

LMS: 37365

PART-II

-(SECTION-1)-

QNO 5:-

Differentiate between eukaryotic and a prokaryotic cell:-

(i) Nucleus : Present in Eukaryotic vs Absent in prokaryotic

Eukaryotic cells have well-defined membrane-bound nucleus. However, Prokaryotic cells have no true nucleus.

(2):- Organelles:- Specialized vs unspecialized

Eukaryotic contain membrane-bound organelles such as mitochondria, chloroplast (in plants), the endoplasmic reticulum, and the golgi apparatus. They specialize in specific tasks, like energy production and protein synthesis. However, Prokaryotic lack specialized structure. All cellular processes occur in cytoplasm or at the cell membrane.

(3)-(DNA Structure) - linear vs circular

DNA is linear, organized into chromosomes, & associated with proteins called histones. However,

DNA is circular and not associated with histones.

4: Ribosomes: large vs smaller

Their ribosomes are large (80S), either free floating in the cytoplasm or attached to rough endoplasmic reticulum. However, ribosomes are smaller (70S) and are free-floating in the cytoplasm.

5: Cell wall: present in plant vs

Cell wall are present in some eukaryotes, such as plants (made of cellulose), and fungi (made of chitin). Animal cells lack a cell wall. But, in prokaryotes most have a rigid cell wall made of peptidoglycan, which provides structural support.

be:

GLOBAL WARMING

It refers to long-term increase in earth's average surface temperature due to human activities, particularly the emission of greenhouse gases like carbon dioxide, methane and nitrous oxide.

These gases trap heat in the atmosphere creating the **greenhouse effect**.

Key-IMPACTS OF Global Warming

- Melting polar ice caps and rising sea levels.
- Increased frequency of extreme weather events (e.g., hurricanes, heatwaves)
- Disruption of ecosystem and loss of biodiversity
- Threats to food security and human health.

Kyoto Protocol:

It is the international treaty adopted in 1997 and came into force in 2005 under the United Nations framework convention on climate change (UNFCCC). Its main goal is to combat climate change by reducing greenhouse gas emissions.

Key features of Kyoto Protocol:-

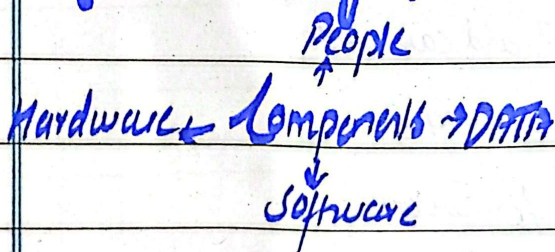
- legally binding targets for developed countries to reduce emissions
- Establishes mechanism like carbon trading and clean development mechanism
- Differentiated responsibilities: Recognize developed countries are responsible for most emissions.

Q3.

Geographic Information System:

It is a framework for capturing, storing, analyzing, and visualizing spatial and geographic data.

Key Components of GIS:



