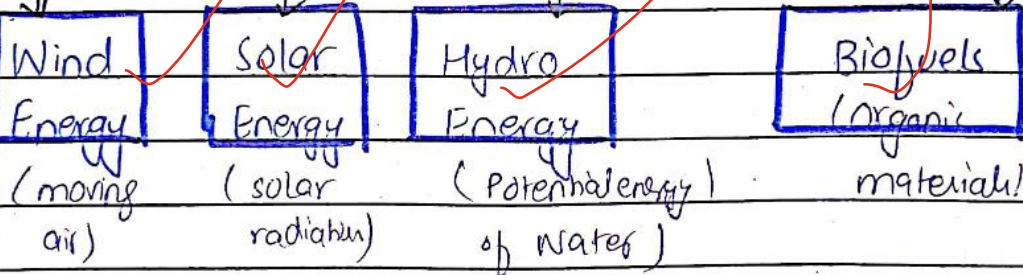


QUESTION # 21- IMPORTANCE OF RENEWABLE ENERGY RESOURCES AND SOLAR ENERGY.ANSI- RENEWABLE ENERGY RESOURCES:

Energy resource, which are present in abundance on Earth and replenish on their are called renewable energy resources. These resources are inexhaustible. Renewable sources of energy includes.

Renewable Energy Resource.2- IMPORTANCE:

Renewable energy resources are important source of electricity generation as.

- i- They are easily replenishable.
- ii- They are environmental friendly.
- iii- They are usually low carbon fuels.
- iv- Also, these sources donot contribute into high carbon levels in atmosphere.
- v- Though their setup cost is high but once installed, these are have low maintenance cost.
- vi- These sources donot contribute to environment pollution.
- vii- They are available everywhere, hence, does not support hegemony over their control internationally.



### 3- SOLAR ENERGY:

Solar energy is the type of renewable energy resource that uses solar radiations to generate electricity. The instrument used for conversion of solar energy into electrical energy is called solar cell or photovoltaic cell. Solar cell works on the principle of conduction in semiconductor through junction. A p-type and n-type semiconductor is used in which movement of electrons and holes (in opposite direction) is used to create voltage.

#### i- Pros of solar energy:

- a- Solar energy is eco-friendly and abundantly available.
- b- It is pollution free.
- c- It needs small functional machinery, that is, solar cell.

#### ii- Cons of solar energy:

- a- Solar cells have high set-up cost.
- b- Solar energy is prone to changes in weather for example, clouds, nights, rain etc.
- c- Voltage generated is not equivalent of thermally generated electricity.

In Pakistan, solar energy is being widely initiated under CPEC program. Moreover, it is used in homes and office settings. Government has initiated many schemes for conversion to solar energy and green metering.



5.5



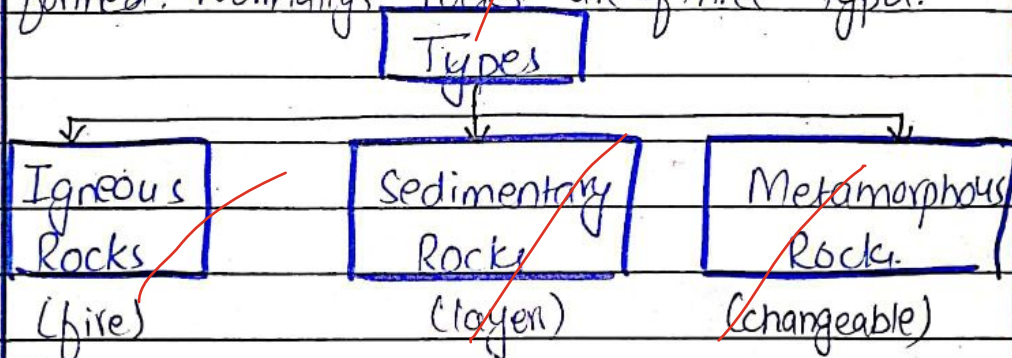
## 2- ROCKS AND THEIR TYPES PLUS ROCK CYCLE

### 1- ROCKS:

Rocks are solids that are rich in minerals and metals and occur naturally. They are most abundantly present in crust and upper mantle of Earth.

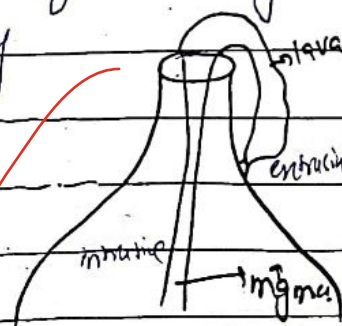
### 2- TYPES OF ROCKS:

Rocks are characterized according to their chemical composition, mineral they contain, and how they are formed. Normally, rocks are of three types.



