

①

Q1- Data is the new oil? Justify your opinion with 3 daily examples?

Data is new oil:

Yes, I agree that "Data is new oil". In 21st century ~~has~~ data has become the most valuable resource just as oil was during the industrial era. It drives economies, powers innovation and determines global competitiveness. However, like oil data also needs to be refined, protected and ethically used.

Justification with Examples

1- Economic Growth and Digital Markets:

Tech giants like Google, Amazon and Meta build their empires on data analytics. They collect, process and monetize user data to target advertisements and predict consumer behavior making data a core driver of digital capitalism.

2- Public Policy and Governance

Government now rely on big data to formulate policies. For example Pakistan's (NADRA) National Database and Regulatory authority, data base and digital census help in planning resources

distribution improving governance and ensuring transparency in welfare programs.

3- Artificial Intelligence and Innovation:

AI System Learn from massive datasets. From self-driving cars to personalized healthcare, data acts as the "fuel" that enables machines to make intelligent decisions and improve human life.

Conclusion

As like as Oil transformed the industrial world, data is transforming digital world. Nations and corporations that control and process data effectively will hold power in the modern era. Thus managing data responsibly is as important today as managing oil was in the past.

b) Universe is expanding; how it resembles with balloon blowing in working?

i) Introduction and Explanation

When we blow air in balloon, the surface of the balloon expands on the surface move away from each other. Similarly, in the expanding universe, galaxies move away from each other as space itself expands. The universe is not expanding

into something - just like the surface of the balloon stretches without having an edge.

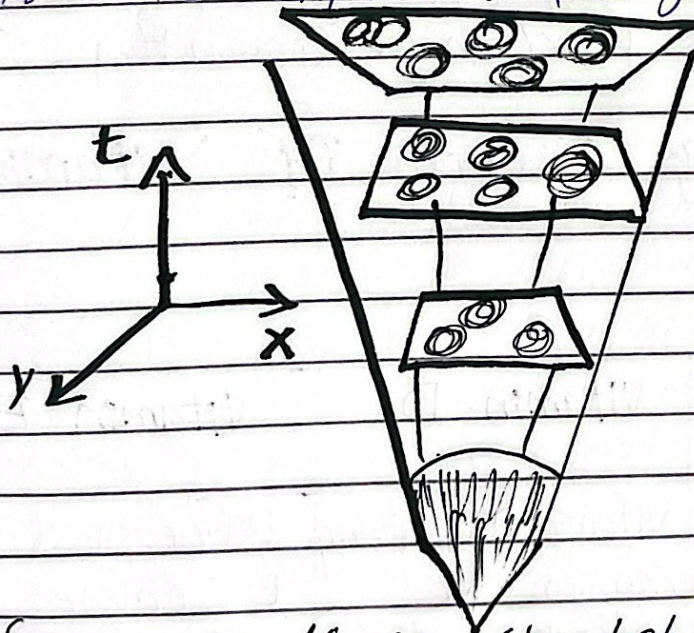
How Resemblance Occurs

(1) Every point moves away from other point

Dots drawn on the surface of a balloon move apart as the balloon inflates, galaxies in the universe move apart as space expands.

2) No Central Point of Expansion

On the balloon's surface, there is no single central point - all points spread evenly. Similarly the universe has no center of expansion. it expands uniformly in all directions.



3) Space itself is stretching

Rubber of the balloon stretches not the dots themselves, same way space itself stretches while galaxies remain roughly the same size.

Conclusion

The model of balloon helps us understand that the expansion of universe means the stretching of space, not galaxies flying through space.

c) What do you mean by balanced diet? Deficiency ?

→ Balanced Diet

A balanced diet means eating a variety of foods in right amounts so that the body gets all essential nutrients including carbohydrates, proteins, fat, vitamins, minerals, fiber and water. It helps the body to grow properly, stay healthy and function efficiently.

