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(Q4)

Cause of Pollution of Land:-

1) Agriculture causes:-

The use of pesticides, herbicides and fertilizers can pollute the soil of land and ground water. The substances seep into soil and accumulate over time. This is cause of improper disposal agriculture waste such as crop residues and animal manure.

2) Waste Disposal Cause:-

The improper disposal of solid waste such as dumping of garbage, construction debris and hazardous materials in landfills or open areas can contaminated the soil.

3) Industrial Cause:

The improper disposal of solid waste manufacturing facilities and industrial processes often release of pollutants into the soil. These pollutants can include heavy

metals, chemical, solvents.

4) Mining Causes:-

Extracting material and resources from the earth crust. Toxic compounds and heavy metals may be released into the soil during mining and damaging neighbouring ecosystem.

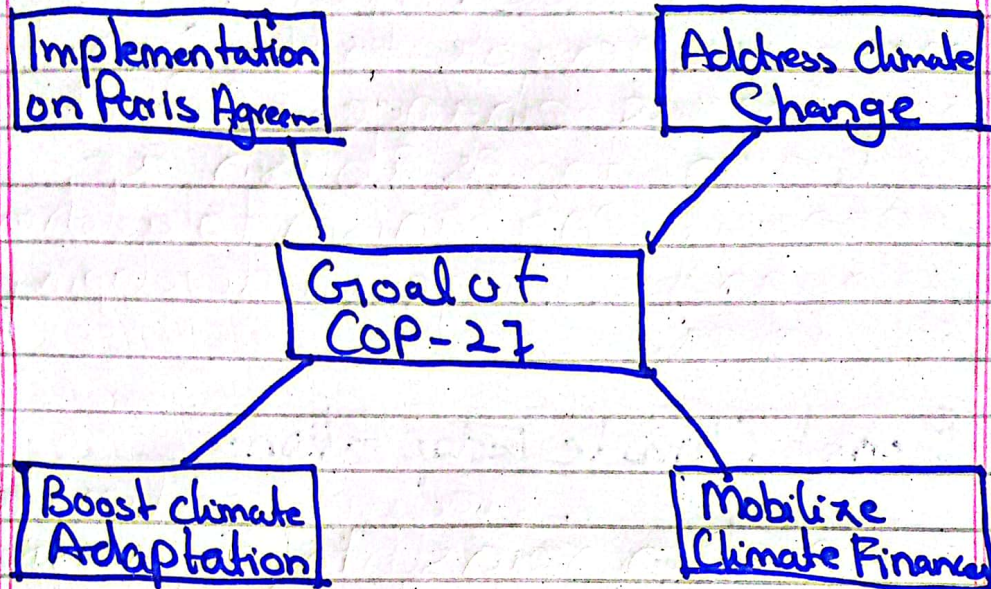
5) Urbanization:-

Heavy Machinery, excavation and the introduction of other chemicals produce pollution that are all common components of urban growth and building projects. These actions have potential to disrupt the natural soil and lead to pollution.

Causes of Pollution

- Industrial Activities
- Agriculture Activities
- Improper Disposal waste
- Mining Activities
- Urbanization
- Oil & Fuels Spills
- Sewage & Wastewater
- Deforestation
- Nuclear Accident

b) Goals of COP-27



1) Implementation on Paris Agreement:-

The Paris Agreement is a legally binding international treaty on climate change. It aims to limit global warming to well below 2 degree Celsius above pre-industrial level and pursue efforts to limit the increase to 1.5 degree Celsius above pre-industrial level. COP27 will focus on implementation of Paris agreement such as increasing the ambition of climate targets, mobilizing finance etc.

2) Address the loss and damaged Caused by Climate Change:-

Loss and damage refers to the irreversible impact of

Climate change that cannot be adapted to is particularly pressing issue for developing countries which are often the most vulnerable to the impact of climate change. COP-27 will aim to establish a financial mechanism to address loss and damage in developing countries.

