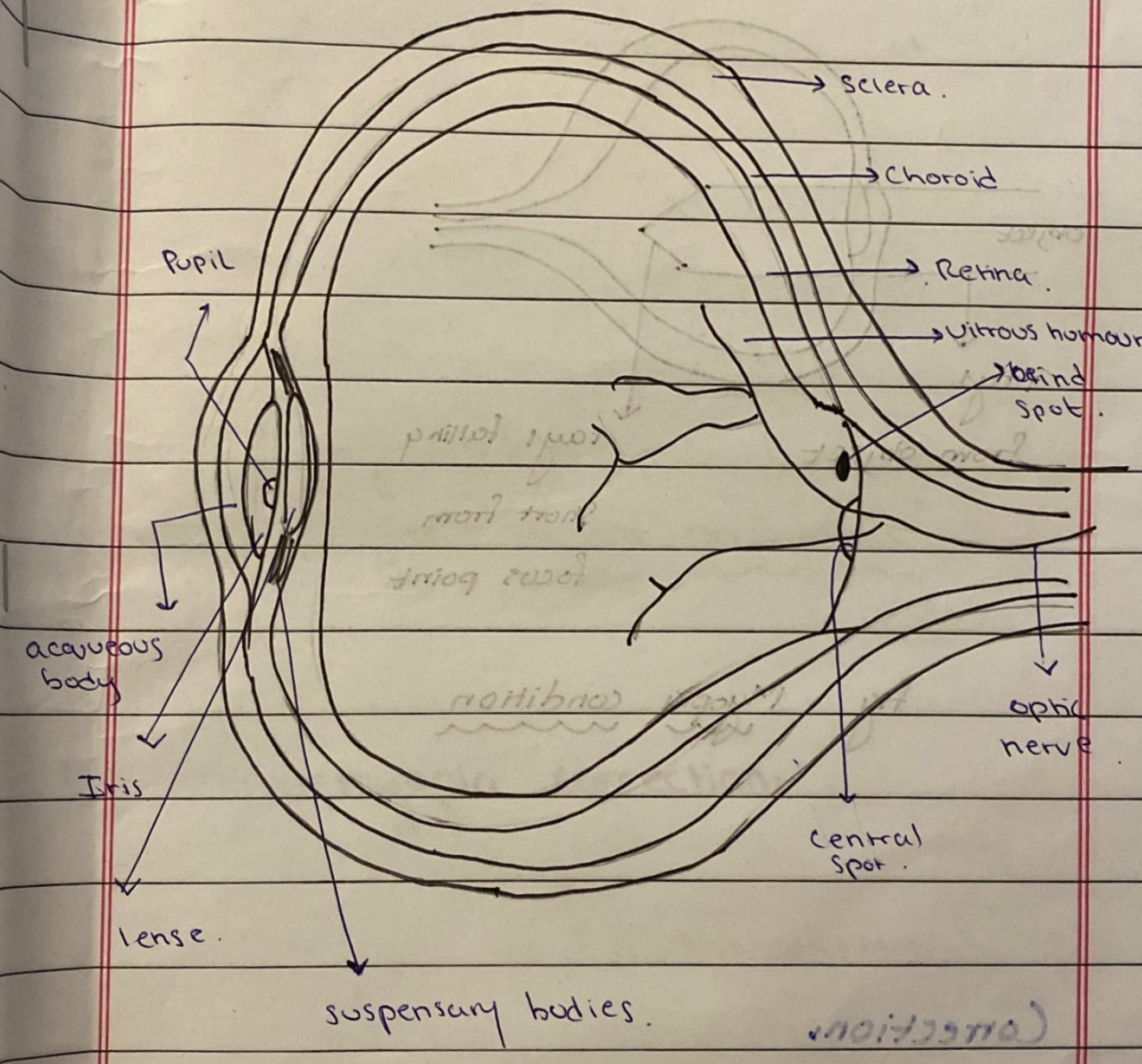
Day: _____ Date: _____

PART-II SECTION-I

QUESTION NO: 04

PART: (A)

STRUCTURE OF AN EYE:-



CORRECTION OF MYOPIA AND HYPERMYOPIA:-

Date:

Day:

(i) Myopia correction:

Myopia is ~~far~~ near sightedness in which far objects are not clearly visible by an individual.

