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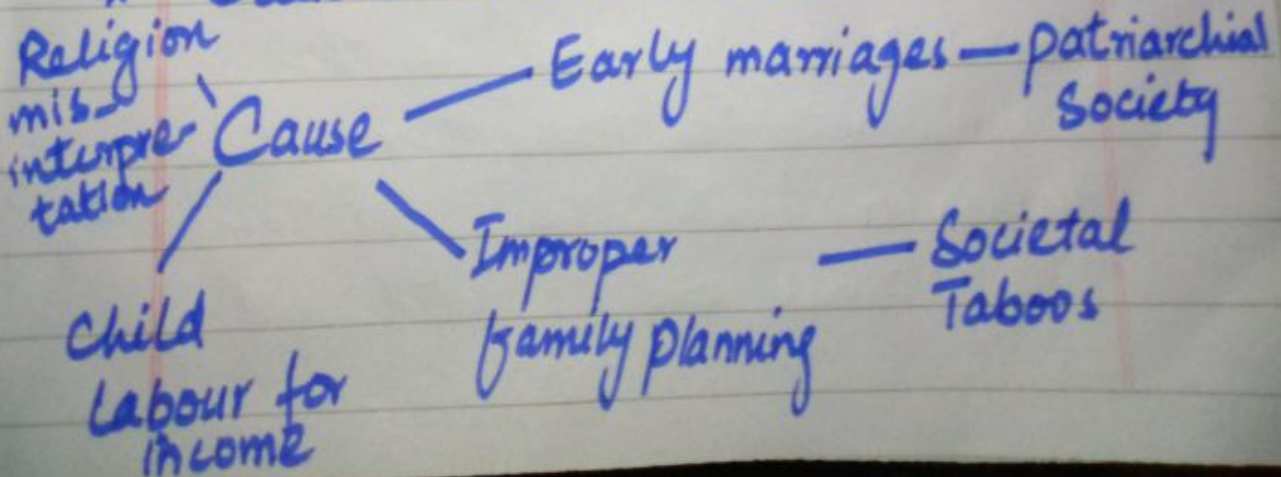
General science and ability. (PART II) Setion-I

Q5)

a) Causes and control measures of population explosion:

* **Introduction:** Pakistan is the 5th most populous country with a population of approximately 242.5 million according to the 7th digital census of Pakistan. Though there are several causes including lack of proper planning, lack of awareness and education, patriarchial society and early marriages. ~~Through~~ However, by adopting proper measures the population explosion can be controlled.

* **Causes and Controls:**



There are several cause of population explosion. Among them the most common are:

1) Early marriages as a major cause:

In Pakistan one of the major cause of the population explosion is the early marriages or child marriage. In most of underdeveloped countries, the child are forcibly married in order to keep the honour of the families. If the early marriages are held so the fertility rates are greater due to which more reproduction takes place and as a result the population increases.

2) Patriarchial Society:

The other major cause of population explosion is the patriarchial society or male dominant society. Even if the women wants to take their own decision or control the population, their decisions are rejected and

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are suppressed to agree to their will.

* **Improper family planning leads toward population explosion:-**

Another

major cause that leads toward population explosion is the improper family planning or lack of family planning. Still to talk over family planning or use contraceptives is considered as a social taboo. This improper family planning erupts the bomb of population on the country and Pakistan is its such example.

4) **High fertility rate:**

Another major reason of population explosion in Pakistan is the high fertility rate. According to the world bank report 2024; the Pakistani women have the high fertility in the South Asia. Though high fertility rate also sometimes become a major threat to the country and leads to population eruption.

④ Child Labour for income generation: Another

major cause for increase population is the desire of income generation by child labour. In most of the rural areas the parents desire for more children in the hope of income generation. According to the World Bank report over 26 million student are out of school and are involved in different types of labours. This clearly depicts that another major reason for population eruption is the child labour.

