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BATCH # 346
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SECTION-I

Q NO:3

(A) Hurdles in developing Countries to tackle impacts of Global Warming:

What is Global Warming?

Global warming is the rise in average temperature of earth wreaking havoc on environment by bring severe and sudden climate changes all around the global. It is caused by over-use of non-renewable resources and inefficient and wasteful use of renewable resources.

2023: The Hottest Year.

According to Asian Development Bank the year 2023 was the hottest year in the history of mankind.

→ In China, Xinjiang the temperature in July 2023 reached upto 52.2°C which

is historic.

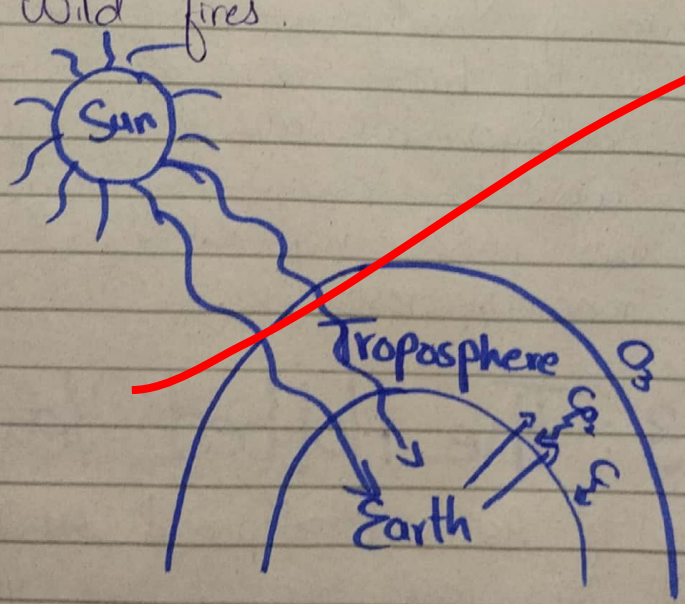
→ In Pakistan, in the city of Jacobabad, Multan, Sibbi temperature crossed 50°c which is the hottest in its history.

Causes Of Global Warming

Global warming is caused when heat from sun reaches earth and when the earth rediates the heat back into atomsphere it is absorbed by green house gases present in the atmosphere. As a result temperature increases.

The various sources of Green house gases are:

→ Industries (release 'C' (carbon).
→ Population explosion
→ Massive deforestation
→ Solid wastes
→ Wild fires.



Major Hurdles to tackle impacts of Global Warming:

Though Global warming is a global environment problem but some countries are more affected. Among these are developing countries including Pakistan. Pakistan contributes only 1% of 'C' emission but is affected most and faces various extreme weather changes every year. 2022 Flood is the best example in this regard.

COP 28: is the 28th Conference of Parties to UNFCCC, concluded in Dubai and is attended by 200 countries, including Pakistan. The major hurdles in light of COP 28 to tackle impacts of Global warming in developing countries are following:

→ Challenges for activating loss and Damage funds by developing countries.
→ Lack of financial resources to invest in climate mitigation and renewable energy projects.
→ Extrem weather events causing losses and making it challenging for countries to recover.
→ Burden by external debt
→ Lack of infrastructure and execution
→ Pledges for loss and damage fund, fall short of $300 billion annual investment needed by 2030.

(B)

Balanced Diet

"Balanced diet is the diet that includes all the nutrients in right amount, like Carbohydrates, proteins, lipids, minerals, vitamins etc. for the proper growth and normal functioning of our body."

Macro Nutrients:

Macro Nutrient are required in large quantity for proper functioning. These include Carbohydrates, Proteins and lipids.

Carbohydrates:

These are main source of energy. Molecules Consists of Carbon, Hydrgen and Oxygen. The Sources of Carbohydrates are grains, wheat, fruits, wheat, Bailey, rice, milk etc.

Deficiency: Distubs energy provision and working of organs

Excess: Obesity and diabetes.

Proteins:

Source of energy required for muscles building and healing. Sources of proteins are fish, milk, meat and eggs.

Deficiency: healing process disturbs

Excess: heart related problems.

Fats: Source of energy, transport of fat: soluble vitamins (A, D, E and K).
Provides insulation on vital organs.
Sources of fats are milk, oil, meat, fish, almonds etc.
Deficiency: insulation suffers
Excess: Cholestrol causes painful joints

Micro Nutrients

Micro Nutrient are required in small quantity by body. These are following:

Minerals:

Essential for bones, teeth, blood clotting etc
Some of the mineral required by body are. Phosphorus, Potassium, Sodium, Copper, iron, fluorine, Zinc, Calcium.
Sources are milk, spinach, vegetables, fruits, nuts etc,
Minerals such as phosphorus combines with Calcium and important for bones. Pottassium is important for healthy nervous functioning.

Vitamins:

These are organic compounds which are essential for normal working, growth and reproduction. These are further divided into 2 categories.