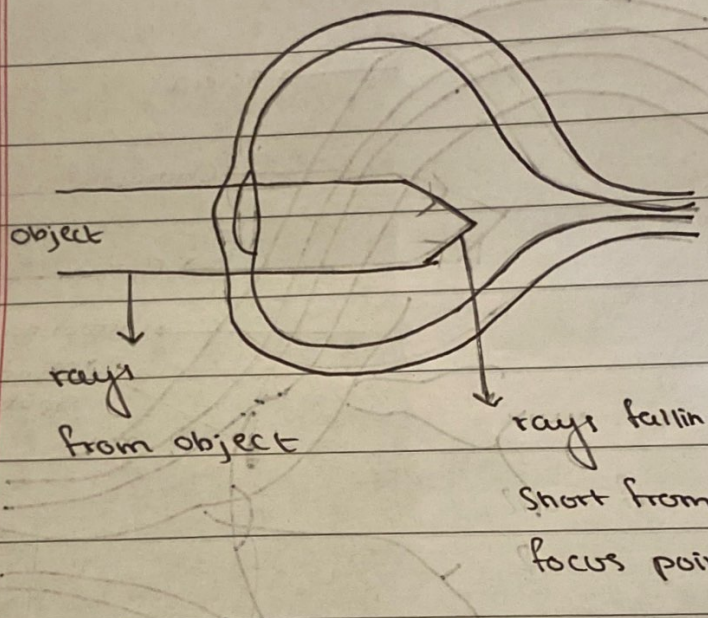
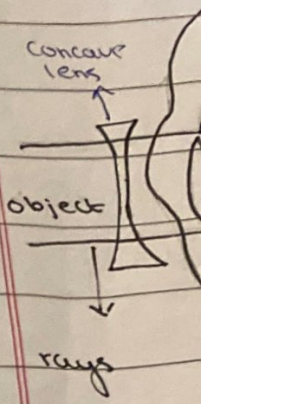


fig Myopia condition

Correction:

Myopia correction is with help of "concave lenses" which help guides the rays of an object to reach the central focalis point



(ii) H

Day: _____ Date: _____

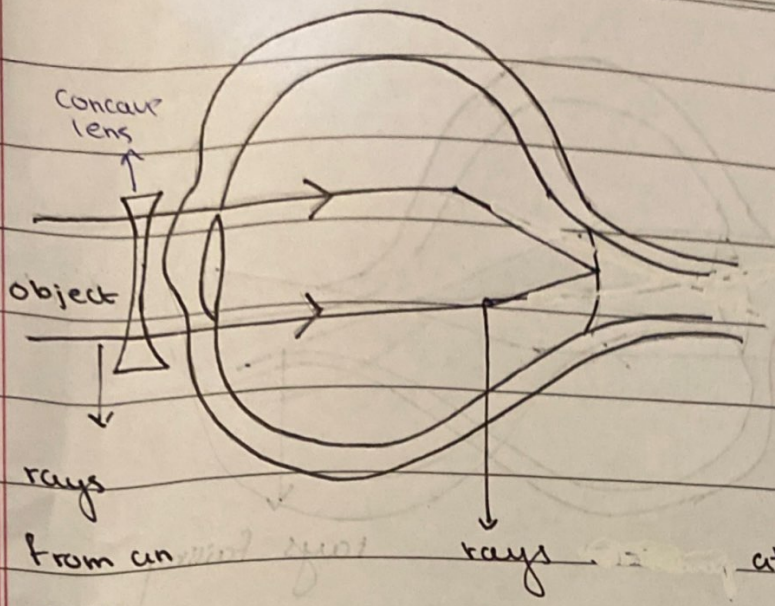


figure : Myopia correctedness

(ii) Hyper myopia correction:

Hyper myopia is far sightedness where the rays from an object fail to focus on a point and cross the central point of focus.