#### i- Igneous Rocks:

These rocks are formed under high temperature and pressure, by solidification of magma underground and lava above ground. They are of two types. Intrusive igneous rocks are present underground while extrusive igneous rocks are found on the surface of Earth. They contain no sign of life or any organic material like oil or petroleum etc. They are also non-porous and are known as hardest rocks. Igneous rocks are rich in minerals.



#### Uses:



Mostly used as building blocks.

Example: In Pakistan, Reko Diq, West of Balochistan and Sargodha Kirang Hills are example of places containing igneous rocks.

→ Igneous rocks contain minerals like basalt, granite, Andesite etc.

## (ii) Sedimentary Rocks:

Sediment means 'particle' so these rocks are formed by layering of sand, clay and silt. This layering is the result of fluctuations of water levels. It is further divided into three types based on formation.

### Sedimentary Rocks

Physically formed

Biologically formed

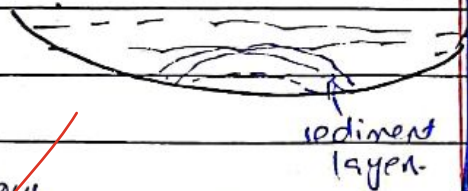
Chemically formed

Sedimentary rocks develop in marine ecosystem hence, are called graveyard of marine life.

They contain fossils of dead aquatic animals and fossil fuels. They are porous and contain organic element.

These rocks are less durable and soft as compared to igneous. They contain no metal deposit.

In Pakistan, these rocks are found in Salt Range and Himalayan region and examples include limestone, shale, limestone and granite.



## (iii) Metamorphous Rocks:

Meta means change and

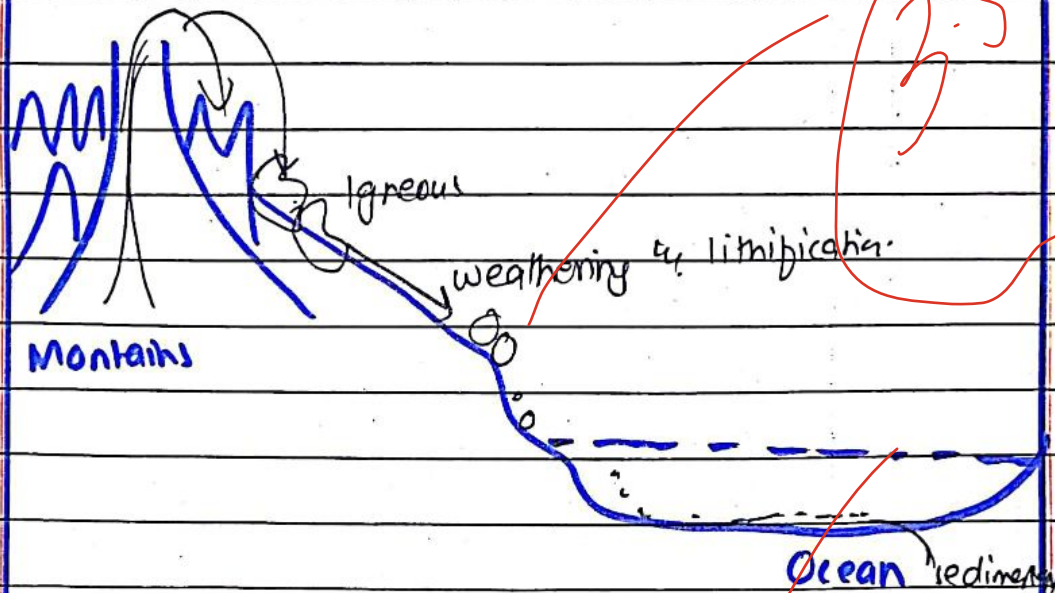


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Morph means 'shape', so, metamorphous rocks are those rocks which change their shape due to change in temperature and pressure. These are formed by metamorphosis of igneous, sedimentary and already metamorphous rocks. They are porous and have minerals aligned. Fossil fuels burn under high temperature and pressure. Cleavage in these rocks is a part where linings of minerals are present and are easy to break here. Gemstones are mostly found in metamorphous rocks. These rocks are durable than sedimentary but less harder than igneous. Hazara Region and Gilgit Baltistan is the region of Pakistan rich in these rocks.