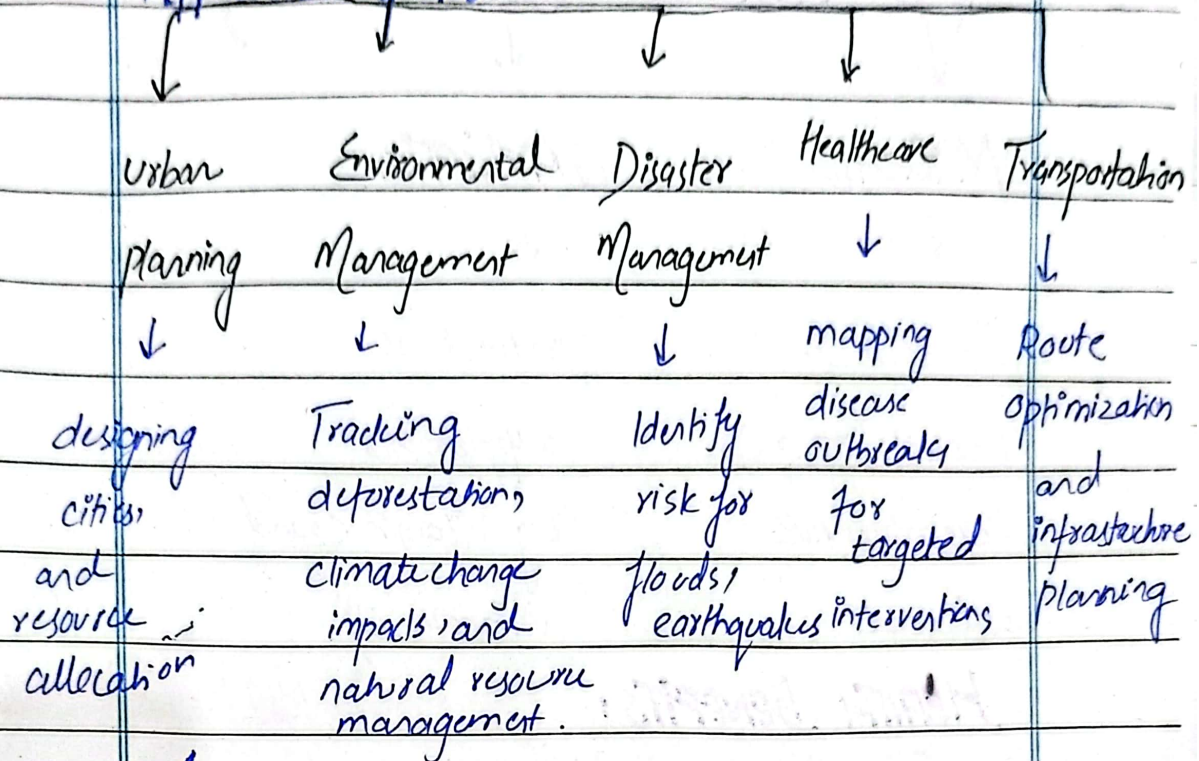
Hardware: Computers & devices for data processing

Software: Google earth

Data: Spatial data (maps, satellite images)

People: experts and analyst who interpret and apply GIS insights.

Applications of GIS:



Example:

it is used to track Covid-19 spread globally, enabling policy-makers to visualize hotspots and allocate resources effectively.

D:

ANTIOXIDANTS:-

Antioxidants are molecules that prevent or slow the damage to cells caused by free radicals - unstable molecules produced during normal metabolic processes or due to external factors like pollution & UV radiation

SOURCES OF ANTIOXIDANTS

NATURAL

SYNTHETIC

Found in fruits
(berries, oranges),
vegetables, nuts
and seeds

Produced as
supplements
(e.g. Vitamin C and
vitamin E).

Hepa
B, C
virus

HEALTH BENEFITS:

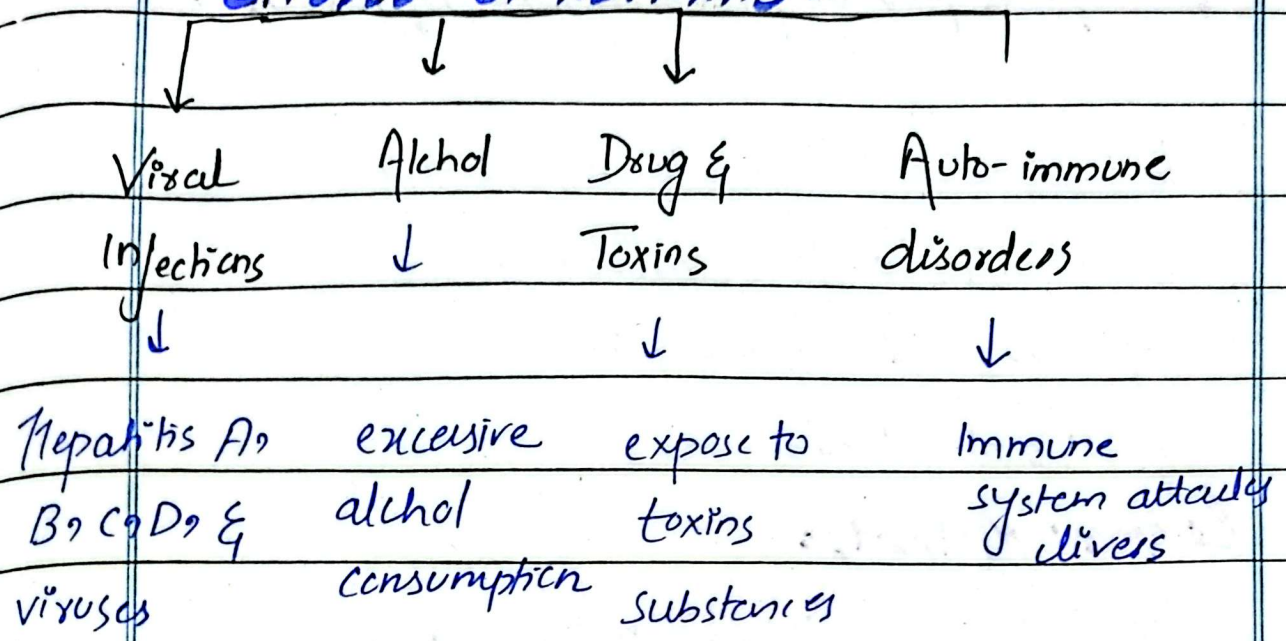
- Protect against chronic diseases like cancer, diabetes, and heart disease.
- Slow down aging and improve skin health.
- Enhance immune system functions.

Q4:-

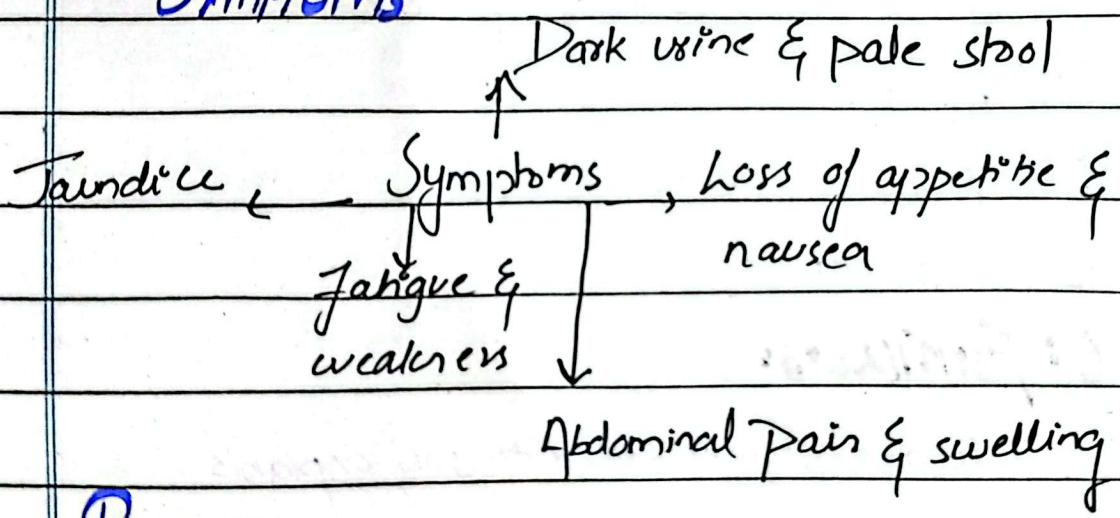
HEPATITIS:

"It is characterized by the inflammation of the liver". It can be acute or chronic and is caused by various factors, including infections, toxins, or autoimmune responses."