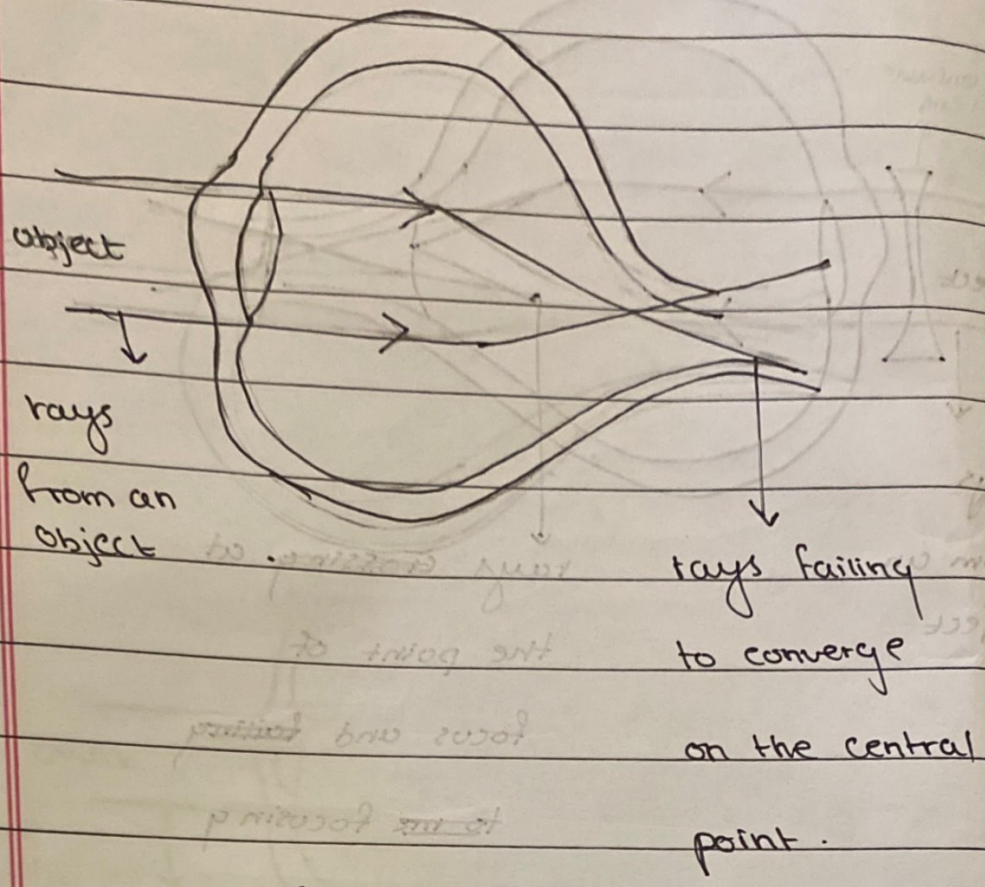
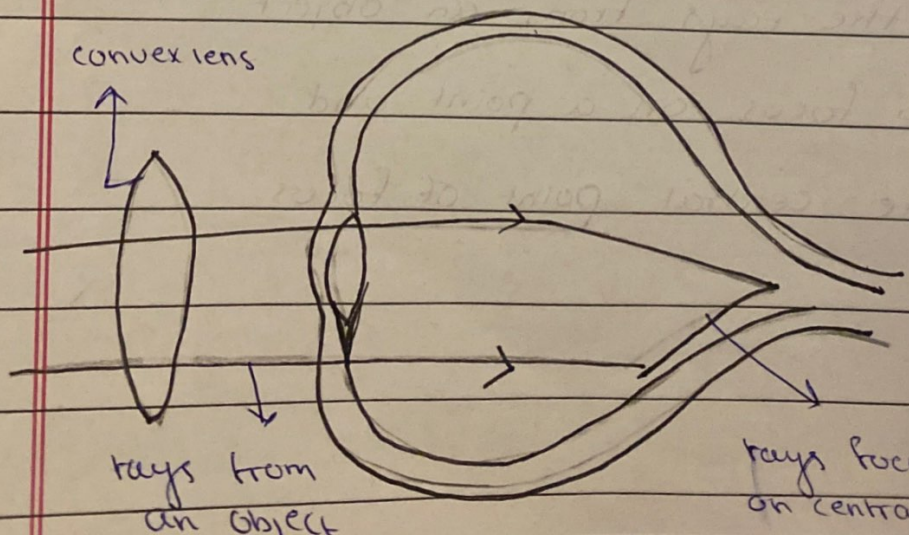


fig:- Hypermyopia condition

Correction:-

Hyper myopia correction is with help of "convex lens" which guides the focus of rays on the central point.