### 3- ROCK CYCLE:



Rock cycle is a process by which rocks preserve their availability on Earth. Molten lava and magmas when cooled, they form igneous rocks. <sup>Extrusive</sup> Igneous rocks go through weathering and lithification biologically, chemically or physically and form sedimentary rocks.



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Following are the depository pattern of sedimentary rocks.

Boulder → Cobble → Pebble → Gravel → Sand → Silt  
↓  
Clay  
← decrease in size →

layers of sedimentary rocks under different pressure and temperature forms metamorphic rocks. and hence, rocks are replenished.

X ——— X

### Q3 SATURATED VS UNSATURATED FATS.

#### 1- FATS:

Fats are nutritional components which are also called 'fatty acids' or 'lipid'. They are essential for a healthy diet and provide energy two times more than same amount of carbohydrate consumed. Though fats must be consumed with caution else excessive use of fats can lead to obesity, cardiovascular diseases and cholesterol issues.

#### 2- TYPES:

Fatty acids are of two types.

Types

↓  
Saturated Fatty acids

↓  
Unsaturated fats

Difference:

#### SATURATED FATS

- 1- Saturated fats contain a single bond.
- 2- Saturated acids must not be consumed more than 10% of total calories of day.

#### UNSATURATED FATS

- unsaturated fats contain at least one double bond.
- Not to be consumed by 30% of total calories of day.



**SATURATED FATS**

3- excessive consumption leads to heart disease

4- Saturated fats don't spoil quickly

5- Present in solid state at room temperature

6- They have high melting point -

7- Often found in animals and animal products like meat, dairy, butter, cheese etc

8- Importance:

i- Helps maintain cell structure -

ii- Provides insulation to heat & cold.

iii- Energy storage.

iv- Regulation of protein.

**UNSATURATED FATS**

Unsaturated fats are mostly good for health. but in excess can increase level of cholesterol

These spoil quickly.

Present in liquid form at room temperature

They have low melting point

Often found in plant products like nuts, olive, avocado.

Importance:

i- Good for health of heart.

ii- Support brain development  
eg Almonds.

iii- build stronger cell membrane.

X ——— X

Q 4. **WATER SOLUBLE VITAMINS:**

Vitamins are elements that necessary for proper growth and development of a human being. They are good for vision, blood clotting, bones, teeth and normal functioning of body. Normally.



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Vitamins are divided into two categories. Fat soluble vitamins are those which can be stored in body and include Vitamin A, D, E and K. Water soluble vitamins are vitamins that cannot be stored in body and are excreted through urine. These include Vitamin B-complex and Vitamin-C.

### ① Vitamin B-complex:

Vitamin B is a group of water soluble vitamins that are essential for cell metabolism, red blood cell production and brain development. Sources of vitamin B complex includes meat, poultry, eggs, beans, vegetable, fruits and whole grain. Vitamin B complex include.

B-1 → deficiency cause Beri-Beri

B-2 → deficiency cause cheilosis.

B-3 → deficiency impacts skin & tissue

B-5 → & impacts health of skin & <sup>healthy</sup> nerves.

B-6 → necessary for healthy brain & memory

B-7 → Good for nails.

B-9 → Needed for memory and reproduction

B-12 → provides protection against allergies.

### ② Vitamin C:

Also known as ascorbic acid, is an important source of vitamin found in citrus fruits like lemon, orange, tangerine and guava etc. Vitamin C is necessary for growth and repair of tissues. It helps in formation of collagen and have healing properties. It is also essential for maintain health of teeth & bones.

X == X

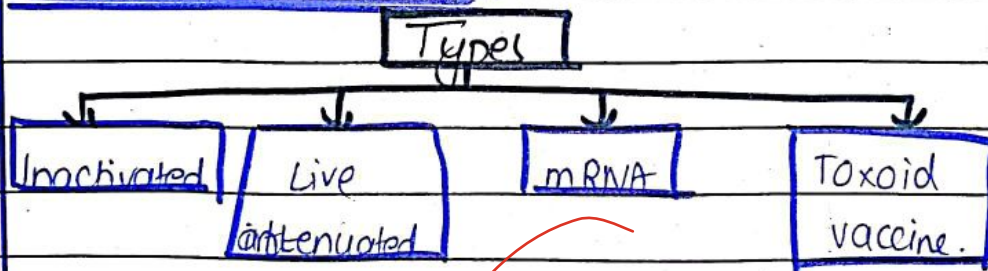


QUESTION #3A- VACCINES:1- VACCINATION:

Vaccination is a process by which vaccines are administered to provide immunity against a disease. Vaccination is mostly done against bacterial and viral diseases and infections.