CAUSES OF HEPATITIS:



SYMPTOMS



Preventions:

- Vaccination
- Avoid sharing needles
- Practice safe sex
- Maintain good hygiene
- Moderate alcohol consumption

b: Food preservation methods:

It involves techniques to extend the shelf life of food, preventing spoilage and retaining its nutritional value.

Common methods:

- 1) Freezing
- 2) Canning
- 3) Drying
- 4) Pickling
- 5) Pasteurization
- 6) Vacuum packing
- 7) Use of preservatives

c: Fertilizers:

It is a substance added to soil or plants to supply essential nutrients and promote growth.

It enhances agriculture productivity by replenishing depleted nutrients in the soil.

Types of fertilizers:

ORGANIC

derived from natural sources like manure, compost, or bone meal

INORGANIC

contain specific nutrients like nitrogen, phosphorus, & potassium.

- Improve soil fertility
- D:

Anatomy of a HUMAN TOOTH:

A human tooth consists of several layers and parts, each performing specific functions.

EXTERNAL

Anatomy :-

Crown: visible part above the gum line

Root: part embedded in the jawbone, anchoring tooth

INTERNAL

Anatomy :-

Enamel	Dentin	Pulp	Cementum	Periodontal
• outermost hard and protective layer	• beneath the enamel, a porous-bone like material	• innermost layer, contain blood vessels and nerves	• A calcified layer covering the root	• A ligament connective tissue that attaches tooth to the surrounding bone, absorbing chewing forces
• Composed of minerals like calcium and phosphate	• support to enamel & transmit sensations	• Nourishes the tooth & provides sensation	• anchoring it to the Periodontal ligament	

TYPES OF HUMAN TEETH:

Inisors	Canines	Premolars	Molars
• cutting (front teeth)	• tearing (sharp teeth)	• for crushing & grinding	• for extensive grinding (back teeth)

SECTION-II

-(IQ VS EQ)-

DEFINITION:

IQ measures cognitive abilities, reasoning, and problem-solving. However, EQ measures emotional intelligence, including understanding and managing emotions.

Focus Area: Logic vs Awareness

IQ focus on memory and analytical skills, and EQ focus on self-awareness and empathy

IMPORTANCE:-

Important for academic and EQ important for leadership, teamwork, personal relationships

EXAMPLE:

Solve mathematical problems and handling conflict.

Q: PRESENT AGE OF AMAN:-

Let Aman's present age be x .

10 year ago, his age was $x-10$

after 20 years, his age will be $x+20$

compare: his age will be 10 times his age 10 years ago

$$x+20 = 10(x-10)$$

$$x+20 = 10x-100$$

$$20+100 = 10x-x$$

$$120 = 9x$$

$$x = \frac{120}{9} = 13.33 \text{ years}$$

Q:-

USING FORMULA:

$$\frac{1}{40} + \frac{1}{60} = \frac{1}{x}$$

LCM = 40 & 60 is 120

$$\frac{120 \times 1}{40} + \frac{120 \times 1}{60} = \frac{120}{x}$$

$$\frac{120}{40} + \frac{120}{60} = \frac{120}{x} = \frac{3}{40} + \frac{2}{60} = \frac{120}{x}$$

$$3 + 2 = \frac{120}{x}$$

$$5 = \frac{120}{x}$$

$$5x = 120$$

$$x = 24$$

Thus, time taken for both of them to mow the lawn together is 24 minutes.

D:-

$$\text{Percentage error} = \frac{\text{difference of no}}{\text{Required no}}$$

Let number 15: (LCM of 5 & 3)

$$\text{Wrong no} = \frac{15 \times 3}{5} = 9$$

Required:

$$\frac{15 \times 5}{3} = 25$$

Percentage error:

$$\left[\frac{25 - 9}{25} \right] \times 100$$

$$= \frac{16 \times 100}{25}$$

$$= 64\%$$