PART (B) :-

DIFFERENT UNITS IN HUMAN CELLS :-

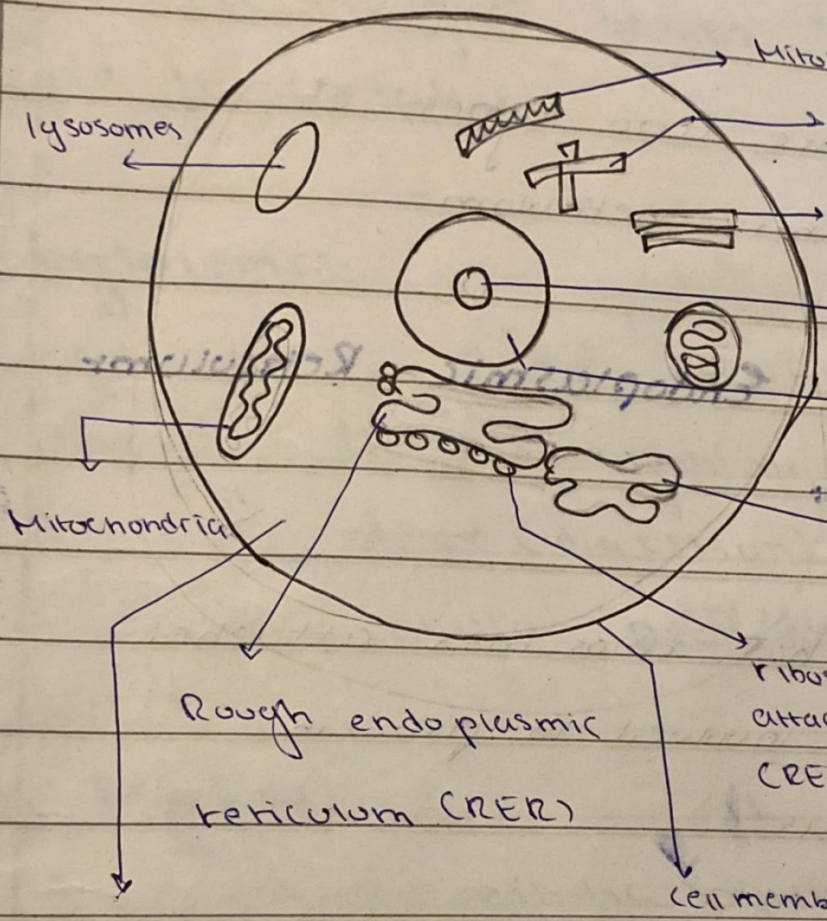


fig :- Cell structure of Human

FUNCTIONS :-

(i) Nucleus :-

Nucleus is the main controlling body of the cell

(ii) Nucleolus:

Nucleolus contains the genetic material, DNA and RNA.

(iii) Endoplasmic Reticulum:

There are two types of endoplasmic reticulum.

(a) Rough Endoplasmic Reticulum (RER):

RER has ribosomes attached and is involved in protein synthesis.

(b) Smooth Endoplasmic Reticulum (SER):

SER is involved in synthesis of lipids.

(iv) Mitochondria:

Mitochondria is the power

house of cell involved in
Adeno Triphosphate (ATP) production.
sine

(v) Golgi apparatus:

It is involved in packing of
material into golgi bodies
and transportation.

(vi) Lysosomes:

Lysosomes secrete specific
enzymes for the engulfing
and lysis of ce (digestion)
of certain cellular products

(vii) Myofiber:

Involved in mitotic spindle.

(viii) Cytoskeleton:

Involved in mitotic spindle.

(ix) Inter tubular fiber:

Hold the organelles together.

(x) Cell membrane:

Entrance and exit of specific molecules inside the cell.

(xi) Cytoplasm:

Conduction of various chemical reactions occur at this site.

PART (C):

GALAXIES:

Galaxies are a combination of dust particles, planets and stars, all held together with help of gravitational force.

TYPES OF GALAXIES:

(i) Spiral galaxy:

Whirlpool galaxy.

(ii) Elliptical galaxy:

Eg:- Andromeda.