2- VACCINE:

Vaccine is an inactivated or dead organism or toxics that is used to provide immunity against a disease or may prevent an infection. There are many types of vaccines. All aims at enhancing the immune system of a human. For example, Polio vaccine, MMR vaccine (Measles, Mumps and Rubella) etc.

3- TYPES OF VACCINES:

a- Inactivated vaccine: These vaccines don't provide strong immunity like live-attenuated. Moreover, booster shots are needed over time to boost immunity. For example, vaccines of flu, Rabies, polio etc.

b- Live-attenuated vaccines: This vaccine is actually weakened form of disease causing germs and create long lasting response. Live attenuated



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are most effective to prevent an infection. Vaccines for small pox, measles etc fall under this category.

c- Messenger RNA vaccine: (mRNA) mRNA vaccine is synthesized from a protein in a body that is used to trigger immune response. That mRNA protein help individual to fight against infection. These vaccines are usually high risk due to side effects. Examples include vaccine for COVID-19.

d- Toxoid vaccine: Toxoid vaccine has targeted immune response as it creates immunity and resistance against disease by killing part of a germ instead of whole body. It can be capsid destruction or inhibition of sugar production. It also needs boosters for longer immunity. Vaccines for Tetanus and Diphtheria are toxoid vaccines.

#### 4- SIDE EFFECTS OF VACCINES:

Mild side effects to vaccination include mild soreness, redness, swelling, skin rash and mild pain. However, allergic reactions and life threatening seizures are rare.

#### 5- EFFECTIVENESS OF VACCINES:

Mostly vaccines contribute to improving health by boosting immunity. It increases the longevity of human beings. Some vaccines are 99% effective like Polio vaccine while other come with risk like COVID-19 vaccine.

X → X



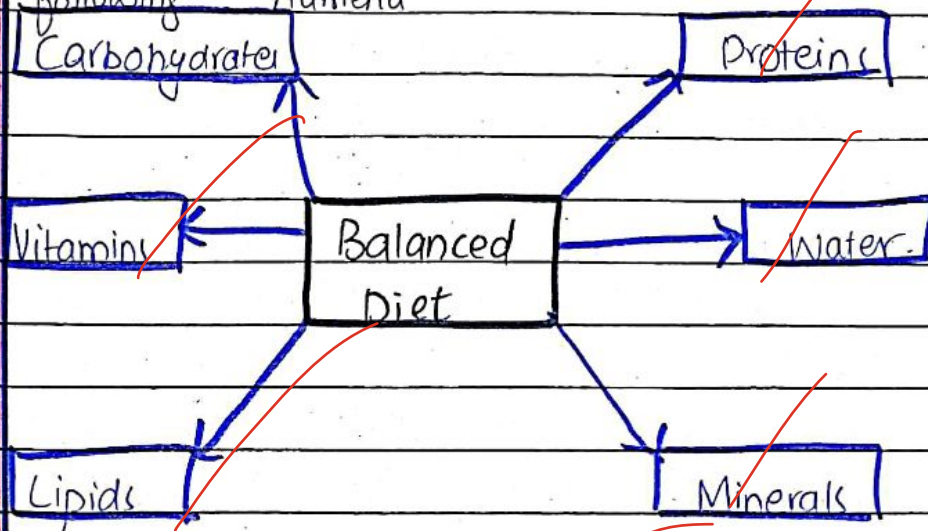
## B BALANCE DIET AND ITS MERITS

### 1- BALANCED DIET:

Balanced diet is a diet that contains right and equal amount of all nutrients in it. These nutrients are necessary for the proper functioning and maintenance of body.