3) Boost Climate Adaptation:-

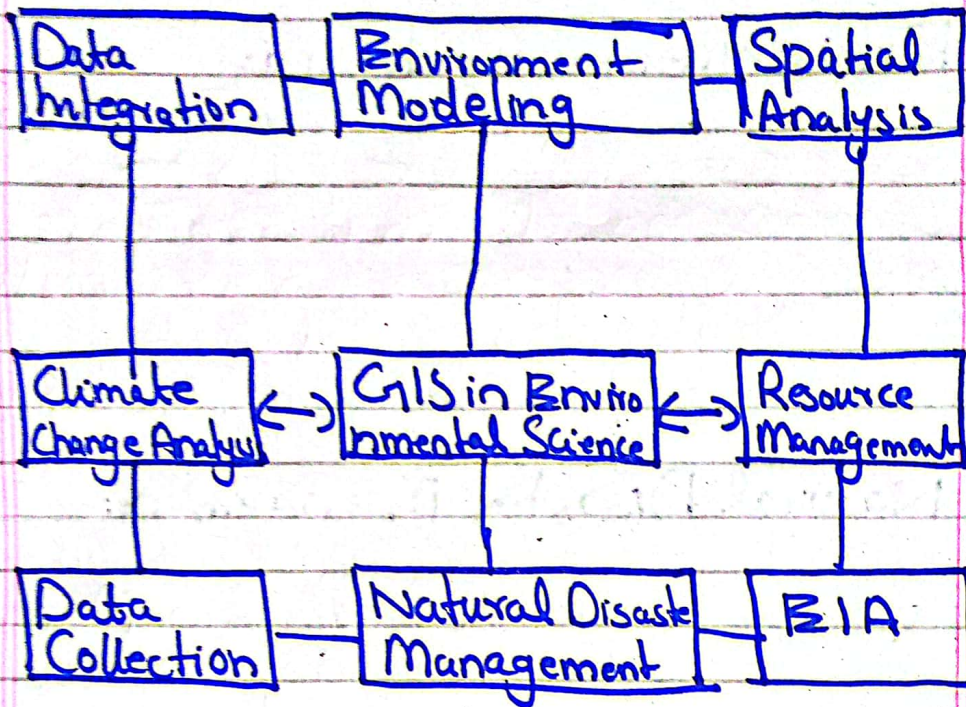
Climate adaptation refers to the measures that people take to adjust to the impacts of climate change. It is essential for reducing the vulnerabilities of people and ecosystem to climate change. The COP-27 will aim to boost climate adaptation by increasing investment in adaptation measures and by providing support for developing countries to adapt climate change.

4) Mobilize Climate Finance:-

Climate finance is essential for supporting the implementation of the Paris agreement. COP27 will aim to mobilize climate change finance from public & private sources.

9)

Role of GIS in Environment Science:-



1) Data Collection:-

GIS Allow environmental scientists to gather various types of spatial data such as satellite images, aerial photographs,

2) Data Integration:-

GIS Allows for integration of numerous environmental datasets from multiple sources.

3) Spatial Analysis:-

GIS provides spatial analytic tool, allowing researchers to undertake complicated computations and

and modelling to analyse environmental events.

4) Environmental Modelling:-

Environmental scientist uses GIS to develop models that simulate natural processes such as climate modeling, hydrological modeling, and ecological modeling.

5) Natural Disaster Management:-

GIS is individual for disaster Management and emergency response.

6) Environmental Impact Assessment (EIA)

GIS aids in conducting EIAs for proposed development project help to analyze factors.

7) Climate Change Analysis:-

GIS is used extensively in climate change research it help to analyze temperature.

d)

Fundamental of Artificial Intelligence.

1) Machine Learning:-

Machine learning is a type of AI that allows

system to learn from data without being explicitly programmed. Machine learning algorithms are used to train AI system to perform specific tasks such as classifying images, predicting customer behavior.

2) Natural language Processing (NLP)

NLP is a field of AI that deals with the interaction between computers and human language. NLP algorithms are used to enable AI systems to understand and generate human language. NLP is used in a wide range of AI application such as Chatbots.

3) Computer Vision :-

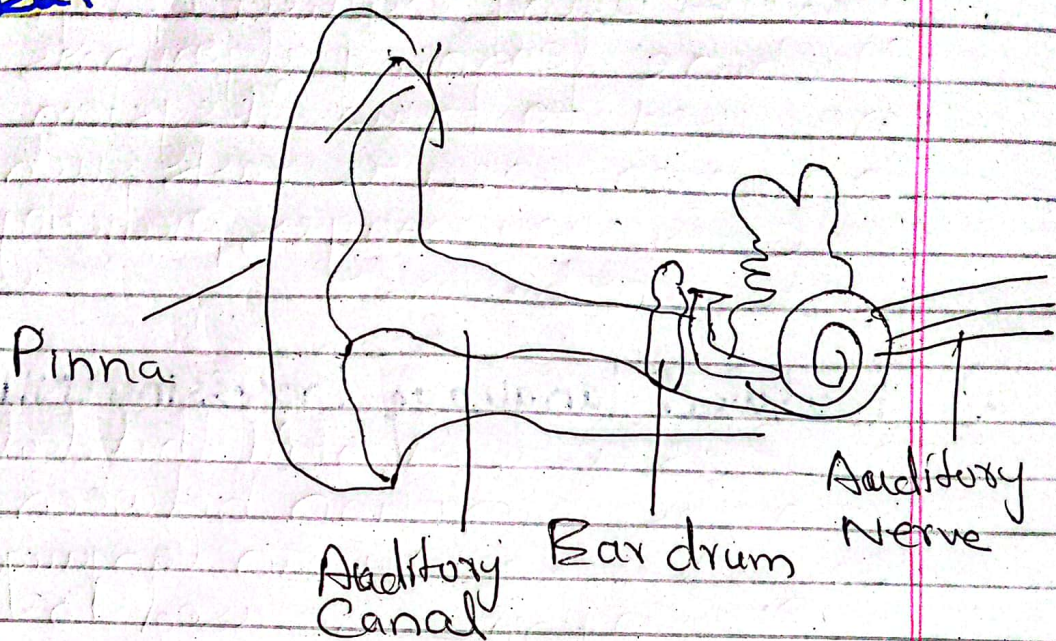
Computer vision is a field of AI that deals with the ability of computers to understand and interpret visual information. It used for wide range AI application such as self-driving car, security system.

