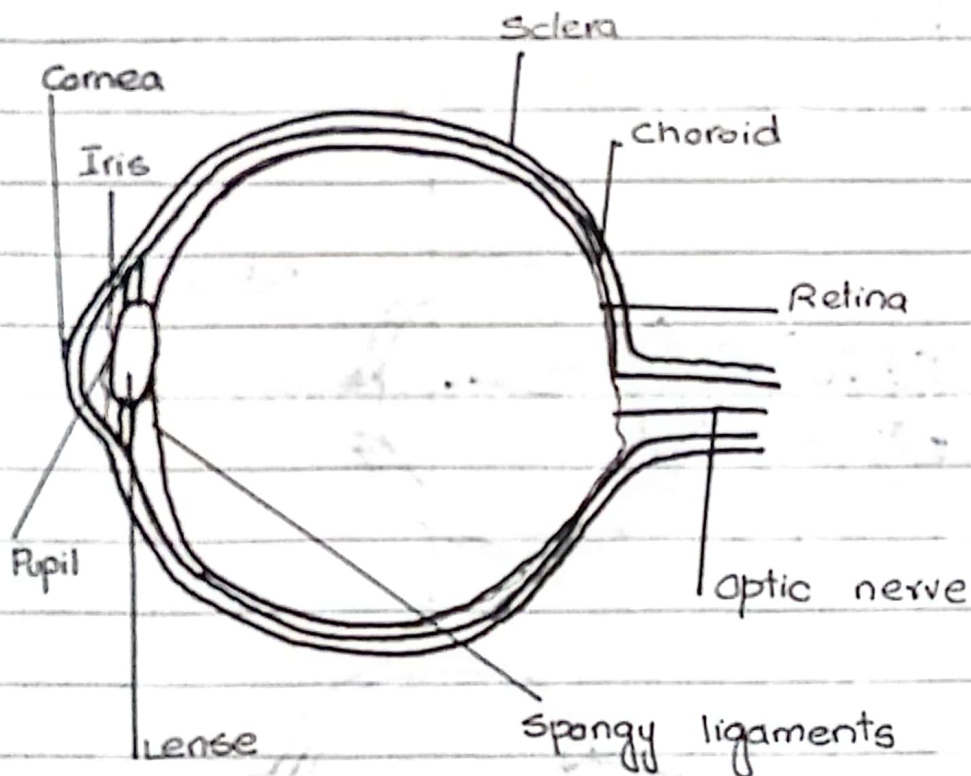


QUESTION # 4(a)

STRUCTURE OF EYE



CORRECTION OF MYOPIA AND HYPEROPIA

~ MYOPIA ~

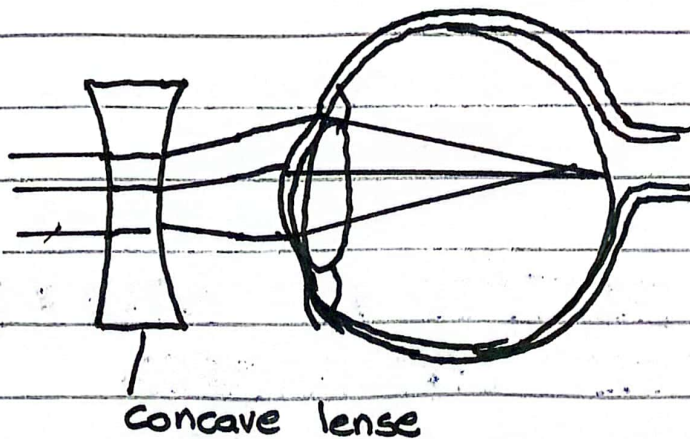
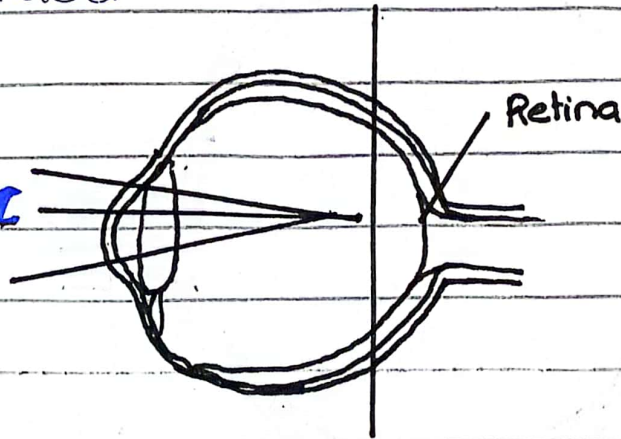
Myopia is also known as shortsightedness. People with myopia can see near object clearly but distant object appear blurry.