→ Deficiency Effects Of Vitamins

Vitamin A	Vitamin D	Vitamin E
Deficiency of Vitamin A causes	Vitamin D's deficiency causes the	Deficiency of Vitamin E causes
→ Night Blindness	→ Rickets in children	→ Nerve Problems
→ Dryness of Eyes	→ Osteomalacia	→ Muscle weakness
→ Weak immune system and infection	→ Poor Calcium absorption	→ Anemia
	→ Skeletal deformities	→ Affects immune system and cell protection functions

(2)

Conclusion

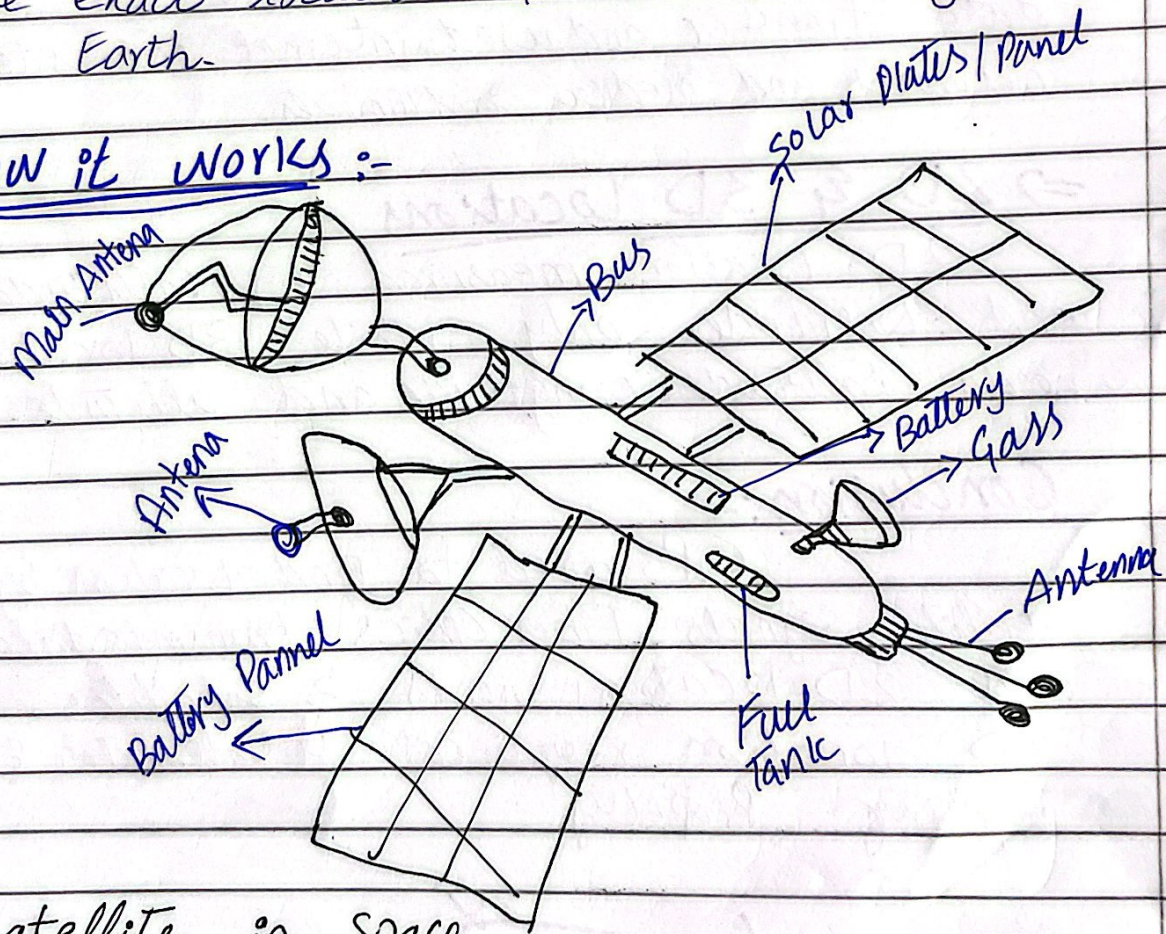
A balanced diet keeps body fit and prevents the deficiencies of vitamins that cause different diseases in human being.

d) Discuss the working of GPS---?

⇒ GPS :-

GPS stands for Global Positioning System. It is basically satellite base navigation system that helps determine the exact location of an object anywhere on Earth.

How it works :-



⇒ Satellite in Space

There are at least 24 satellites orbiting Earth, each continuously sending signals that include their position and exact time the signal was sent.

(2) GPS Receiver:- Receive signals and also Receiver calculates the distance to each satellite by measuring how long the signals take to arrive.

(3) Triangulation:- Receiver determine exact location.

⇒ Fiber Optic:-

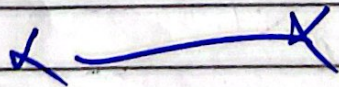
Thin strands of glass or plastic that is used to send signals from one point to another in light form. It is fast and reliable for data transfer and used in internet cables to networks and medical instruments.

