

GSA

~ Question No. 1 ~

Part A

Food adulteration:

It refers to the intentional or deliberate addition of harmful ^{or inferior} substances into food products. Its causes can be financial gains or deceiving someone in enmity.

2. Food Contamination:

It refers to the unintentional presence of harmful substances in the food products. It is already existence of some harmful bacteria that contaminates the food.

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Difference between food adulteration and food contamination

Food adulteration	Food contamination
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1) Intentional addition of harmful substances in food products	Unintentional presence of harmful substance in food products
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2) Done in gaining personal gains or to harm someone	Due to environmental factor or handling of processing
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Example: Adding malamine into the milk

Example: Presence of pesticides in food

Controlling measures of food adulteration

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a) Penalties for food adulteration:

People who are involved in food adulteration, should be charged with high penalties.

b) Public awareness and education:

Public awareness programs should be started to spread awareness among public about this immoral activity that could endanger life of human beings.

c) Improving food inspection and testing mechanism:

There is need to improve food inspection and testing mechanism in order to ensure

good quality of food.

d) Strict restriction oversight by food authority:

Food authority should strictly notice such kind of actions.

e) Promotion of proper food labelling and certified food:

Food should be banned which are not officially certified or labelled. Labelled and certified food should be promoted.

Conclude:-

To conclude, food adulteration and food contamination are both opposing factors to each

other. There is dire need to take action regarding food adulteration which is considered an immoral activity.

Part B

• Food preservation:

Food preservation is a process in which food is preserved or stored in order to ~~pre-~~ ^{food from spoiling.} increasing its life shelf, and maintaining its colour and flavour. Food is preserved by using many methods.

• Five food preservation methods:

i) Canning:

Food is preserved in cans or jars that are airtight after heating them to kill molds, bacteria, or yeast that

can spoil the food. In airtight containers like cans or jar food is saved from harmful bacteria.

Examples: Canned food like vegetables, fruits, soft drinks and sauces etc.

ii) Salting:

Salting is another process in which salt is used on food to dry up the moist. It helps not to grow bacteria, molds and yeast. Food is also saved to be spoiled as there is no moist in it.

Example: Salted meat and fish

iii) Drying:

In drying, moisture is removed from the food making food less hospitable to yeast.

and bacteria. Food is dried in sun light, in air or dehydrated.

Examples: Dried foods like apricot and herbs etc

(iv) Freezing:

Food is frozen at low temperature to kill germs and bacteria from it. It slows down the microorganisms and enzymes to grow.

Example: Frozen vegetables, meat, fruits etc

(v) Fermentation:

It uses beneficial bacteria that convert sugar of food into alcohol or acid, becoming a natural preservative. These bacteria convert sugar into lactic acid or alcohol

which preserves food and adds flavor in it.

Example: Pickle, Jams, yaogurt, Kimchi etc

• Conclusion:

To sum up, these above methods are used to store foods to save them from spoiling and future use. by maintaining their natural colour and flavour.

Part C

(i) Temperature

It refers to the measure of how hot and cold the atmosphere is at given time. It plays a crucial role in weather variation. It has also influence on other weather variables like humidity, precipitation and wind.

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• Factors influencing the temperature:

(i) Sunlight:

Sun is a main source heat and energy. During day time, the sun rays warms the surface of the earth.

(ii) Latitude:

The regions which are near the equator are warmer regions than regions at poles.

(iii) Altitude:

At mountain tops, temperature decreases and colder area as compared to plain land area. So altitude affects the temperature.

(iv) Proximity of water in oceans

and land:

Oceans and rivers tend to moderate the temperature. Water heats up and cools down slowly than lands.

• Conclusion:

In a nutshell, temperature is a major factor in weather variables. There are several factors which are influencing it.

(ii) Humidity

"The amount of water vapours present in the air."

Measure of water vapour in the air:

"When the air with high humidity

cools, the water vapours that it contains condenses into tiny droplets of water or crystals forming clouds.

- Effects of humidity:

- (i) Impact of Temperature:

Humidity can influence the temperature affecting how effectively the atmosphere retains and release heat.

- (ii) Impact on GHGs:

Humidity can affect green house gases by increasing the heat on the Earth's surface.

- Sources or factors increasing humidity

- 1) Breathing
 - 2) Bathing

3) Cooking 4) Boiling

• Conclusion:

To conclude, humidity is the presence of water vapour in the air, condensing into tiny droplets or crystals of ice.

ciii) Pressure

^{ee} The atmospheric pressure exerted from the molecules of atmosphere on the earth's surface."

Change in pressure causes change in weather pattern.

• Factors contributing in pressure variations

ci) Pressure variation due to height:

- 1) As height increases, the ^{thickness of} atmospheric blanket decreases, also decreasing the pressure.
- 2) It creates different pressure zones.
- 3) Air molecules are pushed from high pressure to low pressure.
- 4) Pressure causes circulation of wind and cyclones which it increases.

cii) Pressure variation due to temperature:

- 1) High temperature would result in certainly dry out water vapour in the atmosphere.
- 2) Decrease in mass of air result in decrease in pressure.
- 3) Due to high temperature, pressure also increases which results into tornados and cyclones.

