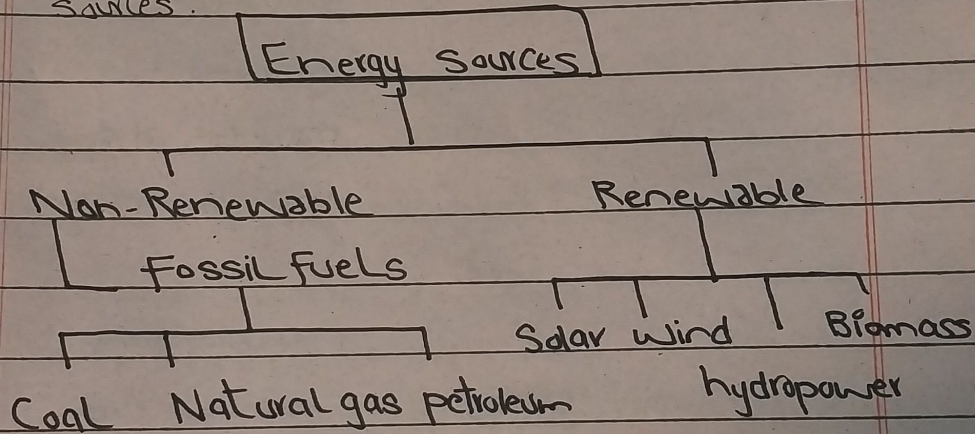


Section 2

Date: _____

Q# 3 (c)

Energy Resources refers to various natural substances or phenomena that can be harnessed to generate power or produce energy. Energy resources are of two kind Non-Renewable and Renewable energy sources.



Renewable Energy Source

Non-Renewable Energy Source

In 1962, Paul Alfred Weiss define Renewable Resources as : "the total range of living organism providing man with Life, fibers etc."

Non-Renewable energy sources are finite and take millions of years to form.

- and can be exhausted.
- 2- Renewable energy sources do not deplete over time whereas non-renewable sources deplete over time.
- 3- They have Environmental impact. They are environmental friendly; have Low CO_2 emission. They are high Carbon emissions and are major contributor to pollution and climate change.
- 4- Cost. The upfront cost of renewable sources is high. Lower initial extraction cost.

Examples:

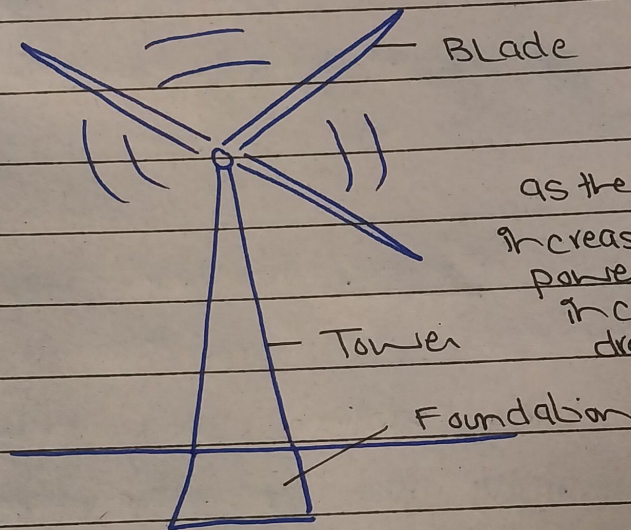
wind, solar,
biomass energy

Coal, Crude,
natural gas.

Wind Energy: A Sustainable
Energy Source for the future ~

Wind energy:

Wind energy harness the power of wind to generate electricity. It is a growing source of clean energy, and are inexpensive. It can produce about 600 km to 5 MW.



as the wind
increases =
power output
increases
dramatically.

1- Growing global Significance of Wind Power:

Wind energy is the fastest growing energy technology worldwide. It has enormous potential to meet future energy demands in a clean, sustainable and cost-effective manner.

2- Environmental friendly:

They are environmental friendly, as it produces no Green house gases, air pollution, or waste.

