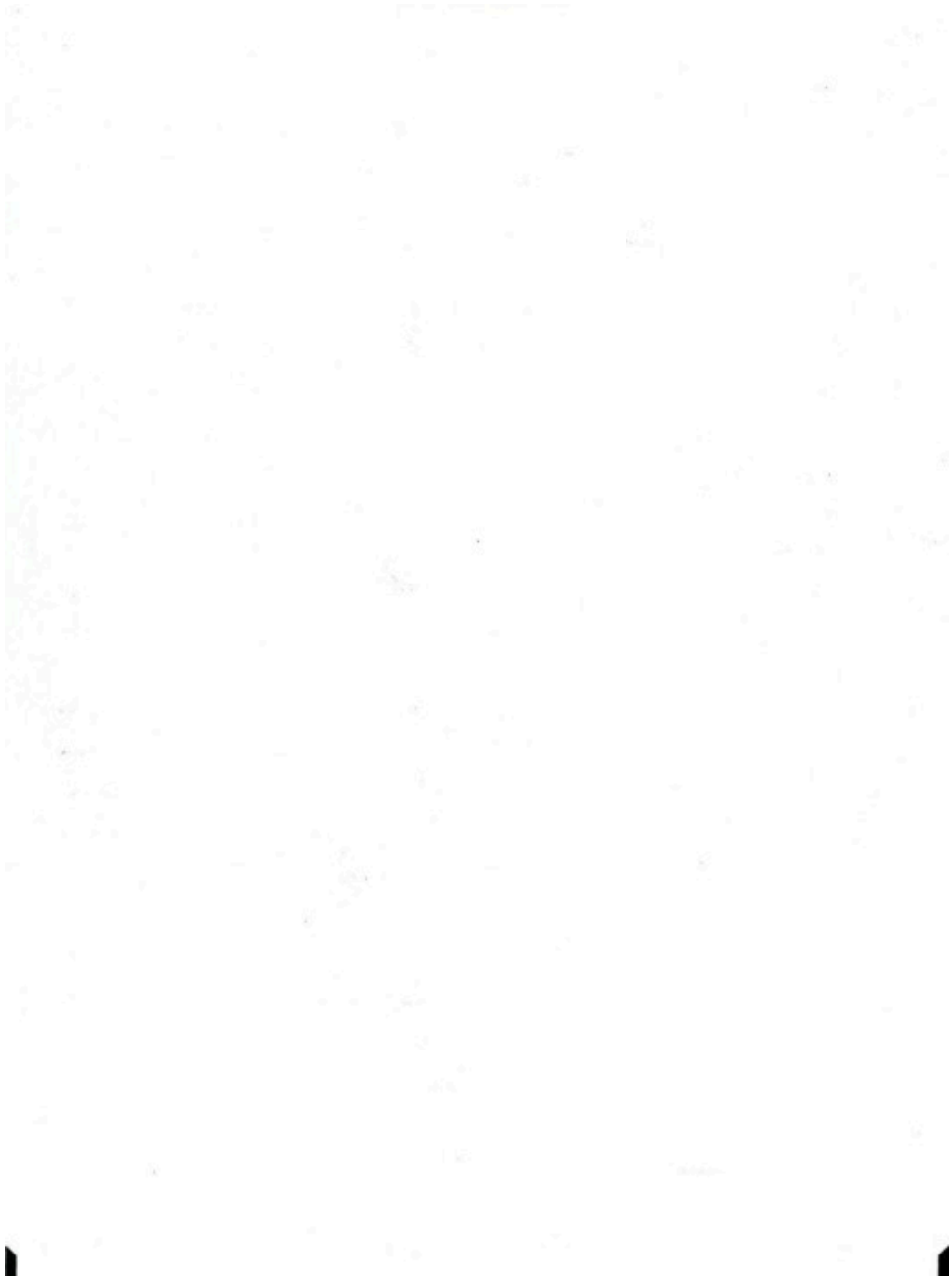




Use for rough work

Q. No. 2 Part (i)

-: Isotopes :-

Defination:- Isotopes are defined as element that have Same **atomic number** (Num of protons) but **different** number of **nucleon** (mass no)

- Same proton number (atomic num)
- Different nucleon number
- Due to differ number of neutrone.

-: Condition II :-

Isotopes have **Similar Chemical** properties.
But isotopes have **different physical** properties.

Example include

$^{1}_{1}H$	$^{2}_{1}H$	$^{3}_{1}H$
Proterium	deterium	tritium

Q. No. 2 Part (ii)

-:Electric field:-

Definaction:-

Electric field is a **region around a charged** object where it exerct **force** on **another** object placed The object must placed in the field region.