• Conclusion:

To sum up, it can be said that when change occurs in pressure, weather also changes.

Part D

Earthquake

Earthquake is the vibration ^{or shaking} of the surface of the earth due to the collision of tectonic plates present in Earth's lithosphere.

Richter scale:

Richter scale is invented by Charles F. Richter in 1935 to measure the magnitude of the earthquake.

• Occurance of earthquake

(i) Collision of tectonic plates:

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Tectonic plates are present in lithosphere that float on the semi-fluid mantle. These plates are constantly moving apart. When they interact to each other, they cause the earthquake.

(a) Convergent boundaries:

Plates move apart from each other

(b) Divergent boundaries:

Plates that move towards each other

(c) Transform boundaries:

Plates move slide past each other

(ii) Focus and epicenter

(a) Focus: A point inside the earth where earthquake happens or occurs. (Hypocenter)

(b) Epicenter: A point on

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the earth's surface above the focus, where earthquake is strong.

(iii) Seismic waves:

These are the waves that travel through the earth. There are three types of seismic waves.

(a) Primary waves (P-waves): These are the fastest waves travel through solid, liquid and gas.

(b) Secondary waves (S-wave): These are slower waves travel through solid.

(c) Surface waves: These are the most disastrous waves travel along the Earth's surface like ripples on water.

• Conclusion:

To conclude, earthquake is the sudden shaking of the

the surface of the earth due to interaction of tectonic plates.

~ Question No. 3 ~

Part A

Vaccines:

Vaccines are the biological preparation that provide immunity for the specific disease. This includes the weakened or inactive pathogens like bacteria which provide the support to the immune system to recognize and fight against the disease if exposed in future.

Work of vaccines:

Vaccines are injected into a person to stimulate his/her immune system to be prepared for fighting the disease in future.

Types of vaccines:

- a) Live attenuated
- b) Inactive
- c) mRNA
- d) Protein subunit vaccine

Benefits:

Vaccines help to prevent individuals from infectious disease and make immune system strong to fight against diseases.

Vaccines have been instrumental in prevention of Polio, measles, and Covid-19.

Conclusion:

To conclude, vaccines are the safety net for individual to prevent them, against many diseases.

Part B

• Balanced Diet:

A balanced diet is a diet that contains all the necessary substances needed for the proper functioning of human body.

Components of balanced diet

- i) Carbohydrates
- ii) Proteins
- iii) Fibers
- iv) Fats
- v) Vitamins
- vi) Iron
- vii) Zinc
- viii) Phosphorous

• Merits of balanced diet

i) Source of energy:

A proper diet provides energy to work.

(ii) Improve digestion:

A balanced diet improves human's digestion.

(iii) Improve Immune system:

A balanced diet also plays its crucial role in improving immune system.

(iv) Prevention dehydration:

A balanced diet prevents human's from dehydration.

(v) Weight management:

A well balanced diet maintains weight of human body because diet is in well proportioned from all components.

(vi) Prevention of disease:

A balanced diet prevents human from diseases.

• Conclusion:

In a nutshell, a balanced diet is very important to manage the proper functioning of human body.

Part C

• DRM of Pakistan:

DRM stands for Disaster Risk Management. It is an approach or concept of identifying, assessing and reducing the disaster risk. It involves preparedness, mitigation and reducing the risks of disasters. It also involves mitigation strategies of risks for people, finance and infrastructure.

Weakness of DRM of Pakistan

i) Financial constraints:

The most prominent weakness of DRM is financial constraints. Pakistan has weak economy facing many issues. DRM is passing through many financial issues.

ii) Flawed policies of DRM:

DRM has flawed policies which cannot be applied in Pakistan.

iii) Federal and provincial divide on DRM:-

There is confusion that who ^{will} take action in case of natural disaster. This divide makes DRM slow and ineffective.

(iv) No preparedness strategies for future;

The main reason behind loss of disasters is not preparedness strategies of DRM. It is not ready for any upcoming disaster.

(v) Political instability:

Political instability is also a major hurdle for DRM, which is weakening it.

(vi) Lack of awareness:

DRM is not aware about the aftermath results of certain disaster for the country as well as the people.

• Conclusion:-

To sum up, there are

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certain weaknesses that make DRM inefficient and ineffective.

Part D

Carbohydrates:

Carbohydrates are the basic components of balanced diet. Carbohydrates is derived from two words 'Carbon' and hydrates. Carbo means 'carbon' and hydrate mean 'hydrogen'. Carbohydrates is simply name as 'sugar'.

Formula: $C_x(H_2O)_y$

Function of Carbohydrates:

Carbohydrates are the main source of energy. It gives strengths for proper function of human heart and brain. It also supports digestion health and regulate

blood sugar.

Sources of Carbohydrates:

Sources are wheat, oats, barely, milk and sweet fruits

Deficiency: It's deficiency affects the performance of human heart and brain. It also prevents human body to work properly due to the lack of energy.

• Conclude:

To conclude, it can be said that carbohydrates are very essential for human ^{body} to function properly.