- Misinterpretation of Islamic religion is also another major cause of population eruption. Because most of the scholars criticizes the family planning and contraceptive use in their sermons.

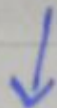
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Controls measure:

Spreading education among
common masses



establishing or holding
different seminars on
family planning.



Reducing fertility rates.

→ Educational awareness:

One of important
control measure is to spread
education among general masses.
Most of the people are unaware
of the adverse affects of the
population explosion and increased
population. If awareness is spread
among the general masses the population
can be controlled.

→ Arrangement of family planning
seminars and sermons:

Family planning seminars and

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religious sermons should be held regarding family plannings. If the religious sermons are held so there are greater chances of family planning and controlling population because the religious leaders had great impact on the mentality of Pakistanis.

→ Reducing fertility rate: Another most important control measure is to reduce fertility rate and use such medicines that helps in reducing the fertility rate. If such measures are followed so the population can be controlled to a greater extent.

→
b) Remote sensing and role of GIS in environmental sciences

* Remote sensing:

Remote sensing is a technology that is used to sense or

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detect different sounds or different environmental conditions and hazards.

- Remote sensing technology consist of special sensors that are made of semiconductors or dopped materials that sense the sound or the incomming voices of the different disasters.

Remote sensors consists of special types of sensors or instrument that detect the sound.

- These sensors had a wide range of applications and are even used in military to detect the enemies arrival.

* GIS is one of the used information sensor widely used in the environmetel sciences:

GIS stands for Global Information System.

GIS is a such type of system

(B)

that is based on different remote sensors and its role in the environmental science is to detect different environmental calamities and conditions. GPS detects the pattern of rain that will happen or will be held in the future.

GPS also helps to determine and identify the upcoming environmental calamities that would hit the country. With the help of GPS the countries prepare their self for the upcoming calamities and helps to mitigate them.

C) The Atmosphere is the blanket of earth:-

Introduction:-

The Atmosphere acts as the blanket of the earth, it prevent the earth from

different harmful radiations and helps to maintain the earth's temperature and avoid different environmental calamities.

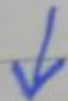
* Atmosphere of Earth:-

The atmosphere of earth is composed of four layers that prevent it from the adverse and harmful effect of violent sun radiations. The main atmospheric layers are:

- 1) Troposphere
- 2) Stratosphere
- 3) Mesosphere
- 4) Thermosphere.

* Why the earth's atmosphere is called the blanket of earth?

Atmosphere as
Earth blanket



Keep earth
temperature
constant



Prevent harmful radiation

↓
Prevent the world
from overflowing.

↓
Protective sheet
against cosmic
rays.

↓
Leads to green and
toxicants free
environment.

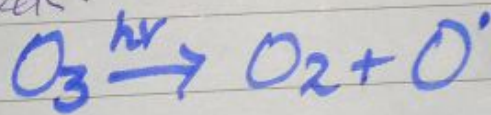
Keeps earth temperature constant:

The atmosphere plays a crucial role in maintaining earth's temperature.

The radiation that enters the earth atmosphere are short and energetic so it enters the atmosphere while the radiation that enters outside the atmosphere are large and less energetic so they cannot escape the atmosphere and are get trapped, so in this way the maintains the earth

Protective sheet against cosmic rays:-

The second layer stratosphere of the earth atmosphere consist of ozone O_3 that absorb the harmful UV radiations. The UV radiations are so harmful that if they fall on the skin so they will lead to cancer. So the O_3 absorb these harmful radiations, itself undergoes degradation but prevent the earth from its destructive effects.



- Furthermore it prevents other harmful radiation, though if all the harmful radiations had fallen so the entire antarctic would have been melted and it would have been resulted in the catastroph. In this way, we can say that atmosphere can case acts as a blanket.

to prevent the spread of the disease:-

- 1) Awareness campaign regarding dengue
- 2) Use of cover over the water tanks and led on the clean water or drinkable water
- 3) Use of antimosquito medicines to prevent the disease

But when the disease is caused then different antibiotics are used in order to cure the patient.