4) Robotics:-

Robotics is a field of engineering deals with the design, construction, operation and application of robots.

Q5
a)

Ear



Structure

1) Outer ear:-

The outer ear is the visible part of ear and consist of Pinna and external auditory canal. The auricle is a flap of cartilage that helps to collect sound wave.

2) Middle Ear:-

The middle ear is a small air-filled cavity that contains 3 tiny bones called ossicles.

3) Inner Ear:-

The inner ear is a fluid-filled labyrinth that contains cochlea and vestibular system.

Function of Ear

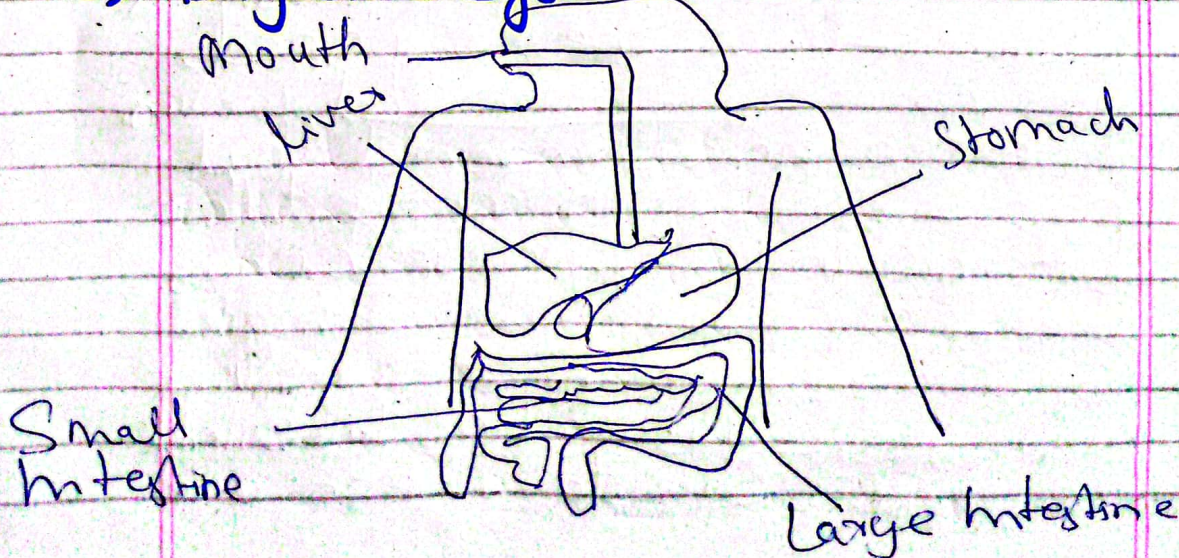
1) Hearing:-

When sound waves enter the outer ear, they travel down the external auditory canal and cause the eardrum to vibrate. The vibrations of the eardrum are transmitted to the ossicles which amplify them and transmit them to the cochlea. The cochlea converts vibrations into electrical signals sent to the brain through the auditory nerve.

2) Balance & Orientation:-

The vestibular system in the inner ear is responsible for balance. It contains 3 semicircular canals and two otolith organs.

b) Digestive System:-



The digestive system is a group of organs that work together to break down food into nutrients that body can use for energy, growth and repair.

Role of Small Intestine:-

The small intestine is the longest part of digestive system and it is responsible for absorbing most of nutrient from food. The small intestine is divided into 3 parts.