3. Technological advancements:

Wind turbines

are more efficient, and cost-effective.

The cost of wind energy power has significantly decreased, making it competitive for fossil fuel energy.

✶ Furthermore, Pakistan has tremendous wind potential. The country has a ~1000 km long coastline, similar to UK and Netherlands. But, no significant wind energy projects have been installed yet. India, with similar geography, installed its first 55 kW wind plant in 1986, Gujarat.

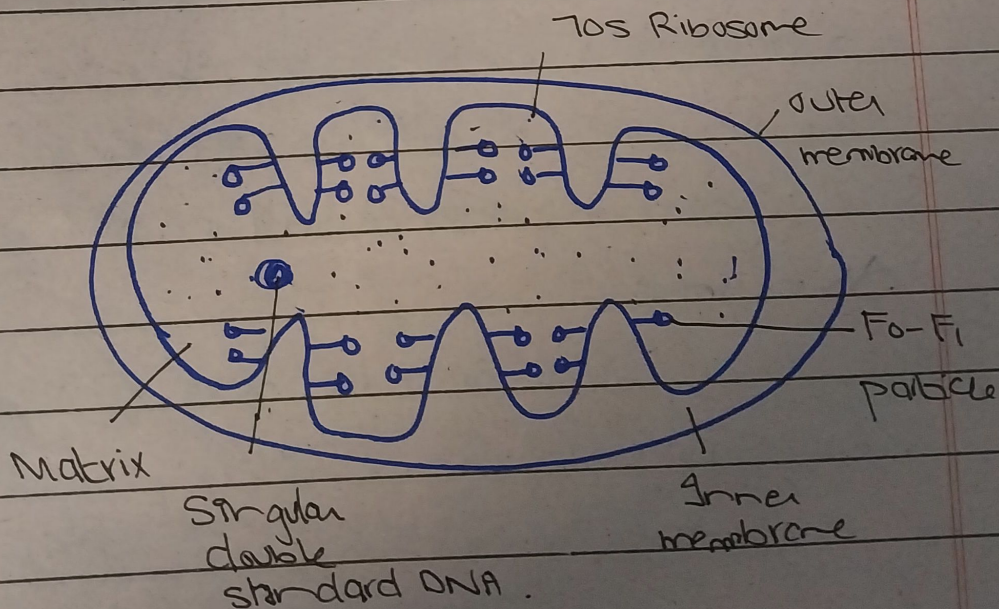
(9)

Mitochondria:

Mitochondria are very important organelle. They are present only in eukaryotic cells. They are involved in manufacturing and supply of energy to the cells. Hence, are therefore called power house of the cell.

Structure :

They are double-membrane bounded organelle. The outer-membrane is smooth, while the inner form cristae. Mitochondria are in cylindrical shape and contain 70S Ribosome.



Fg: Mitochondria

Composition:

They are composed of
Lipids, proteins, enzymes, DNA, Ribosomes,
Co-enzymes.

Function:

Most important function
of mitochondria is to produce ATP
(Adenosine triphosphate) through cellular
respiration. They are involved in
fatty acid metabolism and, significantly
in Apoptosis (Programmed Cell death).

Ribosomes:

Ribosomes are non-membraneous
organelle and smallest organelle.
They are organelle within organelle.
For instance, in mitochondria (and pl)^x

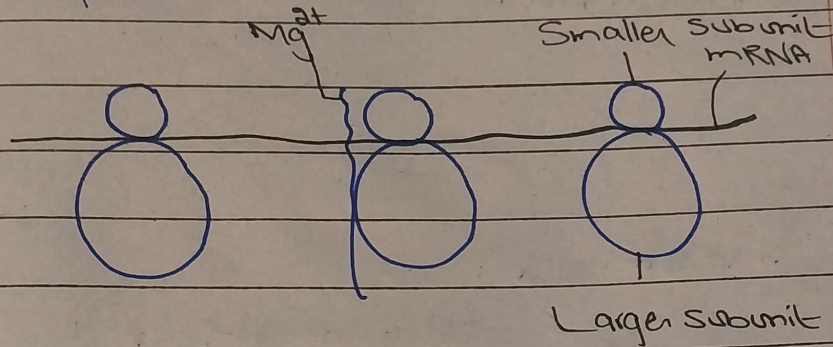
Structure:

They are composed of:
Two sub-units:

- Large subunit (60s)
- Smaller subunit (40s)

The two subunits are joined by

Mg^{++}
 Composition: Made of Ribosomal RNA and protein.

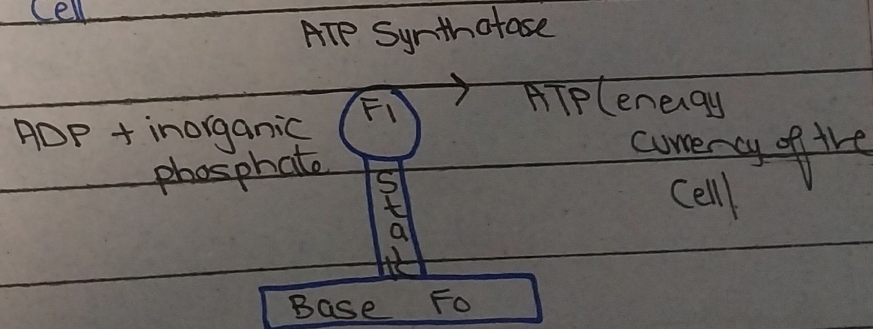


Function:

1. Ribosomes are factories of protein synthesis

Mitochondria : "Power House of the Cell"

Mitochondria are the powerhouse of the cells. They convert nutrients like glucose and fatty acids into ATP (adenosine triphosphate), the energy currency of the cell.



(d)

Dengue Fever :

Dengue Fever is a viral disease spread to humans through the bite of an infected *Aedes mosquito*.

Transmission :

Aedes aegypti and *a.e. albopictus* are responsible for their transmission and are widespread throughout the tropics.

Symptoms :

The common symptoms

includes :

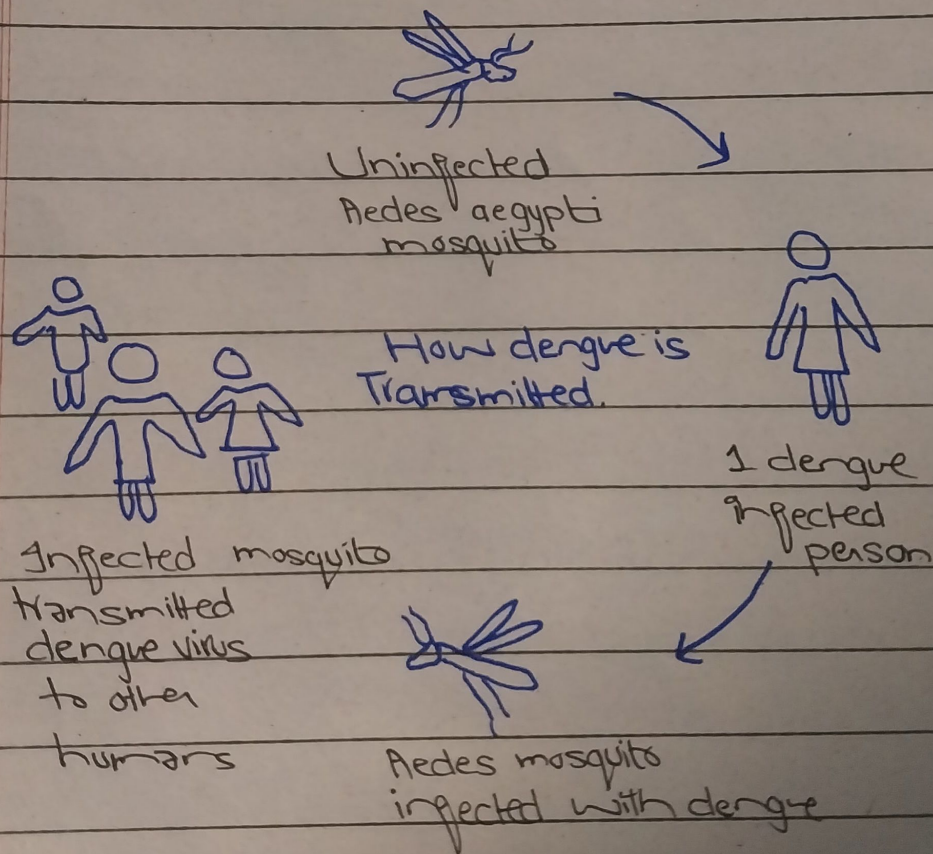
- 1- Severe Fever ($40^{\circ}\text{C}/104^{\circ}\text{F}$)
 - 2- Flu
 - 3- Severe headache
 - 4- pain behind the eyes, muscles, joints,
 - 5- nausea, vomiting.
- and Last upto two to seven days.

