

Khadija Batool - 37974-065

Q # 04
(a)

⇒ Chlorophyll:

"chlorophyll is the essential green pigment in the plant kingdom responsible for photosynthesis, which converts light energy into chemical energy to produce food."

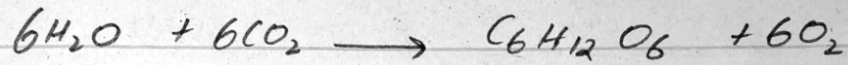
⇒ Working:

It works by absorbing sunlight, particularly red and blue wavelengths, while reflecting green light, which is why plants appear green. The vital process occurs in the chloroplast of plants, algae and cyanobacteria.

⇒ Function and Significance

• photosynthesis:

chlorophyll acts as a photoreceptor absorbing light energy to convert carbon dioxide and water into glucose and oxygen.



• Color : $g\bar{c}$ gives plants green colour as it absorbs blue and red colour.

• Energy transfer: The absorbed light energy is used to synthesise organic compounds.

⇒ Types of chlorophyll
• Chlorophyll "a":

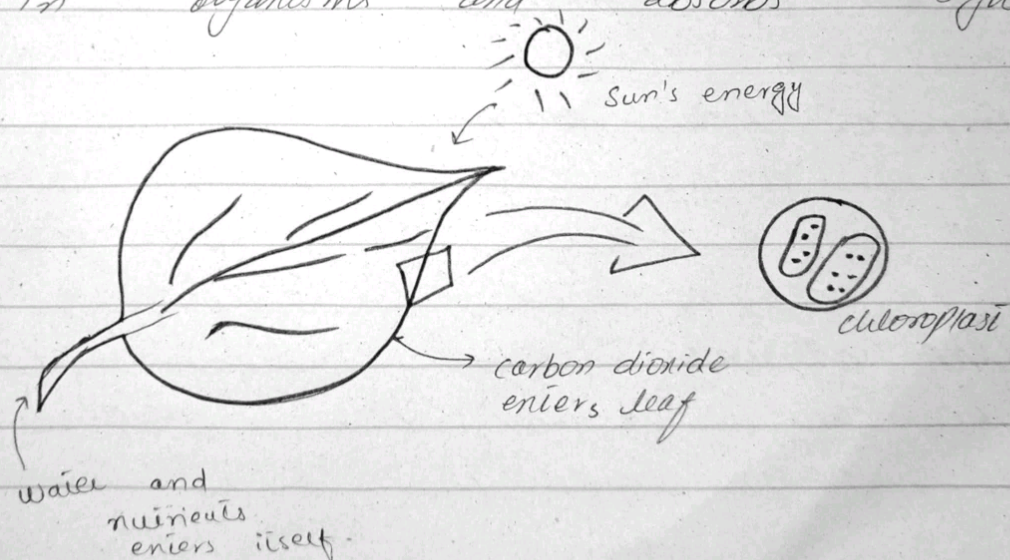
$g\bar{c}$ is found in higher plants and algae and it is also

- a primary pigment involved in photosynthesis.
Chlorophyll "b":

It is present in green algae and plants and absorbs energy to transfer to chlorophyll "a".

- Other types:

Chlorophyll c, d and f are found in organisms and absorb light.



(b)

⇒ Ribosomes:

"The translating genetic instructions from messenger RNA into a chain of amino acids known as ribosomes."

⇒ Working of ribosomes for protein synthesis:

- attachment with mRNA: Ribosomes are attached to mRNA to begin the process of translation.
- Genetic code reading: They read the mRNA sequence by identifying three letter codons which all code for the specific amino acid.
- tRNA adjustment: Each ribosome attach with the correct tRNA which brings the amino acids.

- Formation of peptide bond:

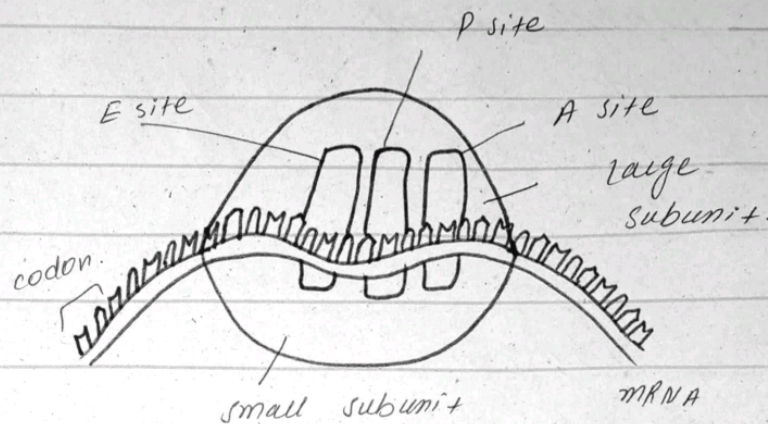
Then the peptide bond is formed between the amino acids linking them together in a correct order.