⇒ 2D & 3D Locations

2D location measured by latitude and longitude only while 3D location needs latitude, longitude and altitude.

Conclusion:-

GPS used to find location by satellite signals. Fiber optics transmits data and 2D location needs 3 satellites, 3D location required 4 satellites for working properly.

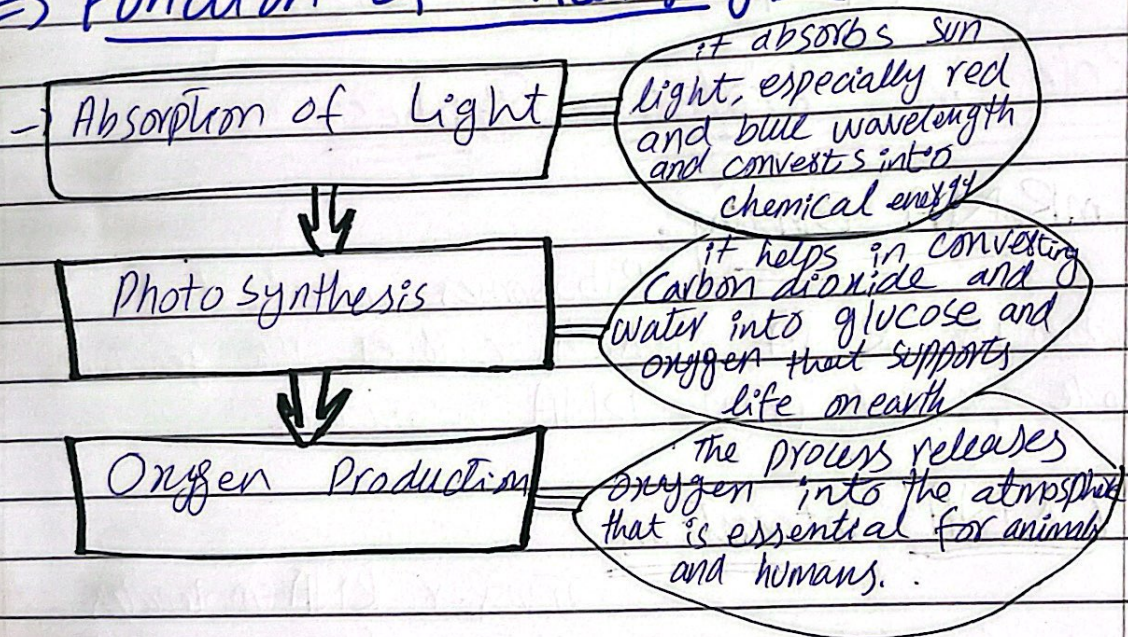


Q4 Write a note on Chlorophyll?

Chlorophyll — kingdom of Plant:-

Plant kingdom includes all living organism that can prepare their own food through photosynthesis. Chlorophyll has all characteristics that is why known as Kingdom of Plant. It is a green pigment found mainly in chloroplast of cells. It gives green color to plants.

⇒ Function of Chlorophyll



⇒ Types of Chlorophyll

→ Chlorophyll A:- (main pigment in all green plants)

→ Chlorophyll B, C, D:- Assist in capturing light energy into different plant groups.

Conclusion :- It is green engine of life that captures sunlight and converts it into the green energy that sustain living organism on earth.

Q- Describe role of Ribosomes in Protein Synthesis?

⇒ Ribosomes :- Small dense structure found in cytoplasm or attached to the endoplasmic Reticulum, they are known as the "Protein factories" of a cell because of main site for proteins synthesized here.

⇒ Role in Protein Synthesis

1) mRNA Binding :-

Ribosomes attached to the messenger RNA which carries the genetic code copied from DNA in nucleus.

2) tRNA Interaction

Transfer RNA molecules bring specific amino acid to ribosomes, each matching the mRNA codon.

3) Formation of Polypeptide Chains :-

Ribosome links amino acids together by forming peptides bonds, creating a polypeptide chain, the basic structure of a protein.

4) Completion and Release :-

When entire sequence on mRNA has been read the ribosome releases the newly made protein which then folds into its proper shape to perform its function.