(iii) Barred spiral galaxy:

Eg:- Milky way.

(iv) Irregular galaxy:

Eg:- Large / Small Magellanic Cloud.

GALAXIES ARE MOVING OR AT REST:

Galaxies "are moving" and not static.

Justification of moving galaxies:

Galaxies are moving according to "Big Bang Theory", universe is expanding at a constant rate since its formation.

(i) Starting point of singularity:

(ii) Expansion of particles and formation of quarks and sub-atomic particles

(iii) Constant rate of expansion.

$$d = v \times t$$

where

d = distance

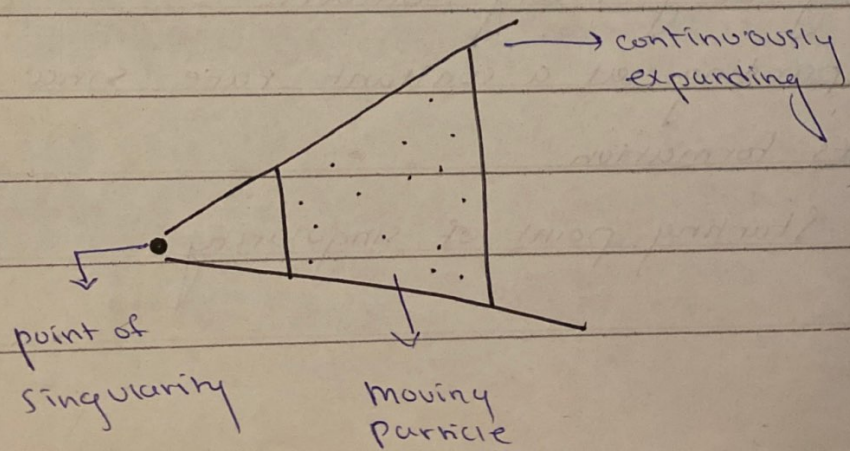
v = velocity

t = time

$$t = \frac{d}{v}$$

$$t = \frac{1}{v}$$ $\therefore V = H_0 d$ (Hubbles constant)

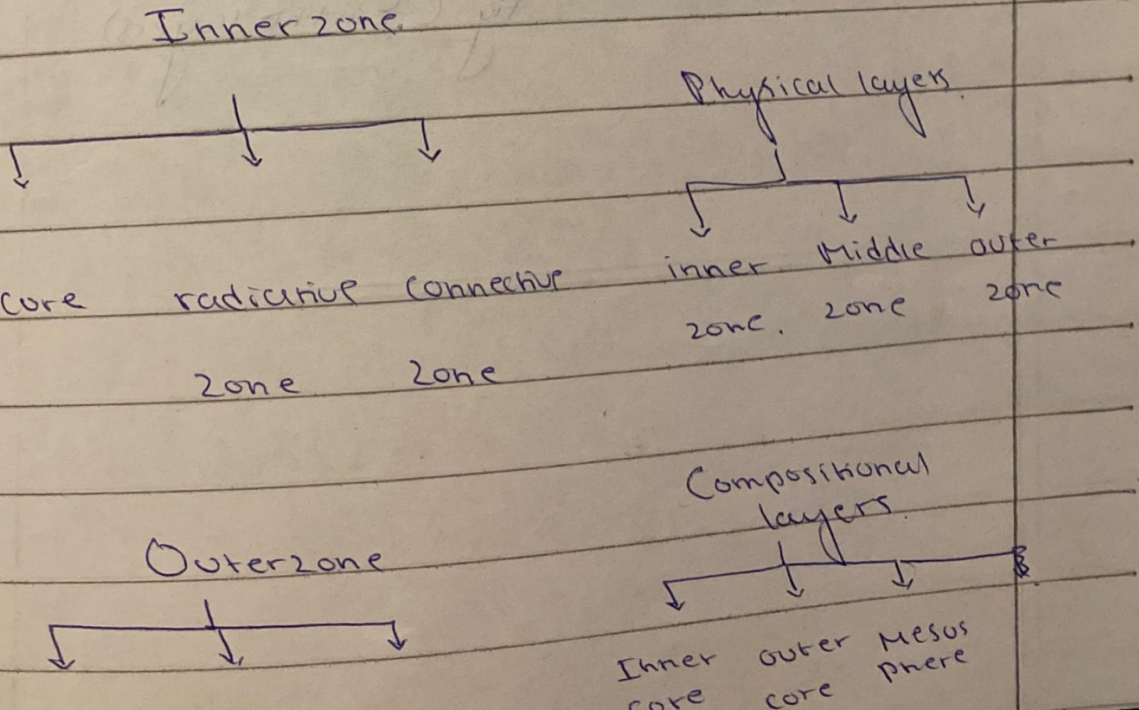
$$t = \frac{1}{H_0 d}$$



PART D:

COMPARISON OF MAIN PARTS OF SUN AND EARTH:

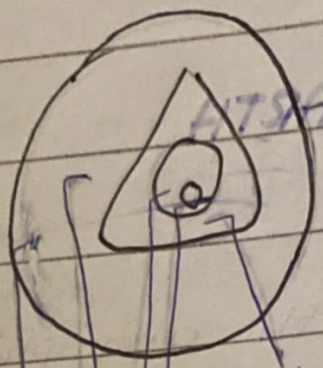
SUN	EARTH
(i) Sun is composed mainly of Hydrogen	(i) Earth's atmosphere is mainly composed of nitrogen.
(ii) Sun is composed of six main parts. Three inner and three outer	(ii) Earth's layer can be divided into physical and compositional layers



Compositional layers

lithosphere

Asthenosphere.



connective zone

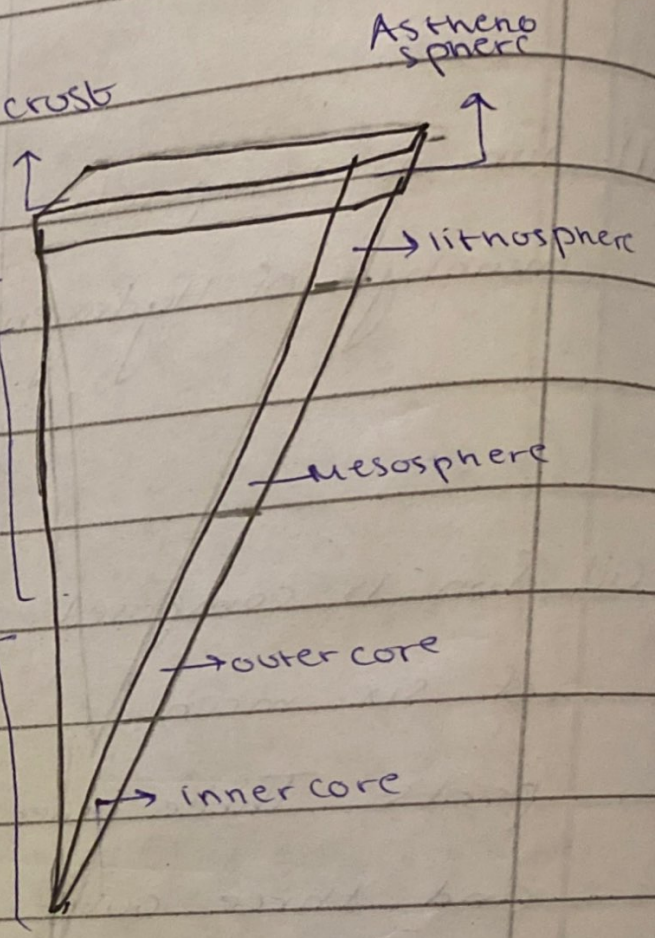
radiative zone

core.

photosphere

corona.

fig (Sun layers).



middle corona

inner core.

fig (Earth layers)

QUESTION NO: 05

PART(A):

CYCLONE FORMULATION:

Cyclone consists of a "a whirlwhind of fast moving winds on the surface of sea water"

Formulation of cyclone consists of following steps:

(i) Rise of warm air from the surface of sea water.

(ii) Upward movement of the air and subsequent cooling of particles

(iii) Creation of low pressure at the base due to upward movement of air particles.

(iv) Occupation of the leftover space at the lower pressure area by the new particles of rising air particles.