In myopia image light falls in front of retina instead of retina.

CORRECTION

Myopia is corrected with concave lens - The lens changes the focus so image fall on retina as they should -

MYOPIC EYE



MYOPIA CORRECTED

HYPEROPIA

Also known as farsightedness

People with hyperopia can see distant objects clearly but nearby objects blurry.

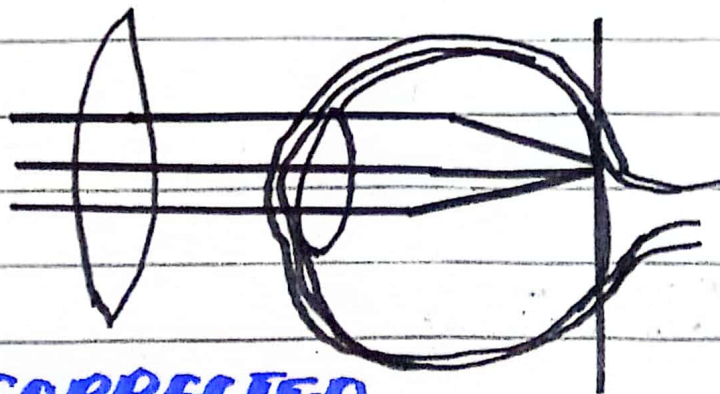
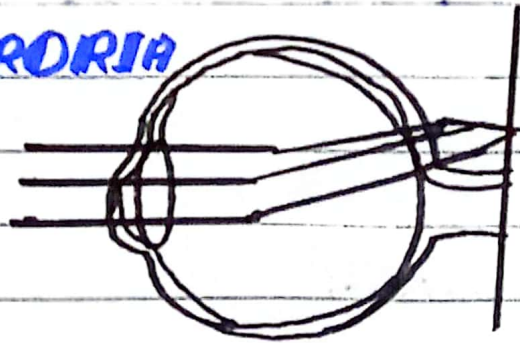
IMAGE FORMATION

It occurs when objects are focused in back of retina

CORRECTION

It is corrected with Convex lens

HYPEROPIA



CORRECTED

Question 4(b)

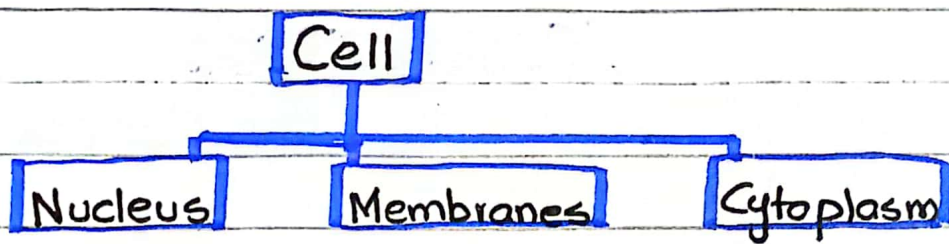
CELL

DEFINITION

"Cell is the basic structural and functional unit of body"

PARTS OF CELL

Divided into three main parts



NUCLEUS: The central part of cell
Genetic material resides here

MEMBRANE

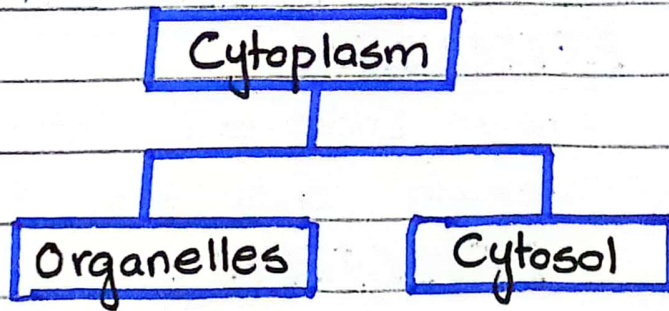
Cell is bounded by either single membrane or double membrane

Cell wall and cell membrane are primarily two membranes of cell.

CYTOPLASM

Cytoplasm is the interior of cell that surrounds nucleus

It includes organelles and jelly like fluid called cytosol



ORGANELLES OR UNITS OF CELL

Cytoplasm of cell contain many organelles that are responsible for various reaction in the cell.