- i) duodenum:- Digestion of food take place.
- ii) Jejunum:- Absorbing nutrient
- iii) ileum:- food into blood stream.

c)

Vitamins:-

Vitamins are essential nutrient that the body needs for normal growth and function. These organic compound that play a role in many different metabolic processes such as energy production, cell growth and repair and immune function. Vitamins are classified as fat-soluble or water soluble. There are

many types of vitamins
like Vitamin A, B, C, D, E, K,
B1, B2, B3 etc.

d)

Function of Pituitary Gland:-

1) Antidiuretic hormone (ADH):-

It helps to regulate blood pressure and water balance.
It helps in growth and development.

2) Oxytocin:-

It stimulates uterine contraction during childbirth and milk release during breastfeeding. It helps in reproduction, metabolism and response of stress.

Part-II

(Q7)

a)

Sol

Let the original price of shirt = x
After increasing the price by 20%
the price of shirt became $1.2x$
The price was Rs 80 too high

$$1.2x - x = 80$$

$$0.2x = 80$$

$$x = \frac{80}{0.2} \Rightarrow x = 400$$

Therefore, the original price of shirt was Rs 400.

b)

Sol

Original code = BROTHER
Code = Q D G S N Q A

S = T
H = L
S = T
T = U
B = H
R = U

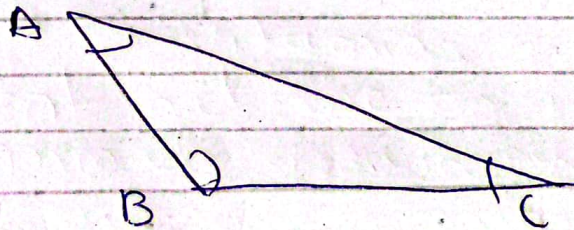
A, B, C, D, E
R, G, H, I, J
K, L, M, N, O
P, Q, R, S, T, U
V, W, X, Y

Therefore, the code is TLTUHU

c)

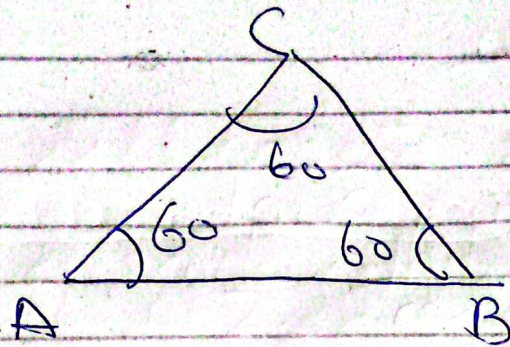
1) Scalene Triangle:-

A scalene triangle is a triangle which all three sides are unequal.



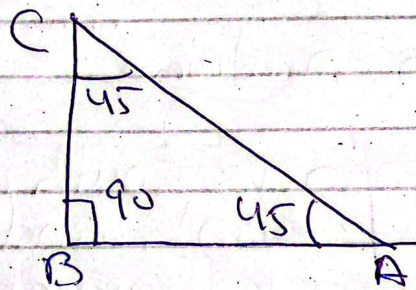
2) Equilateral triangle:-

A equilateral triangle is a triangle in which 3 sides & angles are equal.



3) Isosceles Right triangle:-

A isosceles right triangle is a triangle in which two sides are equal and 3rd side is hypotenuse.



d)

Sol

The probability of shiza pick slice is ~~8/8~~ $3/8$

Because 3 slices with raisin and 5 slices without raisin.

Q8

a)

Sol

Starting point

5 km

3 km

4 km

10 km

Man location

Therefore, man is south of his starting point, and he is 10 km away from his starting point

b)

Sol

The first prime num~~s~~ 2, 3, 5, 7, 11

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c)

Sol

$$\frac{\text{Number of man}}{\text{No. of days}} = \text{length of Road}$$

$$\frac{50}{40} = 20$$

Find out how long 70 men will complete same length of road

$$\frac{70}{x} = \frac{20}{50}$$

$$x = \frac{20 \times 70}{50}$$

$$x = 28 \text{ days}$$

Therefore, 70 men will take 28 days to complete same length of road.

d)

Sol

After paying debt
Remaining property worth =

$$\text{Rs } 1750000 - \text{Rs } 150000 = \text{Rs } 1600000$$

Then

Son share is twice = $2x$
daughter share = x

$$x + 2x = 3x$$

$$3x = 1600000$$

$$x = \frac{1600000}{2 \times 3}$$

$$= \cancel{533333} \quad 53333.33 \text{ Rs}$$

Therefore, daughter share is
~~Rs 533333~~, Rs. 533,333.33
and son received Rs 1,066,666.67