(v) Cyclone consists of an eye central portion with low atmospheric pressure and an outer portion known as eye wall which is the most dangerous portion

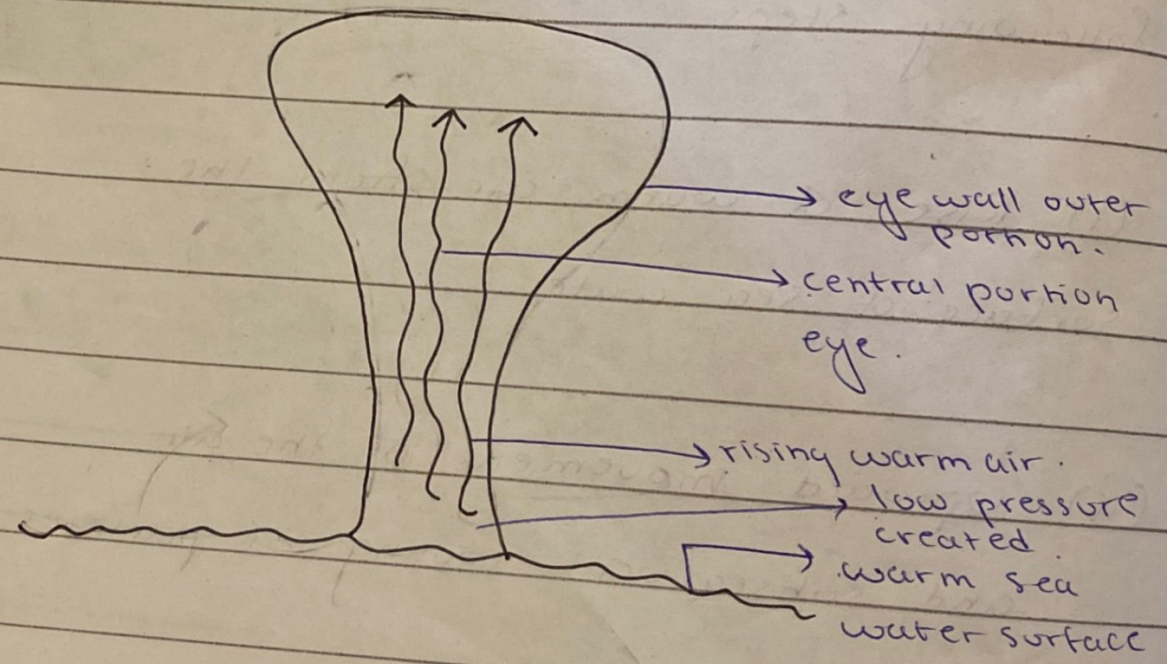
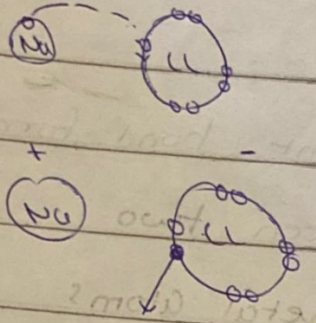
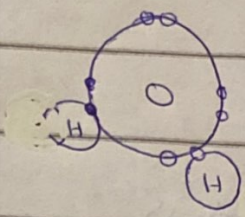


figure: formation of cyclone

PART (B):

DIFFERENTIATE BETWEEN IONIC AND COVALENT BOND:

IONIC BOND	COVALENT BOND
Ionic bond is formed between metal and non metal atom	Covalent bond formed between two non metal atoms
Boiling point and melting point is high	Boiling and melting point is low
State of elements with ionic bond at room temperature is solid	State of elements with covalent bond at room temperature is liquid

IONIC BOND	COVALENT BOND
Flammability is high	Flammability is
Example NaCl, H_2SO_4	Example : H_2O
 transfered electron by Na.	

PART (C):

USES OF GAMMA RAYS, XRAYS, AND RADIO WAVES.

(i) GAMMA RAYS:.

Gamma rays are short wavelength rays of electromagnetic radiations spectrum.

There uses are :-

(i) Cancer therapy
(ii) Surgical procedures
(iii) Stone cutting
(iv) Industrial uses

X-rays :-

X rays are short wavelength electromagnetic radiations.

Uses are as follows :-

(i) For medical purpose daignosis
(ii) Radiation therapy.
(iv) Detection of artifacts

Radiowaves :-

Radiowaves have the longest wavelength

Used for following purposes :-

(i) General Positioning System (GPS)

(ii) Mobile coverage

(iii) Radio show transmission.

