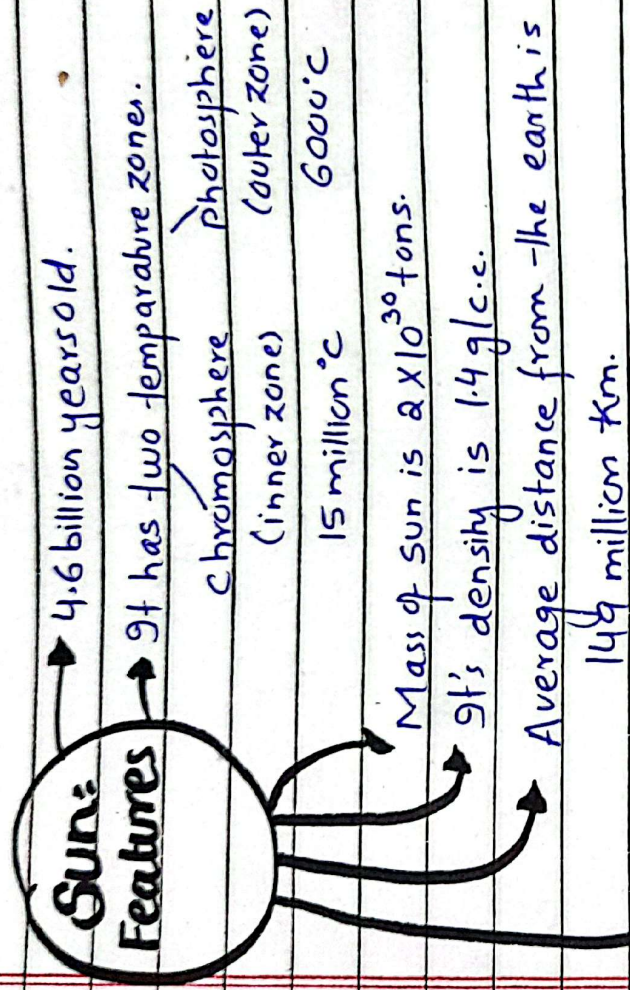




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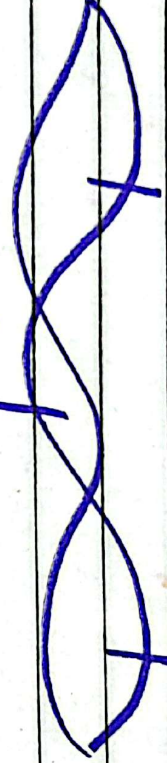
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## II. Sun: Key Features



### Composition of Sun

Hydrogen (71%)



Helium

(25.5%)

Other elements

(2.50%)

### Death of Sun:

In last 10 percent of its life (3 stages)

**Stage: 01**

(It will run short of hydrogen and will start burning its helium - Red dwarf)

**Stage: 02**

Becomes white dwarf after losing half of its mass

**Stage: 03**

Black dwarf - all planets that will be in its orbit will freeze



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### III. Key Features: Eight Planets of Solar system

#### A. Mercury: 1<sup>st</sup> planet

Features → 1<sup>st</sup> planet of solar system  
→ closest to the sun

→ Smallest planet

→ No moon

→ Rotation period of 59 days

Fastest revolution among all planets having revolutionary period of - 88 days

#### B. Venus: 2<sup>nd</sup> Planet

→ wrapped in thick cloudy cor  
→ brightest planet of solar system.

Twin of Earth

→ Rotation period (243 earth days)

→ 2<sup>nd</sup> planet of our solar system

→ Revolution period (225 earth days)

No moon

#### C. Earth: 3<sup>rd</sup> Planet → only planet where life exists

→ 3<sup>rd</sup> planet of solar system

→ 5<sup>th</sup> largest planet

→ Only one moon - Luna

→ Average temperature - 15°C

→ Diameter of 12756 km

→ Rotating period (23 hr 56 min 4.1 sec)

→ Revolutionary period (365.25 days)



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### D. Mars: 4<sup>th</sup> planet

- 2<sup>nd</sup> smallest planet
- fourth planet of solar system
- 2 moons (Deimos and Phobos)
- Mass is 0.11 times of mass of Earth
- Rotation period 25 hours
- Revolution period (687)
- Also called Red planet.

### E. Jupiter: 5<sup>th</sup> planet

- Largest planet of solar system
- 79 moons
- Rotation period (10hr)
- Revolution period (4336 earth days)
- Surface covered with clouds of hydrogen and helium.

### F. Saturn: 6<sup>th</sup> planet

- 6<sup>th</sup> planet of solar system
- 18 moons
- Rotation period (11hr)
- Revolution period (10760)

### G. Uranus: 7<sup>th</sup> planet

- Green planet
- Rotation period (17hr)
- Revolution period (80681 earth days)



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- 15 moons.

## 8- Neptune = 8<sup>th</sup> planet

- twin of Uranus

- Rotation period (16hr)

- Revolution period (60193)

- 2 moons.