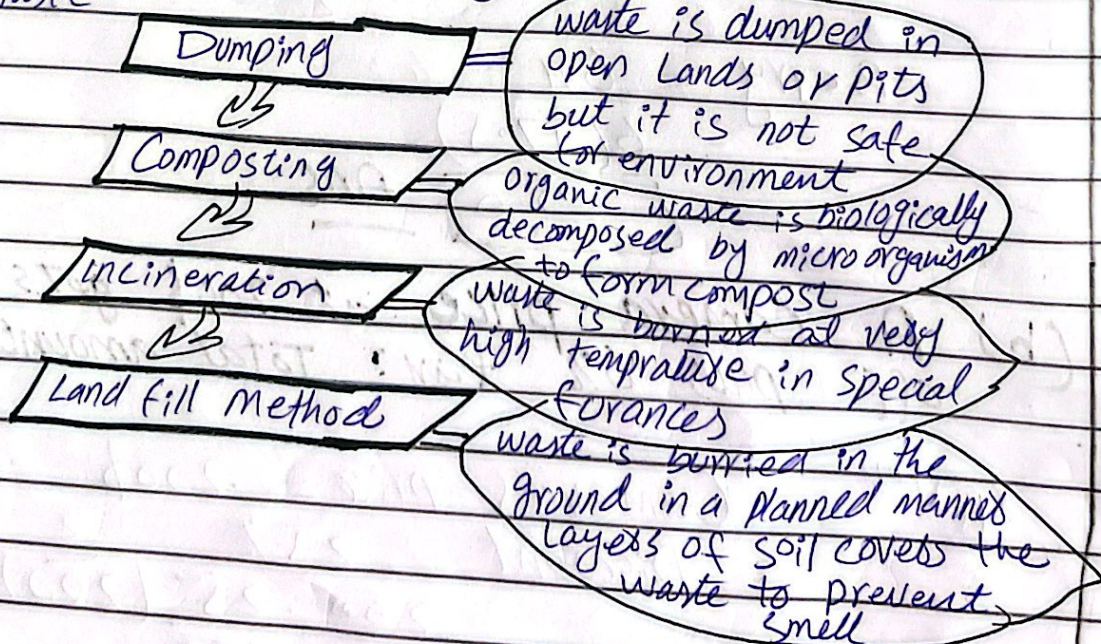
1) Discuss Different Methods of Solid Waste Management?

⇒ Solid Waste Management

Solid waste management refers to collection, treatment and disposal of solid materials that are discarded by humans. Effective waste management is essential to protect Public Health, preserve the environment and promote sustainable development.

Methods of Solid Waste Management

There are as following methods of solid waste



Advantages & Disadvantages

open
Dumping

Advantages

Just only eliminate
garbage from home.

Disadvantages

→ attract insects
→ cause bad odors
→ create pollution
Not Recommended

composting

Advantage

Environment friendly
improves soil fertility

Dis-Advantages

Requires large area
Produce harmful gases
→ decompose

Land
Filling

Advantage

Easy and cheap
can convert waste land into
parks

Disadvantage

→ Required land area
widely
→ Harmful gasses produce

inciner-
ation

Advantage

Reduce waste volume and generate
energy

Disadvantage

High cost, Air pollution.

d) Define terms

(1) Bio fuel:-

Type of renewable fuel made from biological materials such as plants animals waste or algae. It can be used as an alternative to fossil fuels for transportation and energy production.
Examples:- Ethanol and Bio diesel.

(2) Adulteration:-

Adulteration means adding harmful or inferior substances to food, medicine or other products to increase profit or quantity.
Example:- water in milk.

(3) Hydro sphere

It includes all water bodies on earth like oceans, lake, glaciers, groundwaters seas, rivers. It covers about 71% earth surface.

(4) Troposphere

Lowest layer of Earth's atmosphere where change of weather like rain, wind and clouds occur and the life of human is possible.

(5) Isotopes:- These are atoms of same number of protons but different number of Neutrons in their nuclei.

Section-II

Q6

80 | Given

(a)

Flavours Apple : Berry : Cherry : Date
3 : 6 : 2 : 5

if Apple candies exceed = 35

by Date candies

Berry Candies = ?

Sol

Let ~~berry~~ Candies are = x

Apple = $3x$

Berry = $6x$

Cherry = $2x$

Date = $5x$

Apple candies exceeds by dates so

$$|3x - 5x| = 35$$

as difference always $\rightarrow 2x = 35$
positive so $x = \frac{35}{2} = 17.5$

$$\text{Berry} = 6x$$

$$= 6(17.5)$$

$$= \boxed{105.0} \text{ ANS}$$

(b) A camera price at 200\$ gets 25% off plus 6% tax? Total amount?

