

## PART-II (SECTION-I)

### b) Remote Sensing:-

Remote sensing is a science used to study the Earth's surface without being in contact with it. Remote sensing analyze, interpret and transmit the information from target to the analyzer.

### Principle of Remote Sensing:-

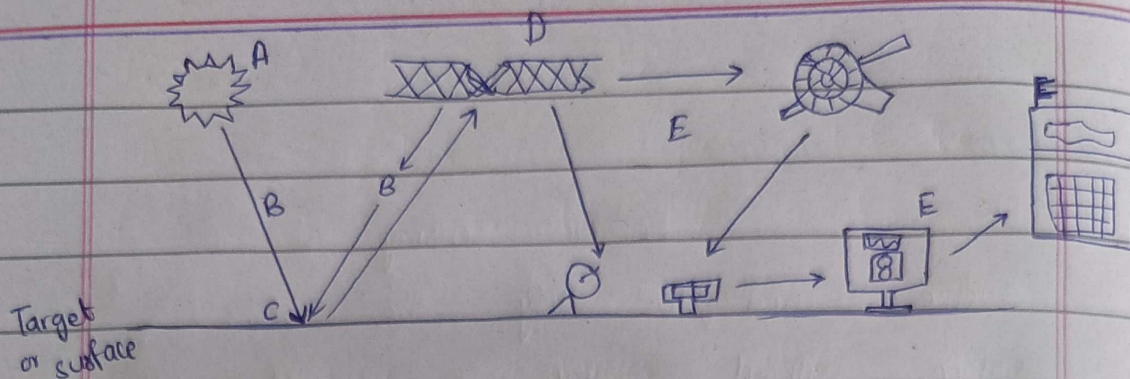
The basic principle of remote sensing is it transfer the life from the source of light, it falls on the target with different wavelength, it is analyze by the interpreter. It interpret ~~part~~ the information and make a visual picture of information.

### Components of Remote Sensing:-

Following are the components of remote sensing:

- |                      |           |
|----------------------|-----------|
| a) Source of light   | b) Target |
| c) Transmission Path | d) Sensor |





### \* Process of Remote Sensing:-

- Light from source fall on the surface of Earth it reflects, transmit or emit the light produce energy observed by the sensor. It transmit the <sup>information</sup>~~energy~~ to transmitter. It transmit and intepret the information to analyze and image is formed.

### \* Role of GIS in environmental Science:-

"GIS is a computer system that transmit, intercept and analyse the information of geographical referenced location".

~ According to American GIS Survey.

In environmental science GIS is used to:

- 1- Monitore the environmental disasters.
- 2- GIS is used to manage the storm water runoff.
- 3- GIS is used to manage ~~control~~ the flood, wetlands and forests.

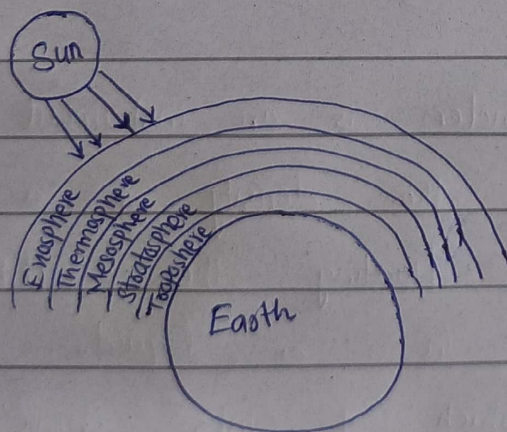


- 4- GIS is used to study the environmental impact analyses.
- 5- It is also used in ground water modelling and water management.

### c) "The Atmosphere is the blanket of Earth."

As our atmosphere is the mixture of gases. These gases forms layers in the atmosphere. These are approximately 120km above the Earth's surface.

The gases present in atmosphere have different temperature. Atmosphere is a transparent and it allow the sun light to reach the surface of Earth.



Atmosphere is the blanket of Earth  
1- **Protection from Harmful Temperatures Radiations:-**  
~~balancing of~~

Atmosphere balances the radiations coming to Earth. Its gas particles



absorb and transmit the heat from sun. It ~~protect~~ ozone layer protect the Earth from harmful UV radiation.

## 2- Balancing of Gases Concentration:-

Atmosphere balances the oxygen concentration on Earth as it contain different gases in it. Life cannot sustain without oxygen.

## 3- Balancing of Temperature:-

Atmosphere's gase particles absorb and transmit heat to manage the Earth's temperature during day and night.

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## d) Define the following term:

### (i) Hydrometer:-

Hydrometer is an instrument used to measure the density of a liquid by floating the calibrated glass tube in a liquid, the depth to which it sinks shows the density of a liquid compared to water.

### (ii) Epicenter:-

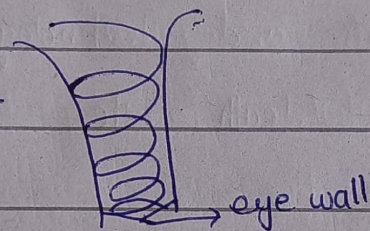
Epicenter is the point ~~above~~ on the surface of Earth directly



above the focus point, where underground location where an earthquake or underground explosion takes place.

### (iii) Eye wall of Cyclone:-

The eye wall is organized ring of towering thunderstorm that surrounds the eye of a tropical cyclone.



### (iv) Deep Focus:-

Deep focus is a cinematic and photographic technique that uses a large depth of field to keep subject in the foreground, ~~background~~ middle ground and background all in sharp focus simultaneously.