- ↳ Endoplasmic Reticulum
- ↳ Golgi Apparatus
- ↳ Mitochondria
- ↳ Ribosomes
- ↳ Plastids
- ↳ Cytoskeleton

ENDOPLASMIC RETICULUM

It is system of membranes found throughout the cell - The membranes contain series of sheet called cisternae.

Two types of Endoplasmic reticulum.

TYPES OF ENDOPLASMIC RETICULUM

- Rough Endoplasmic Reticulum
- Smooth Endoplasmic Reticulum

FUNCTION :

- Plays important role in lipid formation and transportation of material
- Also involved in protein synthesis (Smooth Endoplasmic Reticulum)

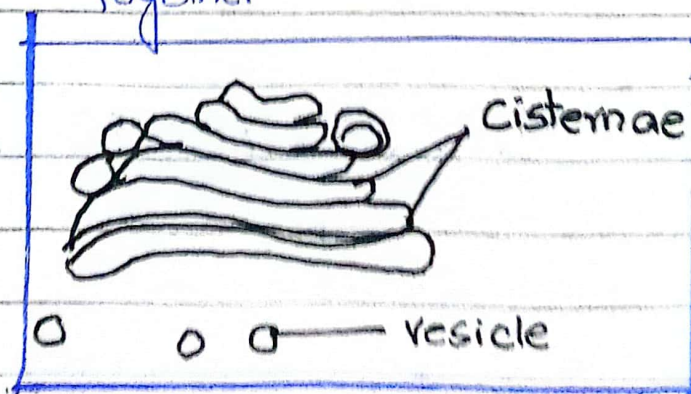
GOLGI APPARATUS

It was discovered by Camillo Golgi

STRUCTURE

It is set of flattened sacs (cisternae) which are stacked

together



FUNCTION

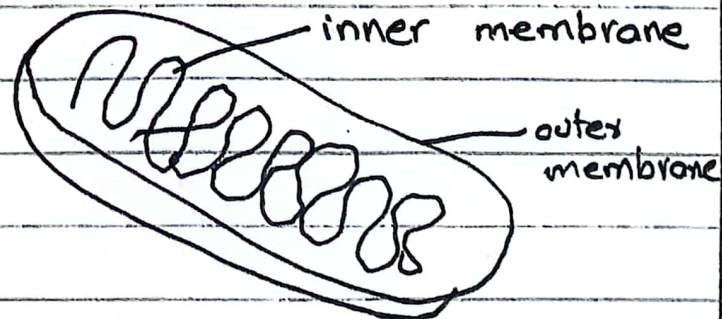
Its function is to store secretions and converts them into finished product

MITOCHONDRIA

In prokaryote mitochondria is absent
Mitochondria is known as power house of cell

STRUCTURE

They are bounded by double membrane
inner membrane and outer membrane
cristae



FUNCTION

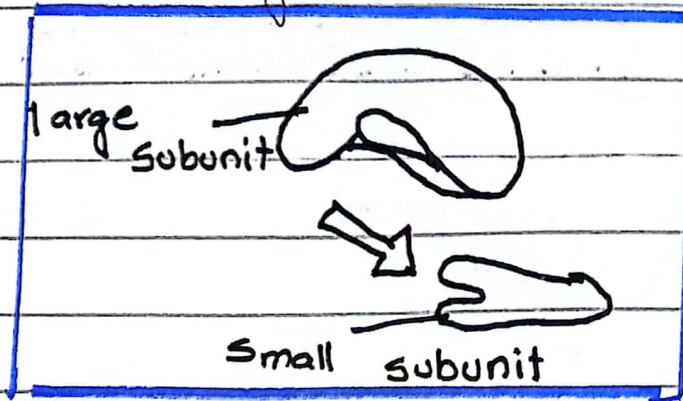
Respiration takes place in mitochondria
as result energy is released in
form of ATP

RIBOSOMES

These are tiny granules

STRUCTURE

Consist of two subunits
• large and smaller



FUNCTION

Involved in protein synthesis

Question 4(c)

GLAXIES

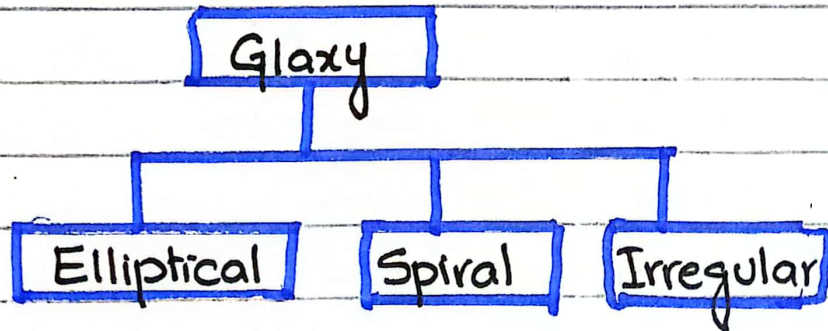
"Galaxy is the vast cosmic island of stars, gas, dust and dark matter held together by gravity"