Prevention :

Preventive measures includes:

- 1- proper disposal of Solid waste
mx

- 2- cleaning, emptying domestic water storage containers
- 3- insecticides to water storage outdoor
- 4- Community participation
- 5- use of vectors
- 6- spraying
- 7- Long-sleeved clothes.



(Q 2)

(C)

Global Warming:

The increase of Green house gases, mainly because of burning of fossil fuels, trapping more heat in earth atmosphere. What's

commonly known as Global Warming.

In simple words, According to Inter-governmental panel on climate change.

"An average and gradual increase in the temperature of the earth".

According to NASA, the temperature has increased about 1°C in the past century.

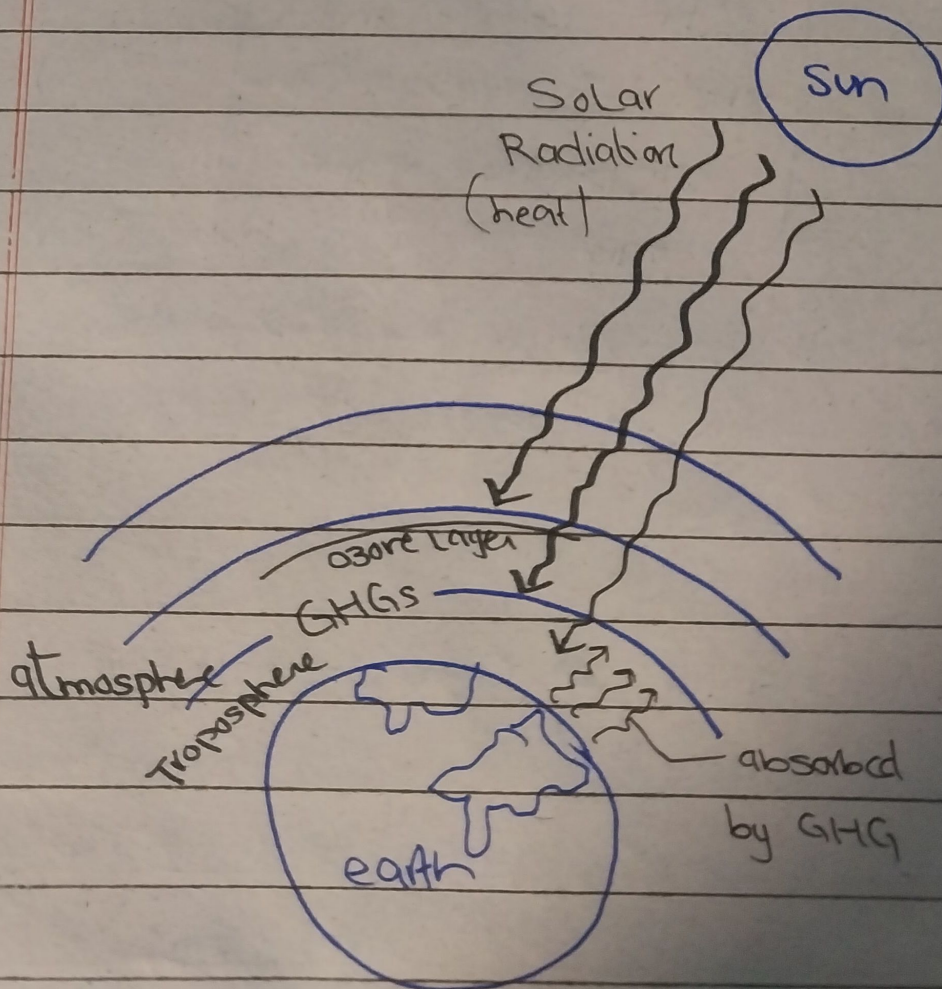
Mechanism of Green House Effect:

Green House

gases are such gases which has the ability to trap and scatter heat.

When sunlight reaches the earth surface, it can either be reflected back (by the e°) into space or absorbed by earth. Once absorbed, the planet releases some of the energy back into the atmosphere as heat:

infra-red radiations. Green house gases absorb energy, preventing the loss of heat. In this way, GHG acts as the blanket of Earth, making it warmer.



Date: _____

Examples of Green house gases :

- 1- CO_2 (Carbon-di-oxide)
- 2- Methane : CH_4
- 3- Nitrous Oxide : N_2O

Section 2

Date: _____

Q# 8

(a)

Given:

R O A D is coded as

U Q D G

To find:

L A K E Code = ?

$\begin{array}{cccc} 18 & R & 15 & O & A & 4 & D & 4 \\ S_{19} & | & P & | & B_3 & | & E & 5 \\ T_{20} & \downarrow & 16 & \downarrow & C_3 & \downarrow & F & 6 \end{array}$

$\begin{array}{cccc} U & Q & D & G \\ 21 & & 4 & 7 \end{array}$

$\begin{array}{cccc} X & L & A & K & E \\ 13 & & 1 & 11 & 5 \end{array}$

$\begin{array}{cccc} M_{13} & | & B_3 & | & L_{12} & | & F_6 \\ N_{14} & \downarrow & & \downarrow & M_{13} & \downarrow & G_7 \end{array}$

$\begin{array}{cccc} O & C & N & H \\ 15 & 3 & 14 & 8 \end{array}$

So, the rule is shift the 1st, 3rd and 4th by 3 places in the alphabet and 2nd by 2

(c)

$$i) \quad 4 \quad 12 \quad 6 \quad 18 \quad 9 \quad 27 \quad 13.5$$

$$\quad \quad \quad \underbrace{\quad \quad \quad}_{\times 3} \quad \underbrace{\quad \quad \quad}_{\div 2} \quad \underbrace{\quad \quad \quad}_{\times 3} \quad \underbrace{\quad \quad \quad}_{\div 2} \quad \underbrace{\quad \quad \quad}_{\times 3} \quad \underbrace{\quad \quad \quad}_{\div 2}$$

$$ii) \quad 1 \quad 3 \quad 6 \quad 24 \quad 120 \quad \boxed{720}$$

$$\quad \quad \quad \underbrace{\quad \quad \quad}_{\times 3} \quad \underbrace{\quad \quad \quad}_{\times 3} \quad \underbrace{\quad \quad \quad}_{\times 4} \quad \underbrace{\quad \quad \quad}_{\times 5} \quad \underbrace{\quad \quad \quad}_{\times 6}$$

(d)

P, Q, R, S, T $\Rightarrow$ Five friends
having different heights

the order become : $T > S > Q > P > R$

(T) - 180cm tall.

S

Q

P

(R)

150cm tall

Third tallest = Q

Maximum possible range :

Tallest - Smallest

$$180 - 150 = \boxed{30 \text{ cm}}$$