Sol

Camera's price = 200\$

Discount = 25% $\frac{2}{100}$

$$= 200 - \frac{25}{100} (200)$$

$$= 50\$$$

Final Price = $200\$ - 50\$ = 150\$$
after off

Tan paid = 6%

$$= \frac{6}{100} (200^2)$$

$$= 12\$$$

$$\text{Total paid} = 150\$ + 12\$ = 162\$$$

So $162\$$ Total amount

c)

Given

Distance = 36 km

Speed = 18 km/hn

Starting Time = 1 pm

time ending = ?

Sol

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{d}{s}$$

$$= \frac{36}{18} = 2 \text{ hours}$$

as starting time is = 1:pm

so

$$\text{Ending Time} = 1 + 2 = 3:00 \text{ pm}$$

$T = 3:00 \text{ pm}$

d) Unscramble

(i) STSTAICITG

Statistics

(ii) LGEBMAR

Algebra

(a)

Q. 7

Calculate volume of a sphere with 14cm diameter

Given

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

$$\text{Radius } r = \frac{14}{2} = 7\text{cm}$$

$$\pi = \frac{22}{7} = 9$$

Sol

$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

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

$$= \frac{4}{3} \left(\frac{22}{7} \right) (343)$$

$$= \frac{4}{3} (22) (49)$$

$$= \frac{4}{3} (1078)$$

$$= \frac{4312}{3}$$

$$= 1434$$

Ans

$$\begin{array}{r} 49 \\ \times 22 \\ \hline 98 \\ 980 \\ \hline 1078 \\ \times 4 \\ \hline 4312 \end{array}$$

b)

Given = Total saving = 25000

Ratio of saving = 1:2:3:4:5

Find smallest = ?

share

Sol

Ratio = 1+2+3+4+5 = 15 parts

one part = $\frac{\text{Total Sum}}{\text{Sum}}$

$$= \frac{25000}{15000} = \frac{25}{15} = \frac{5}{3}$$

as smallest ratio = 1

so

$$1 \left(\frac{5}{3} \right) = \frac{5}{3} \approx 1.6667$$

$$\frac{5}{3} \approx 1.6667$$

$$3 \overline{) 5.000} \\ \underline{3} \\ 20 \\ \underline{18} \\ 200 \\ \underline{180} \\ 2000 \\ \underline{1800} \\ 2000 \\ \underline{1800} \\ 2000$$

c)

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

$\times 3 \quad \times 3 \quad \times 3 \quad \times 3 \quad \times 3$

all are multiple able with "3"

No one incorrect

$$\begin{array}{r} 20 \\ 18 \\ \hline 20 \\ 154 \\ 3 \\ \hline 162 \\ 3 \\ \hline 486 \end{array}$$

(ii) 3, 5, 7, 11, 13

$+2 \quad +2 \quad \times \quad +2$

Sol = all can added by 2 except 11 which needs 4 to add.

so

11 incorrect is

d) A triangle with sides 5cm

Given Sides, $a = 5\text{cm}$

$$b = 12\text{cm}$$

$$c = 13\text{cm}$$

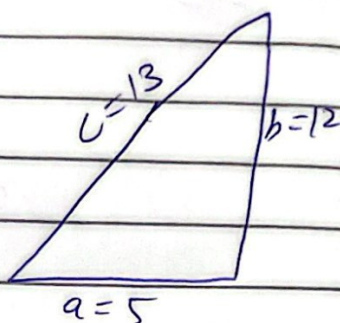
Angles = ?

$$c^2 = a^2 + b^2$$
$$\therefore c^2 = 5^2 + 12^2$$
$$= 25 + 144$$

$$c^2 = 169$$

$$\sqrt{c^2} = \sqrt{169}$$

$$c = 13$$



So Triangle is right Triangle and one angle $= 90^\circ$

as we know Triangle $= 180^\circ$

$$A + B + C = 180^\circ$$

$$\text{Angle } A = \frac{a}{b} = \frac{5}{12} \approx 22.6$$

$$A \approx 22.6^\circ$$

By putting values in

$$A + B + C = 180^\circ$$

$$22.6 + B + 90^\circ = 180^\circ$$

$$B + 112.6 = 180^\circ$$

$$B = 180^\circ - 112.6$$

$$B = 67.4^\circ$$

$$A = 22.6^\circ$$

$$B = 67.4^\circ$$

$$C = 90^\circ$$

Ans