- Translocation:

The ribosomes continue to move along the mRNA until it reached to stop codon.

- Protein release:

once the process of translation completed, the polypeptide chain is released from the ribosomes to fold into a functional protein.



c. Discuss different methods of solid waste management.

=> Solid waste management: It involves collecting, treating and disposing of a waste to minimize environmental impact.

=> Methods of solid waste management:

1- Land filling:

It is the cheap and easy process. But it causes pollution, consuming more space, and emission of methane gas.

e.g

Karachi's Dumba Kochra Kundi.

2. Recycling:

In this process the materials like plastic, paper and metal are reused. But the challenge it's facing is lack of segregation in Pakistan.

3. Composting: The organic waste look like food and leaves are used as a fertilizer. It reduces the landfill burden, enriches soil.

4. Incineration: In this process the waste is burned. But it causes air pollution and produces toxic ash.

5. Waste-to-Energy: It converts waste to electricity, which is more costly and required technology.

6. Community involvement:

- Awareness and education to people.
- Segregation to source.
- Local cleanups
- Recycling cooperatives
- Composting projects
- Waste collection systems

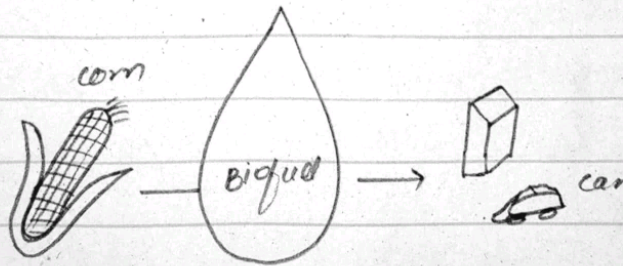
c'

(d)

(i)

=> Biofuel :

A renewable fuel derived from biomass which includes plants, algae, and animal waste offering an alternative to fossil fuels.



=> Working principal :

Biofuels are produced from organic material like crops, waste and algae.

The energy stored in biomass is converted into usable fuel through processes like fermentation, digestion and thermal energy. The resulting fuels can be used in vehicles, heating oil or to generate electricity.

⇒ Types of Biofuels:

- Liquid Biofuels: These include biodiesel and bioethanol.
- Biogases: methane and carbon dioxide are produced from the anaerobic digestion of biomass.
- Solid fuels: it includes fuelwood, wood pellets and charcoal.

⇒ Benefits of Biofuel.

- Renewable

- Environmental impact
- Energy security.

(ii)

⇒ **Adulteration:**

The act of ~~contaminating~~ contaminating or degrading a product, most commonly food by adding inferior, cheaper or harmful substances to increase its quantity or alter its appearance.

(iii)

⇒ **Hydrosphere:**

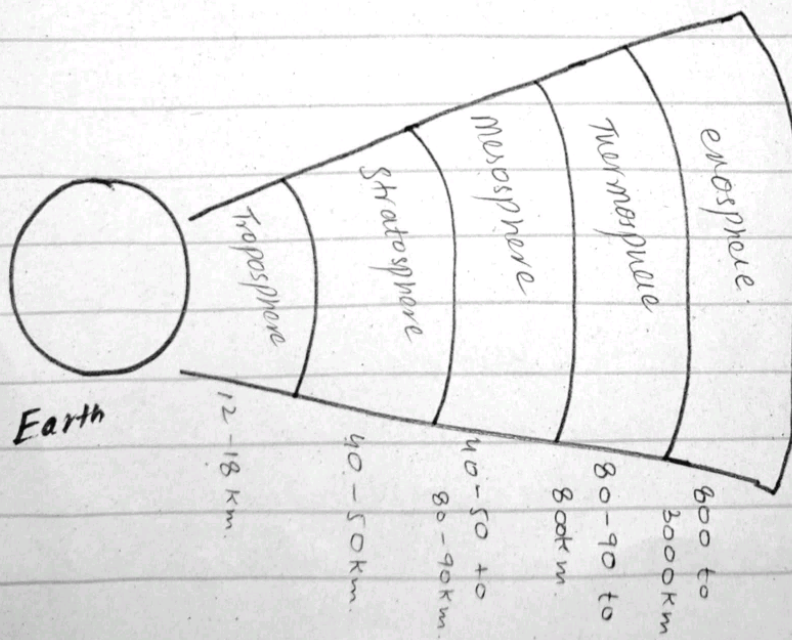
The total amount of water on a planet including all liquid, solid, and gaseous water found on, under and above the surface is

