

QNO: 2 (a)

Define the structure of Universe according to big bang theory.

Answer

1. Introduction

The structure of universe is totally different as viewed in pictures because since explosion of Universe till now, Universe is expanding from its own position. According to Big bang theory, The Universe is around "13.8" billion years old, exploded from a very thin-dense point of singularity to a vast cosmic structure. Following the pattern of expansion, Universe does not have "center" and "edge" as it is moving and expanding day by day.

(a) Concept of Singularity

According to Big bang theory, it is stated that universe is expanding from a very closed-dense singularity, where the temperature was intensely high; resulting

the massive explosion of universe.

(b) Rapid Expansion of Universe

It is believed according to big-bang theory that universe expanded rapidly after explosion. It takes 20-28 minutes to shape its huge structure from the point of Singularity. The Universe in other angle viewed as obtained its shape within fraction of seconds. This exponential expansion called Cosmic Inflation.

(c) Cosmic Inflation Formation

The Universe is believed as transformation from sub-atomic size to vast astronomical dimensions. This Inflation Component made Universe:-

→ Homogeneous = Same Everywhere

→ Isotropic = Same in all directions

→ Flat = Sized in large scales

2. Evolution Time Line of Structure

(a) Singularity to 10^{-32} in a fraction of a second

It takes fractional seconds to transform from a tiny point of singularity to great cosmic astronomical compound.

(b) Formation of Fundamental Particles

As Universe expanded and cooled, Energy converted into (Quarks, electrons), and Quarks combined to form particles like neutrons and protons.

(c) Formation of light Elements (Nucleosynthesis)

About 3-20 minutes after ^{big} bang expansion, protons and neutrons fused to form hydrogen, helium, and trace lithium. This explains that why universe is dominated by hydrogen.

and helium.

(d) Formation of atoms: Era of Recombination

It is stated that after 380,000 years later, electrons combined with nuclei to form neutral atoms. The point from now the light can travel freely in space. This formation released a radiation called Cosmic Microwave Background (CMB).



Formation of Stars ↓

Galaxies



Clusters



Super Clusters



→ Large Scale Universe Structure

3. Large Scale Structure of Universe:-

Today, the Universe shows a Cosmic web structure consisting of

- Galaxies
- Galaxies Clusters
- Super Clusters
- Filaments
- Voids

4. Present Structure of Universe

The Universe is still expanding and expansion is accelerating. This acceleration is attributed to dark energy.

Composition of Major Components of Universe

Dark Matter = ^{Energy} (Approx 60-70%)

Dark Matter = (27-28%)

Visible Ordinary Matter = (5%)

Q. NO: 3 (a)

How Global Warming can be Reversed?

Answer

1. Introduction

Global Warming a threat to human existence becomes a reality from a myth in history. The traces of Global Warming is not new born but it is pointed from great industrial revolution where the use of heavy engines is massively enforced. These machinery used coal and fossil fuels for burning and transformation of chemical energy into mechanical energy. Burning huge amount of coal caused huge emissions of carbon and other harmful particles into the air, which reduces natural mobility of air and protection bodies. Since industrial period earth is warmer around 1.1°C till now. However, it raises serious concerns for human existence, therefore, proper mitigation in term of reforestation, reduce emissions, increase renewable energy and Green house infrastructure can lead reversing of Global Warming.

2. Mechanism for Reversing Global Warming:

Global Warming is not a product of single affection, it consists of multi factors with it, to counter these affection, we need multiple counter infrastructure to reduce Global Warming.

(a) Reduce Carbon emissions

Despite international agreements, Developed countries are on top peak of emissions, like China, USA, India, and Russia. According to IPCC, 2023 report, Carbon Concentration is peaked on "419 PPM" which is highest in "2 million" years.

(b) Transition towards Renewable energy

Burning fossil-fuels ignites the fire of Global temperature. However, this sustainable alternative is a good replica to save environment and reduce global Warming. As evident to Pakistan, having abundant amount

of Coal is shifting to renewables. As mentioned by Pakistan Economic Survey report of energy sector, Despite fossil-fuels in abundant amount Pakistan shifted its Capacity of around 15-16% to renewables.

