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Name: Aiman Mumtaz

Question no 1

(a)

GHE in the content of global warming

Definition:

"The greenhouse effect (GHE) is a natural atmospheric process through which certain gases trap heat and keep the Earth warm enough to sustain life. However, human activities have intensified this effect, leading to global warming."

Role of GHE in the content of global warming:

1- Heat Trapping mechanism:

Green house gases (CO_2, CH_4, N_2O, water vapour) absorb and re-emit infrared radiation emitted by the Earth. Increased concentration of these gases reduce heat loss

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to space causing more energy to remain in the lower atmosphere. This enhanced heat retention leads directly to global warming.

2- Anthropogenic Enhancement of GHE:

Human activities have significantly strengthened the greenhouse effect for example Burning of fossil fuels higher CO_2 level, deforestation reduced carbon absorption and industrial processes realeased nitrous oxide and sythetic gases. This Enhanced greenhouse effect is the main mechanism behind the observed rise in global average temperatures since the industrial revolution.

3- Link between GHE and climate change:

By driving global warming, the enhanced greenhouse effect leads to:

- Rising global temperature

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- Melting glaciers and polar ice caps
- Sea level rise
- Heatwaves, floods, droughts and storms.

(b)
Vitamins

Definition:

"Vitamins are organic compounds required in small amounts for normal growth, metabolism and maintenance of good health."

Types of vitamins:

(i) Fat soluble vitamins:

Fat soluble vitamins are the vitamins which stored in body in the form of fat and also store in liver. Fat soluble vitamins are:

- Vitamin A
- Vitamin D
- Vitamin E

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- Vitamin K

(ii) Water Soluble vitamins:

Water soluble vitamins are not stored in body. If they are in excess is excreted in urine. Water soluble vitamins are:

- Vitamin B complex
- Vitamin C

Fat soluble vitamins:

Vitamin	Functions	Sources	Deficiency Disorders
A	Vision, skin, immunity	Carrots, liver, milk, egg	Night blindness
D	Bone and teeth formation	Sunlight, fish, milk, oil	Rickets, Osteomalacia.
E	Antioxidant, cell protection	Nuts, seeds, vegetable oil	Muscle weakness
K	Blood clotting	Green leafy vegetables	Excessive bleeding

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Water soluble vitamins

Vitamin	Functions	Sources	Deficiency Disorders
B_1 (Thiamine)	Energy met. abolism, nerves	Whole grains	Beriberi
B_2 (Riboflavin)	Growth, skin health	Milk, egg	Cheilosis
B_3 (Niacin	Digestion, nervous system	Meat peanuts	Pellagra
B_6 (Pyriodoxine)	Protein metabolism	Bananas, cereals	Anemia
B_{12} (Cobalamin)	RBC formation	Meat, dairy	Anemia
C Ascorbic acid	Immunity, wound healing	citrus fruits	Scurvy.

(c)

Optic fibers

Definition:

"An optic fiber is a very thin, flexible strand of glass or plastic

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that transmits information in the form of light signals from one point to another using the principle of total internal reflection".

Importance of Optic fibers:

(i) High Speed Communication:

Optic fibers transmit data at extremely high speeds, making them the backbone of internet, telephone and cable TV networks.

(ii) Large Bandwidth:

They can carry huge amount of data simultaneously, supporting video streaming, online conferencing and cloud computing.

(iii) Low signal Loss:

Light signals travel long distances with minimal attenuation, reducing the need for repeators.

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(d)

Water Pollution

Definition:

"Water pollution is the contamination of water bodies (such as rivers, lakes, groundwater and oceans) by physical, chemical and biological substances that degrade water quality, making it harmful for human use, aquatic life and ecosystem."

Types of water pollution:

(i) Physical water pollution:

Physical water pollution changes in physical properties of water for example turbidity, colour change, temperature rise. It effects aquatic habitat and reduced light penetration.

(ii) Chemical water pollution:

Chemical water pollution means the presence

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of harmful chemicals in water for example acids, pesticides, fertilizers and heavy metals. It cause eutrophication and toxicity in water.

(iii) Biological pollution:

Biological pollution contamination of water by microorganisms for example Bacteria, viruses and protozoa. It cause water-borne diseases such as cholera, typhoid, dysentery.

Sources of Water pollution:

(i) Domestic sources:

Domestic sources of water pollution are:

- Sewage and household waste water
- Detergents and soaps

(ii) Industrial sources:

Industrial sources of water pollution are:

- Chemical effluents
- Heavy metals and toxic wastes

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(iii) Agricultural sources:

Agricultural sources of water pollution are:

- Runoff containing fertilizers and pesticides
- Animal waste

Preventive measures to reduce water pollution:

(i) Treatment of Waste water:

Water pollution can reduce by installation of sewage treatment plants (STPs) and industrial effluent treatment before discharge.

(ii) Agricultural management:

Agricultural management like controlled use of fertilizers and pesticides, adoption of organic farming and develop buffer zones near water bodies reduce water pollution.

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(iii) Industrial regulations:

Strict enforcement of environmental laws and cleaner production technologies can also reduce water pollution.

Question no 3

(i)

Global warming

Introduction:

Global warming caused by the excessive accumulation of greenhouse gases in the atmosphere has emerged as a grave threat to developing countries like Pakistan. Despite contributing less than 1 percent of global carbon emissions.

Effects of global warming on Pakistan:

(i) Rising Temperature and Heatwaves:

Pakistan has experienced record breaking heat

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waves, particularly in Sindh and southern Punjab. It increase heat stress leads to loss of human lives, reduced labour productivity and of higher energy demand.

(ii) Melting Glaciers:

Pakistan hosts over 7000 glaciers, the largest concentration outside the polar regions. Accelerated glacier melting causes Glacial Lake Outburst Flood (GLOF) threatening Gilgit Balistan and KP.

(iii) Increased Floods and extreme Weather:

Intense monsoons rains have resulted in frequent and devasting floods (2010, 2022 and 2025) floods. Floods damage infrastructure, agriculture and livelihoods, pushing million into poverty.

Suggestion to address Global

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Warning:

(i) Climate resilient infrastructure:

State should strengthen dams, embankments and drainage systems and to build climate proof roads, housing and urban planning.

(ii) Water resource Management:

The promotion of rainwater harvesting and water efficient irrigation and construct small and medium sized dams.

(iii) Diaster Risk reduction:

Government should strengthen early warning systems for floods and heatwaves and to improve diaster preparedness at local levels.

(b)

Balanced Diet

Importance of Balanced Diet:

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(i) Proper Growth and Development:

Balance diet is essential for physical and mental development especially in children and adolescents. It supports bone growth, muscle formation and brain function.

(ii) Energy Supply:

Balanced diet have carbohydrates and fats that provide energy for daily activities and metabolism.

(iii) Body repair and Maintenance:

In balanced diet protein help in repair of Tissues, wound healing and muscle maintenance.

(iv) Strengthen Immune system:

Vitamin (A, C, E) and minerals (zinc, iron) enhances immunity against dieases.

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Disordess associated with unbalanced diet:

Nutrient Deficient	Disorder
Protein	Kwashiorkor
Protein and Calories	Marasmus
Vitamin A	Night blindness
Vitamin B_1	Beriberi
Vitamin C	Scurvy
Vitamin D	Rickets
Iron	Anemia
Iodine	Goiter