"Section C"

a) Volume of sphere:

$$\text{Formula} = 2\pi r h$$

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$$r = \frac{d}{2}$$

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d) Define the following Terms:-
" Hydrometer:-

Hydrometer is an instrument that is used to measure the pressure of the water.

2) Light Year:-

The distance travelled by a light in one year ~~is~~ with the speed of $3 \times 10^8 \text{ m/s}$ is called light year.

3) Epicenter:-

Epicenter is the main point or centre ~~is~~ from which the earthquake generate.

4) Eye wall of cyclone:-

The cyclone consist of three parts, so the eye wall of the cyclone is one of it. Eye wall of cyclone is that rounding part of cyclone which can be seen.

* Deep focus:-

Deep focus is that deep part or origin in the earth centre which is responsible for generating seismic waves.

Q3)

a) Why cells form organelles and Role of Mitochondria in human cell:-

* Introduction:-

Organelles are the small compartment or the components of the cell. Each organelle performs its own specific task and function. The one of the most important organelle is the mitochondria. It is also called "the power house of the cell".

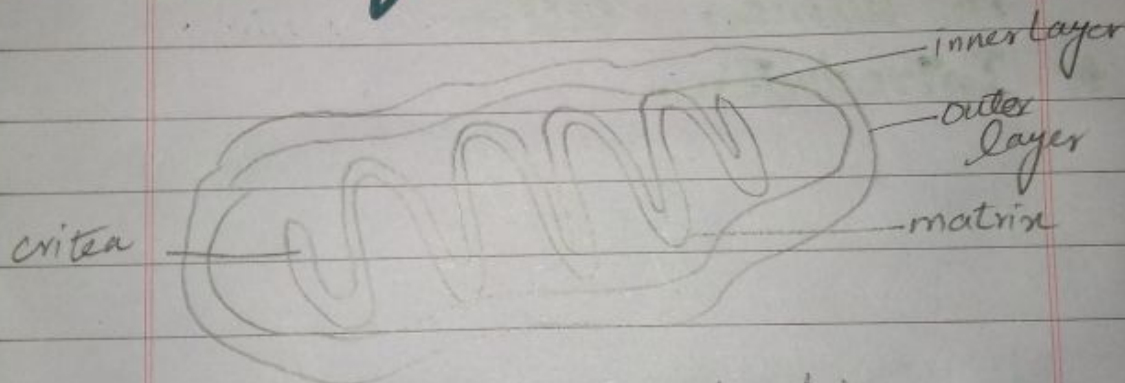
Why cells form organelles?

The cells form organelles because each organelle perform its specific

task and function. If the organelles are not formed the entire material will get disorganised and their function will be hindered.

In order to perform specific and proper functions and to keep different materials intact the cell form organelles.

Role of mitochondria:-



Structure of mitochondria
(Power house of cell)

Role of mitochondria in human cell:-

The mitochondria is called the powerhouse of the cell.

- The function of the mitochondria is to generate energy or provide

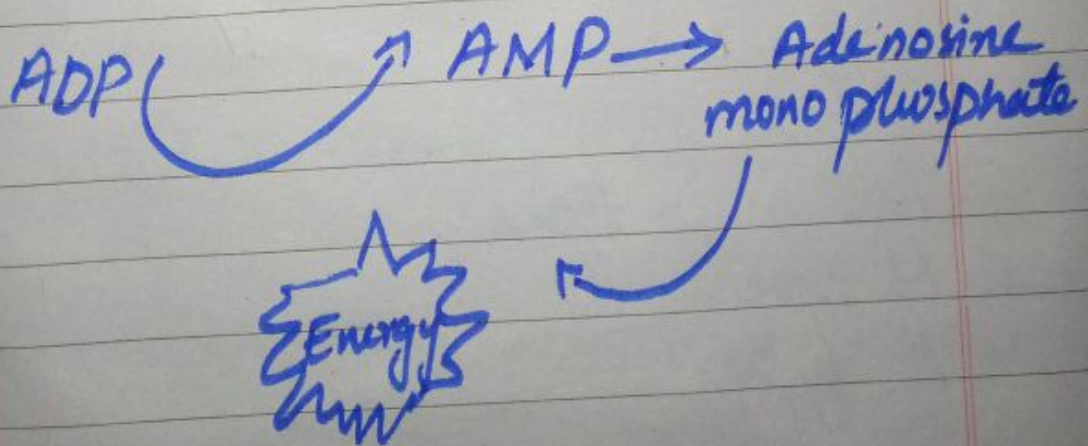
energy to the cell.