TYPES OF GLAXIES

Galaxies are classified into three main categories

HUBBLE CLASSIFICATION

Galaxies were classified into three main categories by Hubble in 1920



SPIRAL GLAXIES

These have flatted shape.

MILKY WAY GLAXY is spiral galaxy.

GLAXIES ARE MOVING

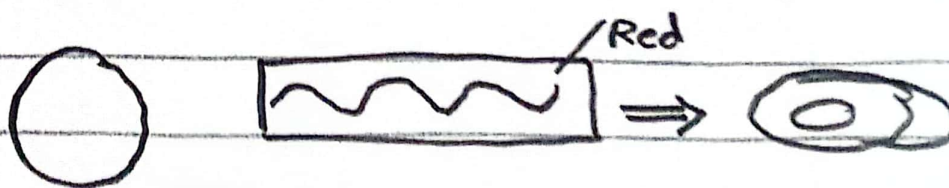
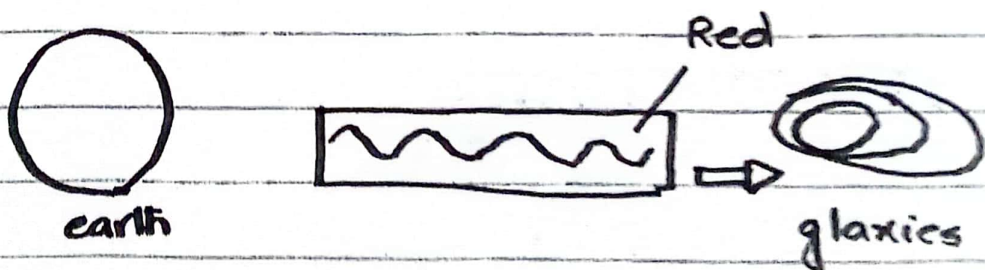
Glaxies are indeed moving
The redshift observed in light from
distant Glaxies justifies the movement
of galaxies

REDSHIFT

(An evidence for movement
of Glaxies)

The phenomenon occurs because universe
is expanding, causing galaxies to move
away from each other, stretching
the wavelength of light they emit
towards the red end of spectrum

Additionally gravitational interaction
between galaxies and clusters of
galaxies also cause them to move
relative to each other



Question 4(d)

COMPARISON BETWEEN EARTH AND SUN

EARTH	SUN
<u>SIZE</u>	
The earth is smaller than sun with diameter is just 12000km	Sun is much larger Its diameter is about 1.4 million km

COMPOSITION

Earth is composed of rocky materials, with solid iron-nickel core, rocky mantle and thin outer crust	Sun is composed of hydrogen (74%) and helium (24%) with other trace amount of elements
--	--

FUNCTION

Earth is rocky material and planet orbiting the sun - It harbors diverse range of ecosystems	Sun generates energy through nuclear fusion at the core.
--	--

Question 5(a)

FORMATION OF CYCLONE

CYCLONE

It is a system of radiating winds around a low pressure gradient core due to pressure gradient and Coriolis effect of spin motion of earth.