called hydrosphere.

(iv)

⇒ Troposphere :

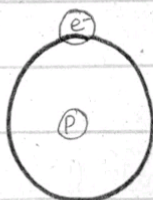
The lower layer of earth's atmosphere extending from the surface upto an average of 13km is known as troposphere.



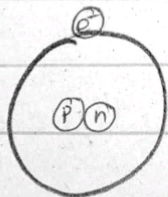
(v)
=> Isotopes :

Atoms of the same chemical
element having same number of
protons different number of neutrons
known as isotopes -

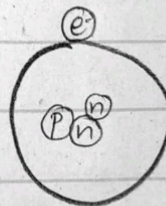
Isotopes of
Hydrogen



Protium



Deuterium



Tritium

PART II

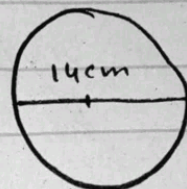
Q # 07

(a)

Diameter of a sphere = 14cm

The value of $\pi = \frac{22}{7}$

Volume = ?



Formula to find the volume

of a sphere :

$$V = \frac{4}{3} \pi r^3 \quad \text{--- ①}$$

The radius of a sphere = $d/2 = \frac{14}{2} = 7\text{cm}$

By putting the values in eq. ①

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

$$V = \frac{4}{3} \times \frac{22}{7} (7)^3$$

$$V = \frac{4}{3} \times \frac{22}{7} \times 343$$

$$V = \frac{88}{21} \times 343$$

$$V = \frac{30,184}{21}$$

$$V = 1437.3 \text{ cm}^3$$

Total volume of sphere is
1437.3 cm³

(b)

By Adding all the numbers to find
total number of parts :

$$1 + 2 + 3 + 4 + 5 = 15$$

Value of one part

$$\text{Total savings} = 25000 \text{ Rs}$$

$$\text{value of one part} = \frac{25000}{15} \quad \text{--- (1)}$$

multiplying the smallest ratio
with eq (1).

$$= \frac{25000}{15} \times 1$$

$$= 1666.67$$

The smallest share is 1666.67

(c)

(i)

2, 6, 18, 54, 162, 486

$$2 \times 3 = 6$$

$$162 \times 3 = 486$$

$$6 \times 3 = 18$$

all the number are

$$18 \times 3 = 54$$

correctly fit.

$$54 \times 3 = 162$$

(ii)

3, 5, 7, 11, 13, —

It is the series of prime number which multiplies with number "1" and gave the same original value. They actually multiply on their own.

3, 5, 7, 11, 13, 17

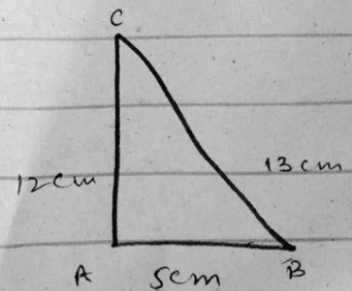
The answer is 17.

(d)

By using pythagorean theorem.

$$(\text{Hyp})^2 = (\text{Base})^2 + (\text{per})^2$$

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



$$169 = 25 + 144$$

$$169 = 169$$

$5^2 + 12^2 = 13^2$, the triangle is right triangle and one of its angle is 90° . The side with length of 13cm is the hypotenuse.

Q #6

(a)

(i) STATISTICS

- STAT • TACTIC
- ITS • TIT
- SIT • CAST
- SAT • SITE
- TIT
- CAT

(ii) GRAMBLE

- ABLE • GEAR
- ALE • RAGE
- AL-GEBRA • BALM
- BLAME • LAMB
- GLAM • BLARE
- BEAM • GLARE