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29/40

Q.2Part (a)

Traditional methods rely on natural techniques (drying, ~~salt~~ fermentation), while modern ~~methods~~ use technology (freezing, canning, irradiation) for efficiency and safety. Each has advantages in cost or convenience, but trade-offs in nutrition, flavor, or energy use.

Traditional Food Preservation

Methods

	Method	Definition	Advantages	Disadvantages
1-	Drying	Removal of moisture to prevent microbial growth.	- Simple - inexpensive - extends shelf life	Loss of some nutrients and flavor.

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	Method	Definition	Advantages	Disadvantages
2 -	Salting	Use of salt or brine to inhibit bacteria.	• Effective for meat, fish, and vegetables.	• High sodium content • Alters natural taste.
3 -	Fermentation	Use of beneficial microbes to preserve food.	• Enhances flavor and nutrition.	• Requires skill and controlled environment.

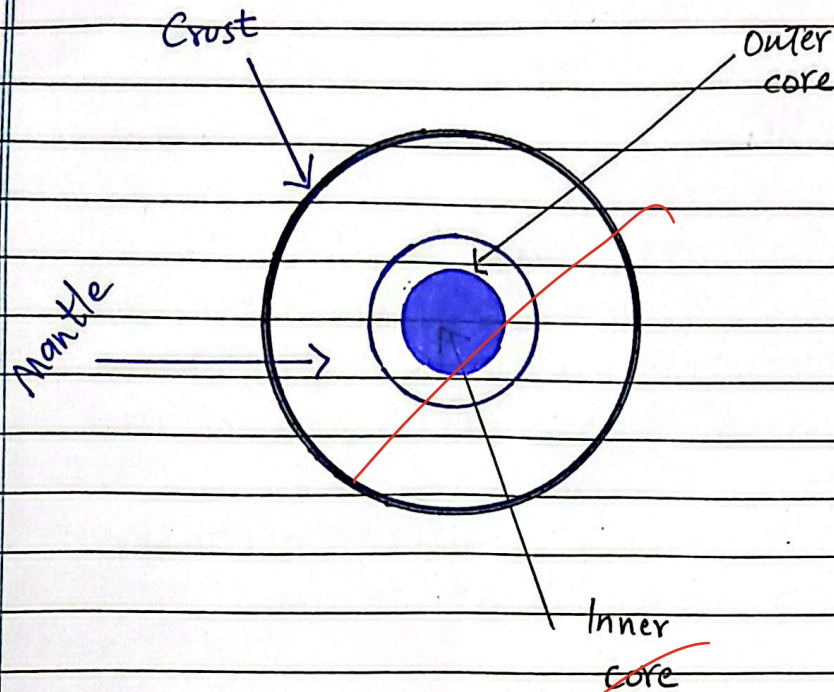
Modern Food Preservation Methods

	Method	Definition	Advantages	Disadvantages
1 -	Refrigeration and Freezing	Lowering temperature to slow or stop microbial growth.	• Retains freshness and nutrition	• High energy cost • Limited storage duration
2 -	Canning	Sealing food in airtight containers after heating.	• Long shelf life. • Convenient storage	• Loss of some vitamins • Risk of contamination.
3 -	Vacuum Packaging	Removal of air to slow spoilage	Prevents • Prevents oxidation and bacterial growth	• Limited to specific food types.

2.5

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Part (b)



Earth's internal structure

The Earth's internal structure is composed of three main layers, the crust, mantle, and core, each differing in composition, temperature, and density.

1- Crust :

- a. The rigid, outermost layer where tectonic plates located and seismic activity occurs.
- b. The crust is the outer layer where we live.
- c. It has two types,
 - Continental crust- relatively low in density, granitic in composition.

- Oceanic crust - denser (especially when cold and old), basaltic in composition.

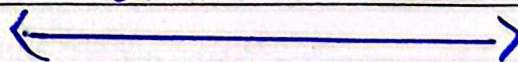
2- Mantle.

- a- A semi-solid layer below the crust.
- b- Divided into upper mantle (includes the asthenosphere) and lower mantle.
- c- The mantle is the thickest layer of the Earth.
- d- The asthenosphere is partially molten, allowing tectonic plates to move.

3- Core.

- a- Divided into:

- Outer Core: Liquid layer composed mainly of iron and nickel, responsible for generating Earth's magnetic field.
- Inner Core: It is the centre and the hottest layer of the Earth. Solid due to immense pressure, made of iron and nickel.