### 2- NUTRIENTS:

A balanced diet comprises of following nutrients



Normally, a person's diet be based on 2000 calories a day but factors like gender, age, activity and metabolism affect this intake.

a- Carbohydrates: Carbohydrates are called sugars and they readily provide energy. These are present in fruits, honey, sugar etc.

b- Protein: Proteins or amino acids are building blocks of a body. For maintenance of muscles and organs, proteins are required. Proteins are packed in meat, beef, eggs and other dairy products.



c- Vitamins: Vitamins are those components which are necessary for normal functioning of body. Vitamins are either fat soluble or water soluble. Vitamins are further categorized into Vitamin A, B, C, D, E and K. Vitamins are found in fruits, dairy products, fish oil and nuts.

d- Lipids: Lipids are also known as fatty acids or fats. They are important reservation of energy and provide insulation to body. Fats are of two types, that is, saturated and unsaturated fats. Saturated fats are present in animals products while beans, plants are sources of unsaturated fatty acid.

e- Minerals: Minerals are elements that are needed in human body. Minerals are either micro minerals, that is, required in small amounts or macro minerals, required in large amounts. Calcium, Magnesium, Phosphorus, Sodium and Potassium are some minerals. and are important for proper working of kidney, tissue recovery, muscle contraction and relaxation, and osmo regulatory function.

f- Water: Water is the chief constituent of body. Water is required for regulation of metabolism, thermoregulation and metabolic activities.

### 3- MERITS OF BALANCED DIET:

Balanced diet

↳ important for.

i- efficient functioning of body.

ii- immunity of body against disease, infection and fatigue.

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- iii - growth and development of human body.
- iv - healthy life.

Imbalanced diet can lead to immuno-deficiency disorders, cardiovascular diseases, deficiency diseases like scurvy, night blindness, rickets etc and retarded growth and development

X ——— X

## C- WEAKNESS IN THE DRM OF PAKISTAN.

### 1- DISASTER RISK MANAGEMENT:

Disaster Risk Management or DRM refers to all aspects of managing disasters and risks. It includes prevention and mitigation, preparedness, anticipatory action, Response and recovery and it means:

Prevention —————> to prevent a risk.

Mitigation —————> to reduce the impact of Risk.

Preparedness —————> enhancing capability and improving ability to deal with risk.

Anticipatory Action —————> to take action in advance of a disaster.

Response —————> Responding to a disaster.

Recovery —————> Recovering from a disaster.

### 2- DRM AND PAKISTAN:

Pakistan is located so that it is prone to disasters due to global warming and security threats. It has faced in its history the disaster of floods, thunderstorms, wildfires, droughts, urban flooding, torrential rains and land sliding. But the



lack of preparedness and mitigation has resulted into incomprehensible human and capital cost. Best example of failure of DRM in Pakistan is floods of 2022. DRM in Pakistan is dealt under the organization of National Disaster Risk Management (NDRM) and Provincial Disaster Risk Management (PPDM).

### 3- WEAKNESSES OF DRM IN PAKISTAN:

Following

are few lackings of DRM in Pakistan.

- 1- lack of resources and human force.
- 2- Lack of coordination among different departments.
- 3- Limited public participation.
- 4- No proper warning system.
- 5- Insufficient risk assessment in terms of impact.
- 6- Unplanned development attitude.
- 7- lack of awareness and education.

### 4- STRATEGIES TO STRENGTHEN DRM IN PAKISTAN:

Pakistan needs to

- i- Initiate community-based disaster risk management upto divisional and district level.
- ii- Construct flood defenses and change development and urbanization attitudes.
- iii- Conduct a thorough hazard identification and risk assessment.
- iv- Improve preparedness.
- v- Ensure wise management of land and environment.
- vi- Include resilient construction in new projects.
- vii- conduct and ensure Repopulation drive.

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# D SHORT NOTE ON CARBOHYDRATES:

## 1- CARBOHYDRATE:

Carbohydrates <sup>is</sup> are an essential element of balanced diet. These are known as main source of energy for human body. Carbohydrates can be taken from pulses, milk, sweets, fruits, wheat, rice etc.

Deficiency of carbohydrates is not affordable while excessive consumption of carbs lead to weight gain and diabetes mellitus.

Carbohydrates are sugar molecules and are categorized as monosaccharides, disaccharides and polysaccharides, for example,

Monosaccharide  $\longrightarrow$  Glucose  
Fructose

Disaccharide  $\longrightarrow$  Sucrose = Glucose + Fructose.

Polysaccharide  $\longrightarrow$  Cellulose and glycogen.

Carbohydrates are important for energy, fueling of brain, functioning of heart and muscles. Fiber is a polysaccharide that keeps the cholesterol levels in check.

These can also help with mood, sleep, weight control, immunity, and blood clotting. The normal diet <sup>ratio</sup> of carbohydrates for a human being should be 45 to 65% percent.

Deficiency or less intake of carbohydrates result in fatigue, headache, mood swing, constipation, weakness, concentration problem and nausea. So,

carbohydrates must be included in balanced diet.

3

X ——— X