FORMATION

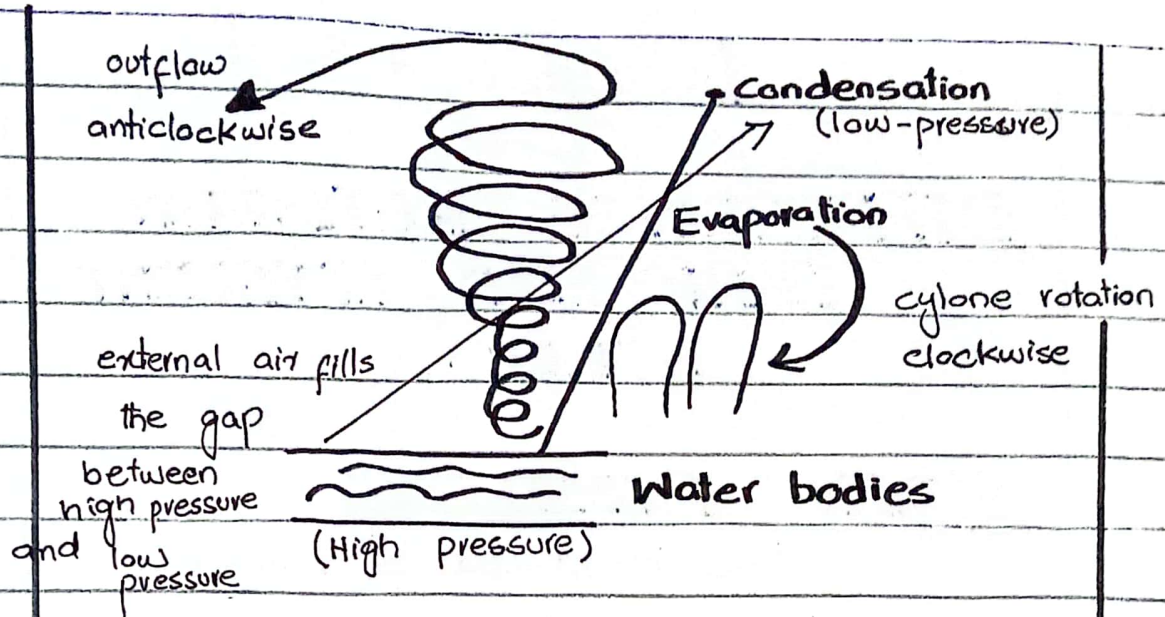
Cyclones are formed due to

- pressure gradient
- Coriolis effect

PRESSURE GRADIENT

As air over the ocean heats up, it rises and creates an area of low pressure beneath it. The surrounding air then rotates around low pressure centre in clockwise direction in southern hemisphere and in an anticlockwise in northern hemisphere.

The rotating air starts to pick up speed it spirals inward toward low pressure centre.



CORIOLIS EFFECT

The coriolis effect, caused by earth's rotation, helps to initiate the spin of cyclone. In the northern hemisphere cyclones rotate counterclockwise, while in southern hemisphere, they rotate clockwise.

Question # 5(b)

DIFFERENCE BETWEEN IONIC AND COVALENT BOND

IONIC BOND

"The bond that is formed by complete transfer of electron."

FORMATION OF IONIC BOND

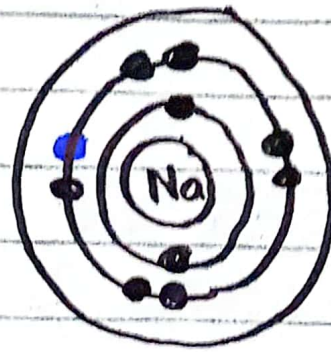
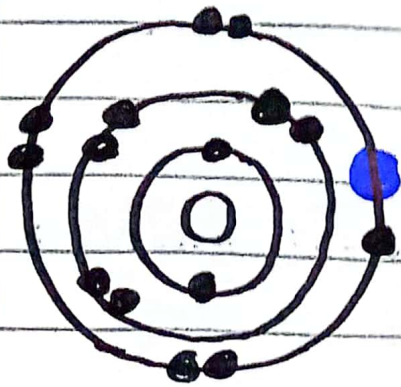
In ionic bond one atom donates electron to the other.

When atom donates electron the atom gets ionized.

CATION

The atom which loses electron and become positively charged cation

ANION : Atom which receives electron and becomes negatively charged ion

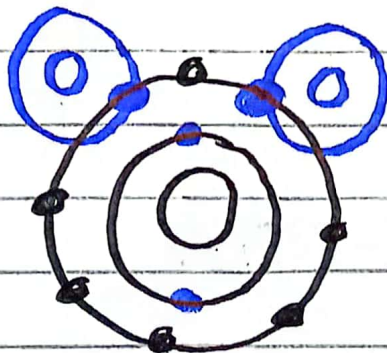
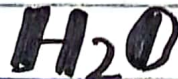


SODIUM CHLORIDE - NaCl

COVALENT BOND

The bond that is formed by mutual sharing of electron

EXAMPLE:



FORMATION:

Covalent bond is formed by sharing of electron -

Question 5(c)

USES OF GAMMA RAYS:

MEDICAL IMAGING

Gamma rays are used in medical imaging... technique like PET (Positron Emission technology) scans for detecting diseases and abnormalities in organ.