① Fat-Soluble vitamins

Vit A	Contributes in good vision
Vit D	Reforms strong bones and teeth
Vit E	Good for skin, hair, nails etc.
Vit K	Helps in blood clotting.

2 Water Soluble Vitamins

Vit B Complex includes Vit B_1, B_2, B_3, B_5, B_6, B_7, B_9, B_{12} Important for growth, nerve functioning, imune system and reproductive system.

Vit C

Also called Ascorbic Acid and is essential for wound healing, nerve working. We can obtain it from Citrus fruits.

(C)
Artificial Intelligence:

"Artificial intelligence is the study and engineering of intelligent machines capable of performing the same tasks that characterize human thought."

These tasks include problem solving, learning, understanding natural language, recognizing patterns and making decisions.

Machine learning:

It is a specific approach within the broader field of AI. It focuses on the development of algorithms and models that enable computers to learn from the data and improve their performance on specific tasks over time. Instead of being explicitly programmed to perform a task, a machine learning system learns from examples and experiences.

Applications Of Artificial Intelligence in World:

Artificial intelligence revolutionized today's world. Here are some ways in which machine learning has made a significant impact:

Cognitive Science:

This area of AI is based on research on biology, neurology, psychology, maths etc. It focuses on learning human behaviours and how brain works and uses this knowledge to create expat systems which can provide decision support to end users in form of advice.

Robotics:

Machine learning has created Robots that work just like humans. In many developed countries 'Robots' are working in industries, resturants, in our phones etc. Robots have visual perception, ability to use hands skillfully and physical ability to move over any surface.

Communication:

Artificial intelligence has ability to understand language and we can talk to Robots on our computers and devices on different apps and it can answer us just

like humans understand each other. People are now connecting more with Robots than humans.

Education:

AI has worked really well in the area of education. Scientific research has become more easy with AI. Student can know access data on a click, all at one place. AI can generates Power point presentations, research papers, assignment within minutes.

AI in Science

Application of AI in Science includes automated discovery, design of experiments, interpretation of data etc.

Fraud detection / Cyber security

Machine learning algorithms are employed to detect patterns of fraudulent behaviour in financial transactions and online activities. This has reduced the impacts of cyber threats on businesses and individuals.

Environmental Monitoring:

Artificial intelligence is applied in environmental science for tasks such as climate modeling, deforestation monitoring, wildlife conservation. These applications contribute to better understanding and managment of environmental challenges.

(D)

RAM and ROM

RAM (Random Access Memory) and ROM (Read Only Memory) are both types of computer memory, but they serve different purposes and have distinct characteristics. Here are the key distinctions between RAM and ROM:

① Volatility

RAM

Volatile memory, it losses when powered off. RAM is used for temporary storage of data that the CPU is currently working with.

ROM

Non volatile memory, means it retains its contents even when the power is turned off. The data is stored in ROM. permanently and does not change.

② Function

RAM

Used for the tasks that require quick access to data during Computer's operation

ROM

It reads the instructions before the system software loads in the computer.

③ Speed

RAM

- Works faster and allows high speed read and write operations.

ROM

Slower compared to RAM. essential for initializing system

Types

RAM

There are different types of RAM which are (DRAM) and (SRAM).

ROM

It has different types like PROM, EPROM and EEPROM

QNO:5

(A)

Methods Of Food Preservation

Food Preservation

"Food Preservation is the technique that is used to prevent food from spoilage, Poisoning, and microbial contamination for a long time.

Methods Of food Preservation

Some methods of food Preservation are.

1- Freezing

In this method, the temperature of the food items is lowered by placing them

in Cold Storage which helps in preventing the growth of micro-organisms, like bacteria and fungi. Fish is usually transported from Karachi to other cities by placing ice cubes in storage.

2- Vaccum Packing

In this method, food items are placed in a plastic bag. And the vacuum is Created in the bag by removing the air containing oxygen and Co_2 - the essential requirements for the growth of Bacteria. It results in the death of microorganisms. It is used for fruits.

3- Salting:

This method implies the use of edible salt thrown over the food items. It not only slowdown the nourishment of Bacteria but also deactivates the enzyme present in the tissue. Meat in areas where there is no light is not applicable.

4- Canning and bottling:

In this method, already cooked food items are restored in cans and bottles made sterile by burning or washing them with different sterling agent. The food items are safe till the cans and bottles are sealed. The partially cooked pulses are stored with help of this method

5- Burrying in the ground:

Food items are buried in the grounds with no light, oxygen and carbon dioxide. This hampers the growth of micro organisms. It is commonly used to preserve vegetables.

(B)

What is Milky Way:

"Milky way is a large, disk-shaped galaxy that includes our Solar system".

A spiral galaxy is shaped like a disk, usually with a bulge in the centre and with arms that spiral outwards as the galaxy rotates.

Dark Matter:

Galaxies are thought to have a black hole at their active centres. A black hole is a massive object, comprising a significant portion of galaxy's mass, influences galactic dynamics through its gravitational pull. Its gravitational field is so strong that it does not let anything escape from it.
Despite being invisible, this dark matter plays fundamental role in formation of galaxies.