(iv) weather forecasting.

PART(D):

TIDES PHENOMENA:

Tides are produced due to gravitational pull of the moon. Their rise and fall coordinates with moon cycle.

Tides are the rise and fall of the surface water of sea. Their production is dependent on the following factors.

(i) Gravitational pull of moon.

(ii) Rotation of Earth around its axis.

LIGHT EMITTING DIODE PHENOMENA:-

Light Emitting Diode (LED) is a semiconductor with p and n junction which is involved in emmission of light and used in various technological commodities.

Process of emission of light by LED :-

(i) Band width present between p and n junction

(ii) P junction containing abundance of electrons.

(iii) n junction containing abundance of holes.

(iv) Stimulus drives electrons towards

the filling of holes and

(v) Crossing of bandwidth by electrons emit light.

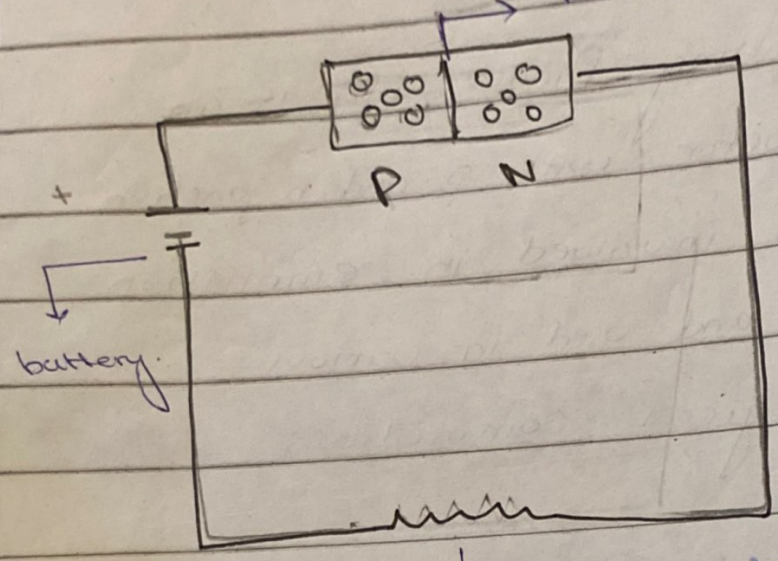


figure :- LED circuit.

SECTION-II

QUESTION NO:07

PART (A):-

Percentage error = $\frac{\text{true value} - \text{Measured value}}{\text{True value}} \times 100\%$

$= \frac{\frac{5}{3} - \frac{3}{5}}{\frac{5}{3}} \times 100$

$= \frac{16}{15} \times \frac{3}{5} \times 100$

$= 16 \times 4$

$= 64\%$

PART (B):

Ratio of chocolate to icecream in a box is 5:8

Let x common multiple.

Number of icrecream cones $8x$

and choclotes $8x$

No. of chocolates is 30.

$5x = 30$

$x = 6$

No. of cones $8 \times 6 = 48$.

∴ No of cones in box is 48.

Part (c):-

Tablet contains medication = 30 mg.

No. of tablets for 240 mg.

30 mg medication = 1 tablet.

1 mg " $= \frac{1}{30}$ tablet.

240 mg " $= \frac{1}{30} \times 240$ tablet

$= 8$ tablets.

∴ Hence 8 tablets to Ms Smith for medication.

PART (D)

Average of 50 numbers = 20

Sum of 50 no. = 20 × 50 = 1000

Sum of discarded = 37 + 43

= 80

Remaining no. = 1000 - 80 = 920

Total remaining no. = 48.

Average of remaining no. = 920 / 48

= 19.17.

QUESTION NO: 08

PART : (A)

IQ (Intelligence Quotient) = Mental age / (chronological age.

Factors affecting IQ:

Environmental

Cognitive development

Hereditary factors

Education

Parenting

Part (b):

No of traineyles = 14

Part (c):

$$\text{Probability} = \frac{\text{no of times}}{\text{Total possible outcomes}}$$

$$= \frac{2}{14}$$

$$= \frac{1}{7}.$$

PART (D):