(c) Sustainable Urban Development

Pre-planned cities with sustainable environment; Increased number of forest cover, Green parks. Solid waste management, Waterpools and population control reduces the risk of Global Warming, A perfect example of Islamabad, Pakistan.

(d) Empowerment of local institutions and public awareness

Green Sustainability awareness through education curriculum and strengthening local institutes like Municipal, Waste collecting bodies and local government system can play a massive role in Global Warming.

(e) Reforestation and afforestation

Increasing number of forest cover upholds main role in Global warming because plants are natural carbon sinks and increasing cover of forests help reduce emissions and reduction in Global Warming.

(f) Enforced Role of International bodies

Not only on paper work but bind through enforcement in practical. Still lots of organizations are working on Global Warming but still it is ineffective on targets, therefore, enforced mechanism is required on Urgent basis to meet the chronic risk of climate vulnerabilities.

QNO: 8 (a)

Answer

A is right to B $B \rightarrow A$
E is left to C $E \leftarrow C$
E is right of A $A \rightarrow E$
B is to right of D $D \rightarrow B$

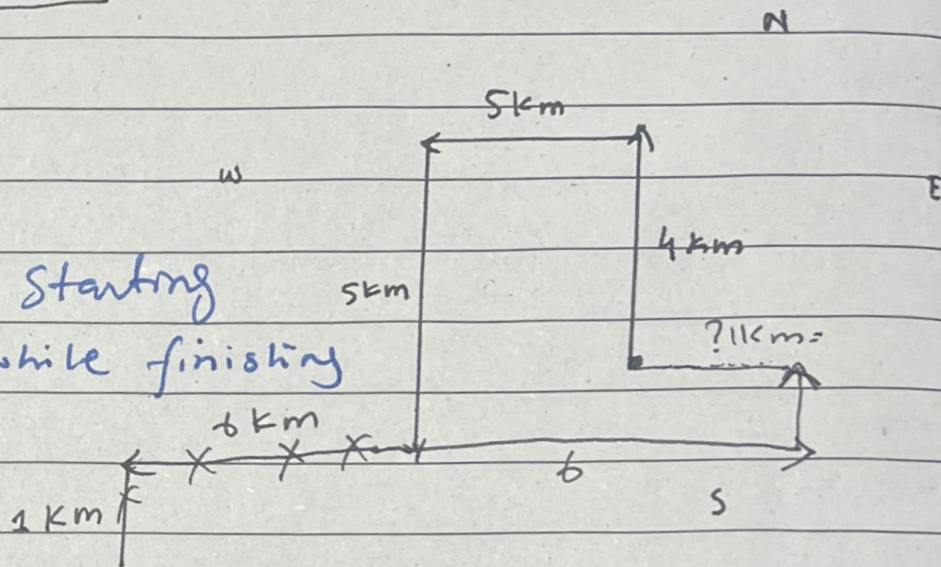
→ Find which is in the middle?

Formation:- D, B, A, E, C

Middle House is (A)

QNO: 8 (b)

- (a) 1 km far from starting
(b) Running north while finishing



- (c) Running towards South Direction in Second turn
(d) Starting running towards West.

QNO: 8 (c)

Find the odd man out of following anagrams:-

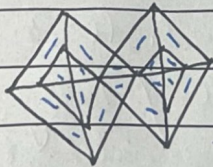
Reverse spellings =

- (a) SHIRT = (upper body) UP
 (b) COAT (UP)
 (c) BLOUSE (UP)
 (d) SKIRT = lower body
 (e) SWEATER = (UP)

Answer: (ODD) = SKIRT

Because it is worn in lower body following other all.

QNO: 8 (d)



There are total = 34 triangles

$$16 = \text{Each side} = 16 \times 2 = 32$$

$$2 = \text{Connecting triangles} = 32 + 2 = 34$$

(C)
Q No 2 What is Un-balanced diet? and
How it affects the healthy living?

1. Introduction

Un-balanced diet refers to the amount of nutrition intake by a body without suitable limit. A body requires suitable and limited nutrients to balance its smooth. The over intake of these nutrients cause body in the state of over-excessive property and the less intake cause shortage of nutrients.

2. Nutrients and its types

There are multiple nutrients required by a body, which are following:-

(a) Carbohydrates

Carbohydrate is known as primary fuel of body, extracted from sugar, wheat and grains

(b) Proteins

Proteins are essential for body repairing mechanisms

damaged tissues, muscles and enzymes.