In human cell the mitochondria stores energy in the form of small units called ATP.

ATP stands for adenosine triphosphate. When the body requires energy during work or any other function so the mitochondria converts ATP into ADP and then ADP is converted into AMP.

The AMP is then transferred to the part of the body which required energy.

ATP $\rightarrow$ ADP (Adenosine diphosphate)



Such energy is then utilized for work.

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b) Doping and different types of Semiconductors:-

* Doping:-

Doping is defined as the process of adding impurities in the semiconductor materials.

What are impurities?

Impurities are basically the materials of the third and the fifth group of the periodic table.

When the elements of the third and the fifth group are added in the semiconductors so such materials are called doped materials.

Types of Semiconductors:- Two main types:-

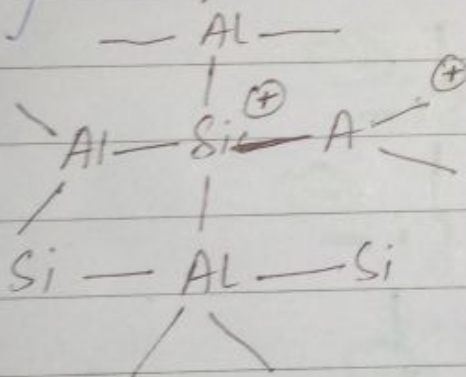
- 1) N type:
- 2) P type:

P type semiconductor:

These

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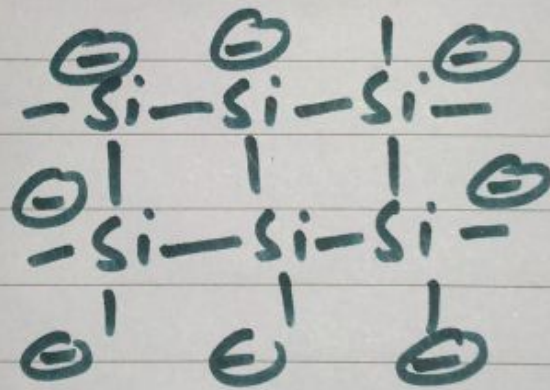
materials are the doped semiconductors in which group third element are used as an impurities. They are positive materials because they hold positive charge. The third group elements had 3 valence electrons while the semiconductor have 4 valence electrons, so when they are doped a vacancy for ~~one~~ one electron is created and they are called 'Hole'.



N type materials:

N type materials are formed when the group five elements are added in the semiconductor. They

are also known as negative materials. The elements of the fifth group have 5 valence electrons while that of the semiconductors have 4 valence electrons. When they are dropped in semiconductors so an extra electron exist so they ~~are~~ bear a negative charge. Such materials are called N type semiconductor.



When P and N type materials combine so they form PN junctions.

B) Merits and demerits of volcanic eruptions:-

The volcanic eruption have

Several merits and demerits. Some of the important merits and demerits are:-

* Merits:-

1) Leads or give various precious stone:-

Though volcanic eruption have demerits but there are also some merits of volcanic eruption also. When the volcanic eruption occur the molten stones and magma come out side. This magma is very precious, it contain different rocks or stones that can be used to make various precious stone.