Parts of Galaxy:

1- Nuclear or Galactic Center:

It contains dense concentration of stars and other celestial objects.

2- Disk

The flat, rotating region of a galaxy where stars, gas and dust are concentrated.

3- Spiral Arms:

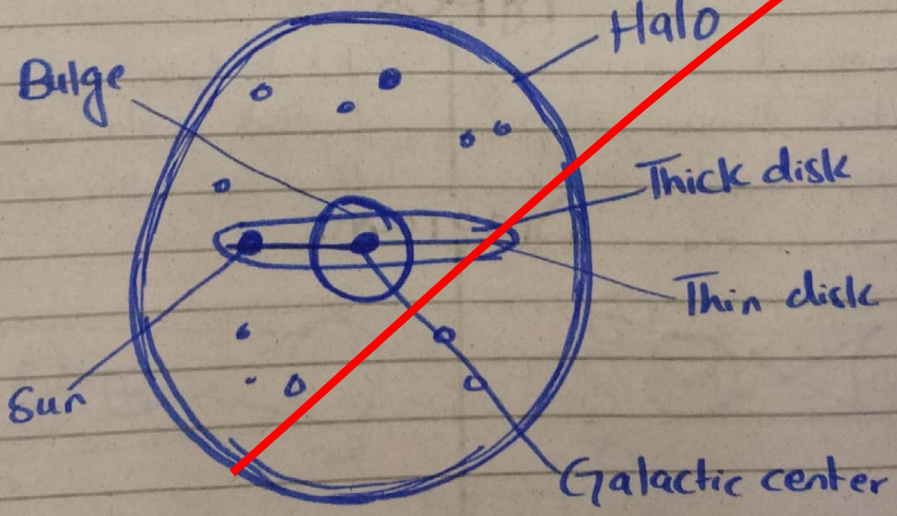
Curved arms extending from galactic center into the disk.

4- Bulge:

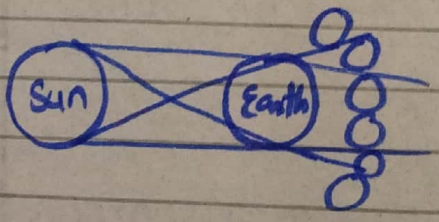
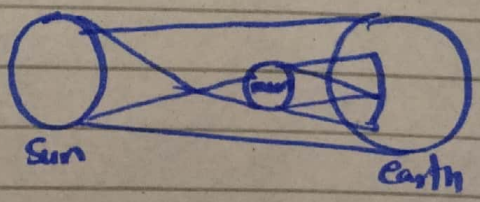
A central, spherical concentration of stars often found at the center of galaxy.

5- Halo:

Outermost region of a galaxy.



(C)

Lunar Eclipse	Solar Eclipse
The moon moves in orbit around the earth at the same time earth orbits sun. At some point, earth moves between sun and moon and blocks sunlight to reach the moon.	Moon orbits earth, when it moves between the sun and earth it blocks sunlight to reach the earth. This is called Solar Eclipse
Occurence	
A lunar eclipse can occure only when moon is full.	Solar eclipse occurs at the time of new moon.
Visibility	
It can be seen from Earth at night.	looking directly on solar esclipse can damage eyes.
Occurence/year	
It occurs several times a year.	Solar eclipse happens only once in 18 months.
Types	
Penumbral lunar eclipse Partial lunar eclipse Total lunar eclipse	Total solar eclipse Partial Solar eclipse Annular solar eclipse
Diagrams	
	

(D)

Nuclear Fission

It is a nuclear reaction in which the nucleus of an atom splits into two or more smaller nuclei, along with release of energy.

Process

A neutron collides with the nucleus of a heavy atom, such as Uranium-235 or Plutonium-239 and results in two nuclei and neutrons and amount of energy.

$$^{1}_{0}n + ^{235}_{92}U \longrightarrow ^{141}_{56}Ba + ^{92}_{36}Kr + 3^{1}_{0}n + \text{Energy}$$

It is used in power plants to generate electricity

Nuclear Fusion

In this process two light atomic nuclei combine to form a heavier nucleus, relasing a large amount of energy.

Process

In stars and hydrogen bombs, the extremely high temperatures and pressure cause hydrogen nuclei to overcome their mutual repulsion and fuse into helium, relasing energy in form of light and heat.

$$^{2}_{1}H + ^{2}_{1}H \longrightarrow ^{3}_{2}He + ^{1}_{0}n + 3.27\text{Mev}$$

IONIC Bond:

"It is a type of chemical bonding that involves electrostatic attraction between oppositely charge ions and electrons are transfered completely from one atom to another."

TABLE SALT

NaCl is commonly called table salt. It is ionic compound formed by ionic bond that results when sodium (Na) transfers its valence electron to chlorine (Cl). After this transfer Na becomes positive and Cl becomes negatively charged and these two opposite charges attract each other and form a strong bond, ionic bond.