(c) Fats

A concentrated energy source for protection of organ, insulation and absorption of fat-soluble vitamins (A, D, E, K).

(d) Water

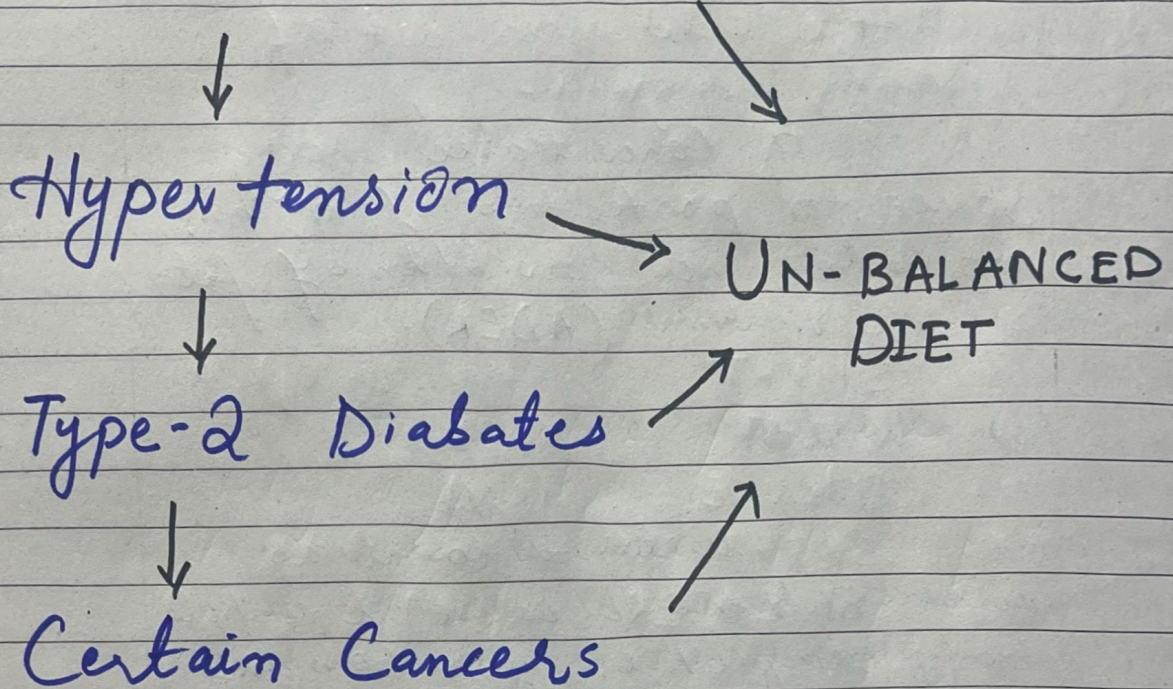
Water is ^{also} count as vital nutrient because it controls body temperature, hydration and nutrient transformation.

3. How Nutrients affect the healthy living

(a) Chronic Diseases Caused by Un-balanced diet

When a body obtains a condition of over-nutrition it transforms its self into excessive external burden and this burden impact on organ regulation which caused chronic diseases.

Cardiovascular Disease



(b) Digestion Problem

Un-balanced diet pressures on Digestive function which turns a smooth state of body into abnormal behaviour.

(c) Nutritional Deficiencies

Nutritional Deficiencies such as Vitamin deficiency led to serious problems such as Anemia, - (Iron Deficiency), Scurvy (Bleeding Gums) Night-Blindness (short of sightness).

(d) Weakened Immune System

Insufficient intake of vitamins and proteins or excessive intakes cause dis-functioning of body's army in protection from harm. Avoiding protection can lead body into harmful stage.

(e) Energy and Sleep

Insufficient body intake results in Insomnia - (Un formal sleep pattern) and restrains healthy body into dis-comfort zone.

4. Conclusion

Un-balanced diet is a result of multiple harmful factors to a human body which lead body into harmful stage in terms of vitamins, minerals and protein deficiency. However, Suitable amount of Diet is required to maintain a healthy body without any harm, because healthy and balanced diet prevents incoming chronic diseases and activate the army of body (Immune System).