2) Avoid the danger for few decades:-

Majority of the volcanos are not quite active, they are partially active, once the volcanic eruption takes place then there are very little change of the eruption again so in

This way they avoid the risk of eruption again and also eliminate the dangerous situations.

Demerits:-

Beside few merits there are several demerits of volcanic eruption.

Some of the important are:-

→ Leads to wide range

destruction:- Most of the volcanic eruption leads to wide range destruction and even fatalities. When the eruption occurs the hot and molten magma flows and blocks and destroy the residential area.

→ Result in the earthquake:-

Another major reason or demerit of volcanic eruption is that it leads to the earthquake and tsunami. When there is volcanic eruption, so the earth shakes vigorously and results in massive destruction.

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* Leads to Land infertility:-

Another demerit of volcanic eruption is that when eruption occurs, the magma float on the land, fertile areas and even roads. After sometimes it get harden and it is difficult to remove them, so even the fertile lands get barren.

→ Transportation issues are also the result of the volcanic eruptions.

d) Dengue, symptomology, causative agent and remedies:

Dengue is a contingent disease that can be caused by the special specie of the mosquitoes family. Initially the disease didn't represent quite well known symptoms but in worse conditions it can also results in the fatality of the person.

Causitive agent:-

A female mosquito that undergoes

the illness and can even reproduce and increase their offsprings.

- In certain cases the person is not directly affected but is indirectly affected by using the contaminated water etc.

* Symptomology:-

- Initially the disease didn't show quite symptoms but after one week the symptoms began to start.
- Head and severe fever that can lead to shivering.
- Extreme fatigue and body pain.
- Nausea and vomiting.
- Dizziness.

When the person is got bitten by the dengue causing agent the red spot may appear on the skin within the 24 hours.

* Remedies:-

There are various remedies

to prevent the spread of the disease:-

- 1) Awareness campaign regarding dengue
- 2) Use of cover over the water tanks and led on the clean water or drinkable water
- 3) Use of antimosquito medicines to prevent the disease

But when the disease is caused then different antibiotics are used in order to cure the patient.

"Section C"

a) Volume of sphere:

$$\text{Formula} = \frac{4}{3}\pi r^3$$

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$$r = \frac{d}{2}$$

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c) Spot the error / complete the Series:

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

Solution: _____

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

Solution: _____

As 2 is added with all the numbers so the series is

3, 5, 7, 11, 13, 15.

d) A triangle with sides 5cm, 12, 13cm. So the angles of triangle are: _____

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Q8)

c) A rectangular box is $8\text{m} \times 6\text{m} \times 4\text{m}$. Find total surface area and volume.

Solution:-

Area of rectangular box =

$$\begin{aligned} &= L \times W \times h \\ &= 8 \times 6 \times 4 \\ &= 48 \times 4 \\ &= 192\text{m}^2 \end{aligned}$$

$$\begin{array}{r} 3 \\ 48 \\ \times 4 \\ \hline 192 \end{array}$$

Volume =

$$\frac{1}{2} l \times w \times h$$

$$\frac{1}{2} \times 8 \times 6 \times 4$$

$$\frac{1}{2} (96)$$

$$= 48\text{m}^3 \text{ Ans.}$$

d) Six sibling share Rs: 9000

$$A = \frac{1}{2}B, B = 3C, C = 4D, D = 2E$$

$E = F$. Find each volume?

Suppose if E utilines = 187
 $E = F$

$$187 = 187$$

$$D = 2E$$

$$D = 2(187) \\ = 374$$

$$C = 4(D)$$

$$C = 4(374)$$

$$C = 1496$$

$$B = 3(C)$$

$$B = 4488$$

$$A = \frac{1}{2} B$$

$$A = 2,244$$

So

$$A + B + C + D + E + F = 9000$$

~~187~~

$$2,244 + 4488 + 1496 + 374 + 374 = 9000 \text{ P.u.}$$