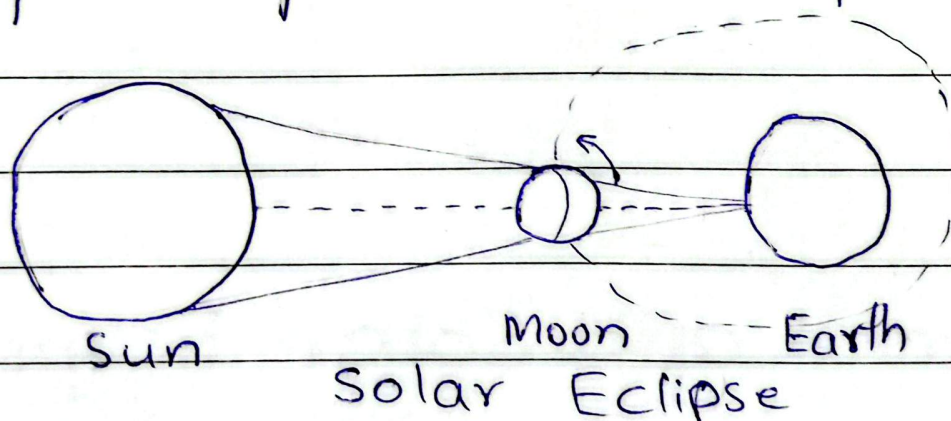


GSA

Qno. 1:

a) Solar Eclipse

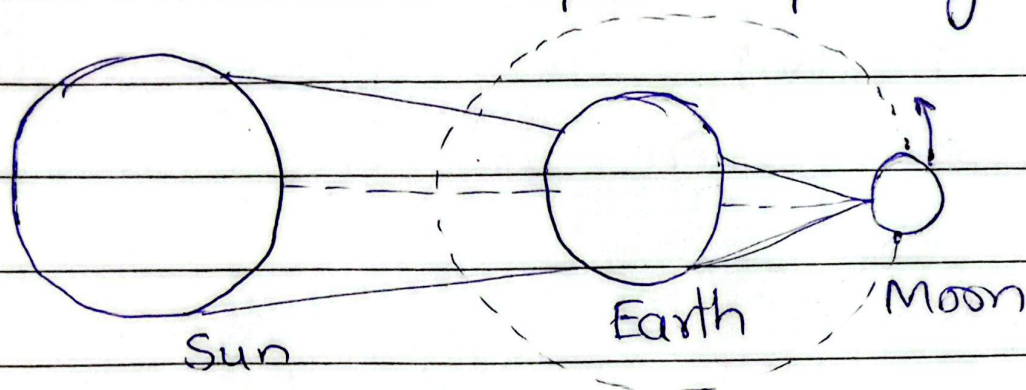
Solar eclipse is also known as eclipse of the sun. It occurs when the moon comes in between the sun and the earth. As a result, the moon blocks the light of the sun from reaching the earth's surface and cast a shadow on it. This occur in a new phase moon. We can observe solar eclipse upto 5 times per year.



Solar eclipse can not see directly.

Lunar Eclipse

Lunar eclipse is also known as the eclipse of the moon. It occurs when the earth comes in between the moon and ^{the} sun. As a result, the earth blocks the light of sun from reaching the moon surface and casts its shadow on the moon. It occurs on a full moon. We can observe up to 3 lunar eclipses per year.



Types of Solar Eclipse

There are three types of solar eclipse.

1) Total Solar Eclipse

It occurs

when the moon completely covers the sun. This area is usually 100 miles wide and 1000 miles long. Looking at total Solar eclipse without any protective eyewear can harm one's eyes.

2) Partial Solar Eclipse

It occurs when the moon only covers the partial disc of the sun. It can be observed when sun, moon and earth do not align in a perfectly straight line.

3) Annular Solar Eclipse

It occurs when the moon ^{appears} smaller than sun as it passes centrally across the disc and a bright ring or annulus remains visible during eclipse.

b) Ceramics

Ceramics are inorganic non-metallic solid made up of clay that have been shaped and hardened by heating at high temperature. It includes tile, bricks, plates, glass etc. It is found in spark plugs, engine parts, space shuttle, aeroplanes and other appliances.

Classification of Ceramics

Ceramics are classified:

i) On the basis of composition

ii) On the basis of application

On the basis of composition

It is divided into three categories,

a) Oxides : zirconia, iron oxide

b) Non-oxides : borides, nitrides

c) Composites, It is combination of oxides and non-oxides.

On the basis of application

It can be classified into traditional and non-

traditional ceramics.

Traditional Ceramics

- Ceramic
- Brick and Tile
- Cement
- Abrasive

Advanced ceramics

Electroceramics

- Magnetic Ceramics
- Optical Ceramics
- Conductive Ceramics

Advanced Structural

- Nuclear Ceramics
- Bio Ceramics
- Automotive Ceramics

Applications of Ceramics

1: Ceramics are used in the formation of space shuttle and rockets.

2: Computer parts like capacitor, insulator, superconductor are made up of ceramics.

3: Ceramics are used in medical field especially in bone fillings.

4: Manufacturers use ceramics to make bricks, pipes, tiles and other construction materials.

5. Nuclear ceramics, ceramic material employed in the generation of nuclear power plants.

Plastics.

Plastics are materials made up of large organic molecules that can be formed into a variety of products. The word plastic is derived from the word plasticus (Latin for capable of being moulded) and plastikos (fit for moulding). They are electrical insulator and non-magnetic in nature. Plastics have a density lower than that of metals.

d) Imbalanced diet

Imbalanced diet is a diet that has an excess or deficiency of essential nutrients such as protein, carbohydrates, fats, vitamins or minerals. Consuming wrong type of food affect the functioning of body.