Part (c)

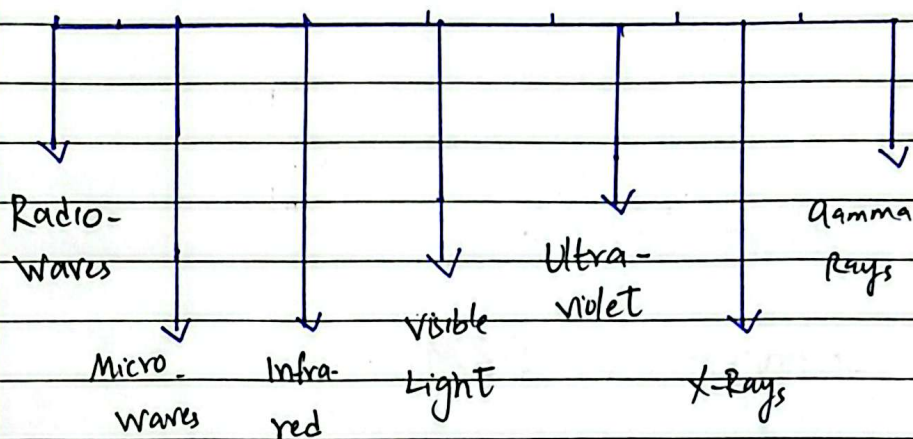
Electromagnetic Radiations

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Definition

Electromagnetic radiations (EM) are waves of energy or stream of photons that travel through space or medium at the speed of light (3×10^8 m/s).

Types of EM



Properties of EM

- 1- EM waves do not require a medium to travel.
- 2- They all travel at the speed of light in vacuum.
- 3- The energy of EM radiation increases with frequency and decreases with wavelength.

Applications of EM

Electromagnetic radiations have a wide

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range of applications in daily life, technology, medicine, and industry.

- a- Communication: Radio, TV, and satellite transmission.
- b- Medicine: X-Rays for imaging, gamma rays for therapy.
- c- Daily Life: Microwaves for cooking and reheating food; visible light for illumination and photography.

Part (d) (Q.2)

Definition of DRM

Disaster Risk Management (DRM) refers to the systematic process of using administrative decisions, organization skills, and operational ~~capabilities~~ capacities to implement strategies and policies that lessen the adverse impact of natural and human-induced hazards. It includes prevention, mitigation, preparedness, response, and recovery measures to minimize disaster risks and enhance community resilience.

Importance of Risk Assessment in DRM

Risk assessment is a critical component

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of Disaster Risk Management because it identifies potential hazards, vulnerabilities, and exposure levels. It helps for informed decision-making in policies, strategies, and investments to build resilience.

- a- Identification of Hazards: Determines possible natural or man-made threats (such as, floods, ~~and~~ earthquakes, industrial hazards/accidents).
- b- Preparedness and Planning: Enables formulation of effective emergency plans and mitigation strategies.
- c- Resource Allocation: Ensure that funds and resources are directed to high-risk areas first.



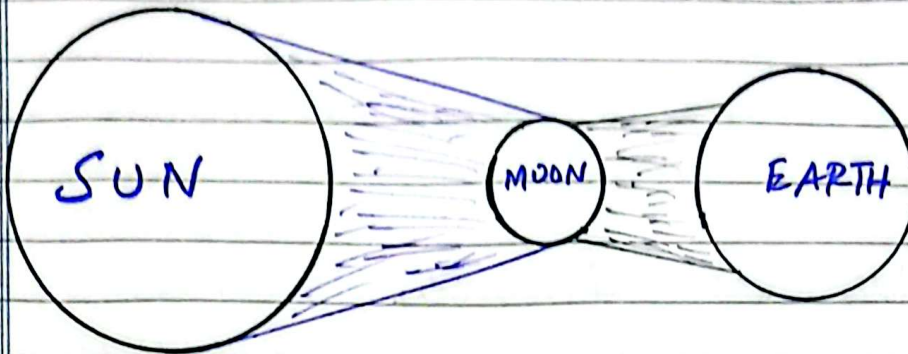
Q.1

Part (a)