CANCER TREATMENT = These rays

are employed in radiation therapy to destroy cancer cell

INDUSTRIAL APPLICATION

They are used industrial radiography for inspecting welds and detecting flaws in metal parts

USES OF X-RAYS

MEDICAL IMAGING

X-rays are widely used in medicine for imaging bones and internal organ

AIRPORT SECURITY

For screening of luggage at airport

MATERIAL ANALYSIS

Used to study structure of material such as crystals in chemistry

USES OF RADIO WAVES

- Used for communication
 - Radar system
 - Used in Astronomy like radio telescope observe celestial objects.
-

Question (5d)

TIDES:

"Tides are rising and falling of sea level caused by gravitational forces exerted by moon and to a lesser extent the sun acting on earth's oceans"

HIGH TIDES

This is when water level is at highest level

It occurs roughly every 12hrs and 25min.

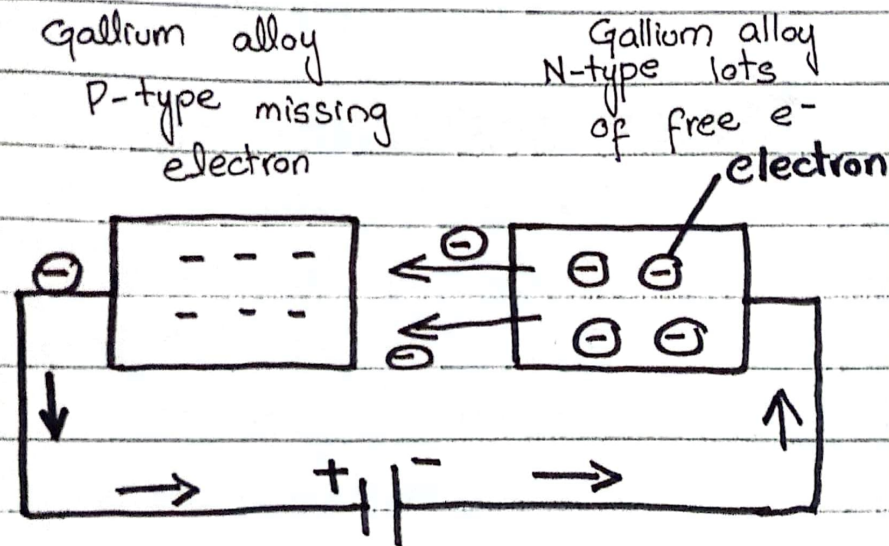
LOW TIDES

When water is at lowest level.

LED (LIGHT EMITTING DIODE)

LED is a semiconductor light source that emits light when current flows through it.

HOW LED WORKS



SECTION - II

Question # 8 (A)

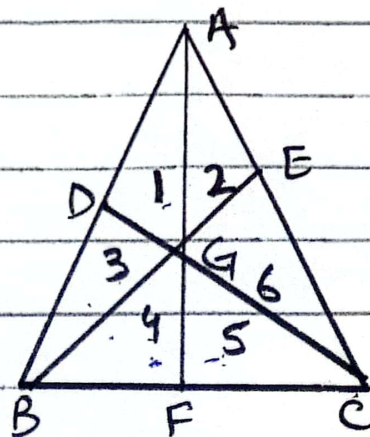
FORMULA OF IQ

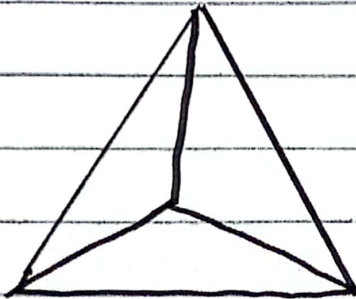
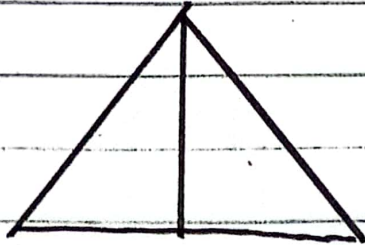
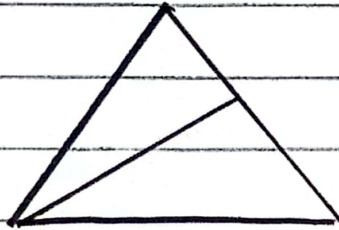
$$\text{IQ} = \frac{\text{Mental Age} \times 100}{\text{Chronological Age}}$$

FACTOR AFFECTING IQ

- Genetic factor
- Environmental factors
- Health and well being
- Brain development
- Learning experience

QUESTION 8 (B)





NO OF TRIANGLE = 16