Consequences of unbalanced diet

- 1) An unbalanced diet increase the risk of diseases such as type 2, cardiovascular, certain cancer and obesity.
- 2) Deficiency or excess of ^{essential} nutrients ~~unbalanced diet~~ result in disturbance of proper immune function, poor concentration and growth failure in children.
- 3) It can lead to mental health disorders like depression, anxiety as well as cognitive impairment and memory problems.
- 4) It can cause muscle spasms weakness, fatigue and heart problems.

c)

Food Contamination

Food contamination is a harmful chemical or microorganism present in the food which can cause disease or illness in living things.

Food Adulteration

Food Adulteration is an act of intentionally decreasing the quality of food for sale by mixing inferior substance or harmful substance to food products.

Food contaminants:

Pesticides, Detergents, antibiotics, pathogens, heavy metals
Food Adulterants:

water in milk, artificial colors, washing soda in sugar, Papaya seeds in black pepper, Saccharin in sweets, beverages and ice creams.

Question no. 3

b) causes of floods in Pakistan

There are several

Date: _____

1) Deforestation.

Cutting down of forests reduces soil absorption which leads to increasing surface runoff.

2) Glaciers melting

Rapid melting of glaciers especially in northern areas increases river flow.

3) Excessive rainfall

Excessive rainfall during the monsoon season causes the river to overflow.

4) Poor drainage system

Inadequate drainage system in cities leads to water accumulation and urban flooding.

5) Climate change

Changing rainfall patterns and rising temperatures make flood more frequent and intense.

Suggestions.

1) Construct dams and reservoir
Increase dams
and water storage reservoirs
to store water and control
overflow of water

2) Reforestation

Grow more and
more trees to increase absorption
and surface runoff.

3) Improve drainage systems

Build and maintain
effective urban drainage to
prevent waterlogging.

4) Climate adaptation policies

Develop long term
strategies to deal with weather
patterns.

5) Early warning systems.

Use modern
technologies and weather
forecasting to alert people
in time.

a) Chemical bonding

Chemical bonding is the strong electrostatic forces of attraction between the atoms or ions in its structure.

There are four types of Chemical bonding.

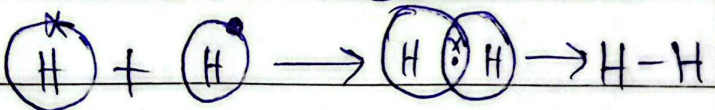
1) Ionic bonding

It is a type of chemical bond that involved the electrostatic force of attraction between oppositely charged ions.

e.g. Na^+Cl^-

2) Covalent bond

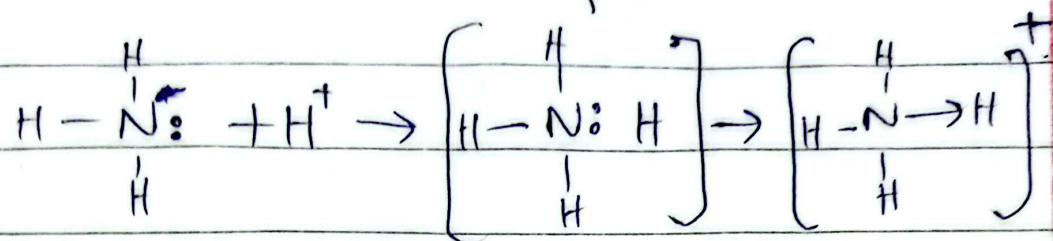
It is a type of covalent bond in which two non-metal ^{atoms} combine, they share pair of one or more electrons and form covalent bonds.

e.g. $\text{H}-\text{H}$ 

3) Coordinate covalent bond

when shared pair of electrons come from only

one atom and donate it to other atom to form bond.



4) Metallic bond

This type of bond is formed due to attraction between positive ions and the mobile electron in a metal to form bond.
eg. Iron, gold, silver

d) Big Bang Theory

Many astronomers believe the universe began on a big bang about 13.8 billion years ago. At that time, the entire universe was inside a bubble that was thousand times smaller than a pin head and it was termed as singularity. Then it suddenly exploded and expanded leading

leading to the formation of time, space and matter with the Big Bang. Since then, universe has been expanding continuously.

As the universe expanded and cooled, energy change into particle of matter and anti-matters. The universe was filled with clouds of hydrogen and helium. These clouds of dust and gases form celestial bodies.

Evidence for big bang.

By analysing the spectrum of light from a star or galaxy, astronomers can tell it is moving towards earth or away from earth. If an object is moving away from Earth, its light shift to longer redder wavelength known as red shift. Astronomer Edwin Hubble observed that galaxies are red shifted and

are moving away from each other. Another evidence of Big Bang is cosmic radiations. Arno Penzias and Wilson detected a cosmic microwaves background radiations while studying radio signals. These radiations are received from all partes of the universe and is thought to be the heat left over from the original expansion or big bang.

c) Glaxies formation and evolution

Galaxy is a gravitational bound system of star, steller remnants, nebulae, black hole, satellite, interstellar gas, dust and dark matters. After the Big Bang, clouds of hydrogen and helium gas gathered under gravity to form the first stars.

These stars group together to form galaxies such as spiral, elliptical or irregular types.

How galaxies evolve over time?

New stars are continuously formed from clouds of gases and dust inside galaxies. Galaxies collide and merge creating larger and more complex systems. Collisions and gravitational forces can change a galaxy's shape. As old stars explode as supernova or turn into white dwarf and black holes. As the universe expands, galaxies are moving further apart and changing in structure.