Solar Eclipse

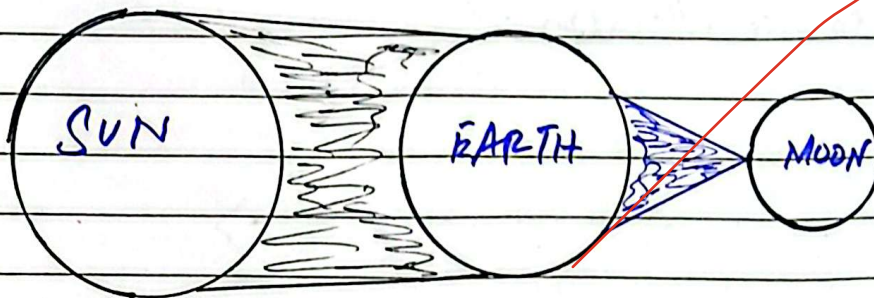
A solar eclipse occurs when the Moon comes between the Earth and the sun, blocking all ~~parts or part~~ of the sun's light from reaching the Earth.

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Lunar Eclipse

When Earth is between the Sun and the Moon, and the Earth's shadow falls on the Moon.



Types of Solar Eclipse

1- Total Solar Eclipse:

When the moon is exactly aligned on the same line that joins the center of the sun and the earth.

The Moon completely covers the Sun, and the day turns temporarily dark.

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in the path of totality.

2- Partial Solar Eclipse:

When the moon is above or below the central line joining the sun and the earth:

The Moon covers only a part of the Sun's disk; the sun appears as a crescent.

3- Annular Solar Eclipse:

Occurs when the Moon is farther from Earth and appears smaller; it covers the sun's center, leaving its outer edges to form a "ring of fire" or annulus.



Q.3 Part (b)

Differentiate between ceramics and plastics.

	Property	Ceramics	Plastics
1-	Composition	Made from inorganic materials (clay, silica)	Made from organic polymers derived from petrochemicals
2	Heat Resistance	Can withstand very high temperatures	Soften or melt at high temperatures

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	Property	Ceramics	Plastics
3-	Electrical Conductivity	Excellent electrical insulators	Can be insulators or conductors (depending on type)
4-	Strength and Brittleness	Hard and strong but brittle	Flexible and less brittle
5-	Weight / Density	Generally denser and heavier	Lightweight

Types of Ceramics

1- Traditional Ceramics

These are made from inorganic non-metallic solids such as clay, silica, and feldspar, using established processing techniques like firing at high temperatures. Includes pottery, bricks, tiles and porcelain.

2- Advanced Ceramics

Made from pure compounds like alumina, silicon carbide, or zirconia. It is used for specialized industrial and technological purposes.

Applications of Ceramics

a- Construction: Bricks, tiles, cement.

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- b- Household: Crockery, dishes.
- c- Medical: Artificial bones, dental implants, prosthetics and surgical tools.

Q. 1 - Part (c)

Differentiate Between

	Food Contamination	Food Adulteration
1-	The accidental presence of harmful or unwanted substances in food.	The intentional and deliberate addition or substitution of inferior or harmful substances in food.
2-	Unintentional. Usually results from negligence or environmental factors.	Intentional to increase quality, appearance, or shelf life.
3-	Usually due to physical, chemical, biological, or allergic allergenic contaminants contaminants.	Usually due to human greed or negligence.
4-	Bacterial contamination in milk.	Mixing water in milk to increase volume

Name of Food Contaminants

- 1- Bacteria such as Salmonella and E. coli.
- 2- Heavy metals including lead and mercury.
- 3- Pesticide residues.
- 4- Physical objects like hair, glass, plastic, or dirt.
- 5- Cleaning agents namely soaps, detergents, or sanitizers.

Name of Food Adulterants

- 1- Water
- 2- Chalk powder
- 3- Brick powder
- 4- Used tea leaves
- 5- Used cooking oil.

Q.3 Part (d)

Imbalanced Diet

An imbalanced diet is one that does not provide with necessary proportions of nutrients required for growth, energy, and overall health. It can occur due to excessive intake of certain nutrients or deficiency of essential nutrients.

Major Consequences of an Unbalanced Diet

a- Obesity and other Chronic Health Problems

Excess intake of fats and sugars can cause ~~obese~~ obesity, diabetes, and heart disease.

b- Weak Immunity

Deficiency of proteins and essential nutrients can compromise the immune system, making the body more susceptible to infections.

c- Mental Health Issues

Poor and inadequate nutrition is associated with an increased risk of psychiatric disorders.

d- Fatigue and brain drain

Without right nutrients, your brain and body may lack the energy needed to function optimally.

e- Poor growth and development

In children, an imbalanced diet leads to stunted growth and developmental delays.

←————→
The End