### (v) Light Year:-

The distance that a light can travel in one year in a vacuum is known as light year.

$$1 \text{ light year} = 9.460 \times 10^{12} \text{ km}$$



g) Pakistan is the fifth most populous country of the World. (255.2 million in 2025)

### \* Causes of Population explosion:-

1- High Fertility Rate:-

Pakistan has high fertility rate in woman which is the most important cause of population explosion.

2- Declining Death rate:-

Significant improvement in health, sanitation and technology, sharply decreases the death rate.

3- Low contraceptive Use:-

Low contraceptive use due to inefficient service delivery and cultural norms that people do not prefer family planning.

4- Early Marriages:-

Early marriage especially in woman results in prolonged fertility period.

5- Desire for son:-

A cultural preference to have son, families continue to have children until a son is born.

6- Misinterpretation of Religious Views:-



Misinterpretation and conservative views about religion about family planning and contraceptives uses.

## \* Control Measures of Population Explosion:-

### 1- Contraceptive Uses:-

Efficient delivery of awareness to use contraceptive measures to control population.

### 2- Ban on early marriages:-

Government should ~~take~~ enforce a minimum marriage age (e.g. 18 years)

### 3- Women's Empowerment:-

Focus on women education and opportunities, an educated women tend to have smaller families.

### 4- Family Planning Programs:-

Comprehensive family planning programs to aware about family size benefits. ~~and~~

### 5- Education and Awareness Campaigns:-

Mass media and community based awareness campaigns by lady health workers to educate public about women health and family planning.

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Answer:-4

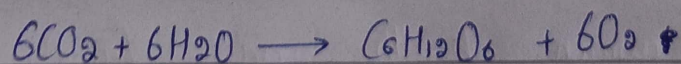
a) Plant Kingdom:-

The taxonomic kingdom that contain all plants, they are multicellular and mostly photosynthetic eukaryotes. Their cell is made of cellulose and contain cell wall.

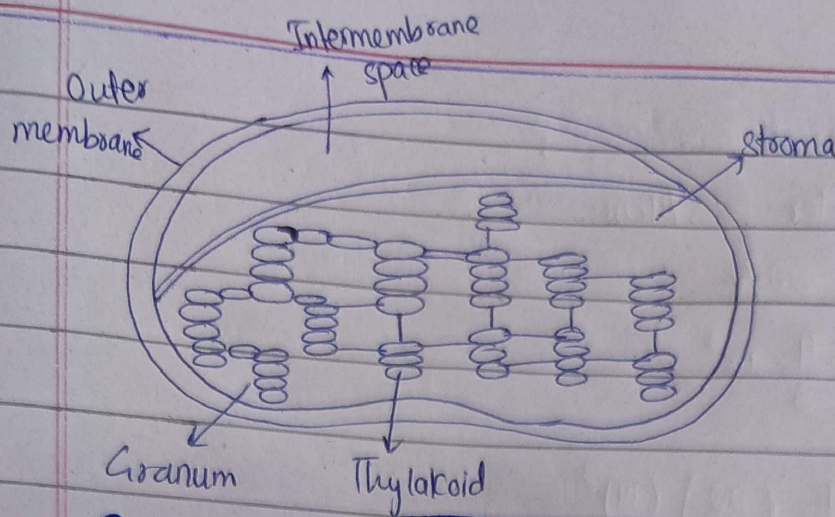
\* Chlorophyll:-

Chlorophyll is a green pigment found in plants kingdom.

- It is essential for photosynthesis in plants.
- It is used to convert light energy into chemical energy.
- Chlorophylls absorb light mostly in the blue portion of the electromagnetic spectrum as well as red portion.
- Plants use sunlight to prepare food absorbed by chlorophyll.
- The by-product of photosynthesis is oxygen without which organisms cannot live and ATP used for energy.







## b) Role of ribosomes in protein Synthesis:-

Ribosomes ~~to~~ is used to synthesize the proteins necessary for building and operating the photosynthetic machinery.

### 1- Protein Synthesis:-

The primary function of ribosomes is protein synthesis based on genetic information carried by messenger RNA (mRNA).

### 2- Synthesis of Photosynthetic Proteins:-

The 70S ribosomes within the chloroplasts produce some of key proteins required for the light-dependent and light-independent reactions.

### 3- Nuclear-encoded Proteins:-

Most proteins needed for chloroplasts function, are encoded by nuclear DNA, synthesized by 80S ribosomes in cytoplasm.



Q-7 a) Volume of Sphere = ?

$$\text{Diameter} = 14\text{cm}$$

$$\pi = 22/7$$

$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \left( \frac{22}{7} \right) (14)^3$$

$$V = \frac{14}{28} \times 2744$$
$$\frac{68}{33}$$

$$V = 0.424 \times 2744$$

$$V = 1163.4 \text{ m}^3$$

b) Total Saving = 25,000 Rs

$$\text{Ratio} = 1:2:3:4:5$$

$$\text{let } x + 2x + 3x + 4x + 5x = 25000$$

$$15x = 25000$$

$$x = \frac{25000}{15}$$

$$x = 1666.6 \text{ Rs}$$

1666.6 is the smallest share by a person of ration 1.

c) Complete the Series

i) 2, 6, 18, 54, 162, 486

None is out of series



(ii) 3, 5, 7, 11, 13, —

These are prime numbers

3, 5, 7, 11, 13, 17

d) A triangle with sides 5cm, 12cm, 13cm. Find the three angles.

Using Pythagorean theorem:

$$5^2 + 12^2 = 13^2$$

$$169 = 169$$

In right angle triangle, 13cm is hypotenuse which is  $90^\circ$ .

$$\theta_1 = \frac{5}{13} = 22.62^\circ$$

$$\begin{aligned}\theta_2 &= 180^\circ - 90^\circ - 22.62^\circ \\ &= 67.38^\circ\end{aligned}$$