Example:- A **magnet** attract **iron pins** even without direct Contact. Direction of mag E-F is movement of positive Ch

Condition II

Electric field exerct on an object even when they are **not in Contact**.-

Example:- Different poles of magnet attract each other even they are at a distance each other.

Direction of electric field is from N pole to S pole

Q. No. 2 Part (iii)

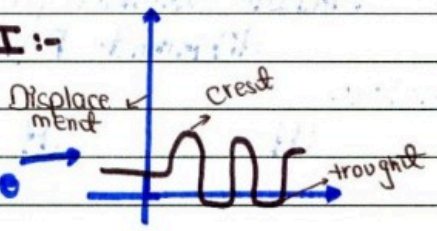
-:Transverse waves:-

Definaction:- Transverse waves are the waves in which disturbance occur **perpendicular** to **direction** of motion.

Energy transfer:- The particles in transverse wave move **up** and **down** while energy transfer **horizontally**

Example:- Wave in water, the ripples cause the energy transfer horizontally while particle move up and down.

Condition II:-



Q. No. 2 Part (iv)

Refractive index:-

Measure of measurement of **light ray** when it pass from **one** medium to another

Mathematically

We know that

$n = c/v$ $\quad \frac{3\times10^8 m/s}{2\times10^8 m/s}$

$n = 1.5 \times 10^8 \times 10^8$ ~~per~~

$n = 1.5$

Q. No. 2 Part (v)

-:Numerical based:-

$V = 220V$

$I = 2A$

We know that

$P = V \times I$

$P = 220 \times 2A$

$P =$ ~~to~~ 440W

.....

Q. No. 2 Part (vi)

-: Difference AC and DC :-

AC (Alternative Current)	DC (Direct Current)
• Only **one direction** forward direction (Current flow)	• **Both direction** forward and reverse (Current flow)
• Single ~~Continuous~~ muscle Contraction	• Conti Single muscle Contraction.
• **More dangerous** than DC (above 500V)	• **Less dangerous** than AC
• Enough energy for the victim death cause	• Enough energy to push the victim away.

Q. No. 2 Part (vii)

-: Echo :-

Definaction:- Echo of Sound wave is characterist of Sound waves that **reflect back** after hitting a Surface.
The time and distance must be "0.1s and 17m".

Echo production:- A **Sonar** is a device that Send Sound wave into water and return as a echo back to the Ship.

Example:- Transducer is device that Send **high frequency** Sound into our body and return as a echo with real time image of tissue and organs.

Calculating distance:- To calculate distance formula $d = v/2 \times t$ will be used.

.....

Q. No. 2 Part (viii)

-:OHM's LAW:-

OHM's law State the relation-Ship between Current "I" and potential difference "V"
Especially when the temperature "T" and physical parameter remain Constant
Formula of OHM's Law is V=IR

-:Numerical:-

Given data:-
Resistance = Ω = 10Ω
Current = I = 2A
Voltage = V = ?

-: Solution:-
We know that

V=IR **or** I=V/R
Putting values
V = 2A × 10Ω
V = 2A × 10V/A
V = 20voltage **Ans**

Q. No. 2 Part (ix)

-: Half-life:-

Defination:- The **time** ~~ration~~ in which a unstable ~~nuc~~ Substance divide into two nuclei with time ~~and~~ **duration** is called **half life** of radioactive Substance.

Mathematically :- $N = (\frac{1}{2})^{n} \times N_0$ **or** $N = (\frac{1}{2})^{\frac{\Delta T}{T_{1/2}}}$

Half life of a Substance change with fixed amount of time.

Example:- **Iodide 131** have a half life of 8days means that it will take eight days to become half and after another 8 days it become 1/4

Best time:- Best time of a Substance for Carbon dating of C-14 is 50,000 years.

.....

Q. No. 2 Part (x)

:- Wave length and diffraction :-

Affect of wavelength on diffraction

Definaction:- Wavelength is distance blw two Consecutive Crest and through

Definaction:- Diffraction is bending of light from Small whole or gaps

Affects :-

Wavelength = Gap Size	Similer diffraction (often wider diffraction
Wavelength ≥ Gap Size	Strong diffraction
Wave length < Gap Size	Less diffraction.

Q. No. 2 Part (xi)

Boiling and Evaporation

Evaporation	Boiling
Occur at Surface of liquid	Throughout the liquid
It is a Slow process	It is a fast process
No bubbles formation	Bubbles are formed
Use Surrounding heat Energy	Use external heat Energy
Less effected by external pressure	Highly affected by external pressure
Occur at any temp	Occur at fixed temp. (100°C)

Q. No. 3 (Page 1)

-: Conduction :-

Defination:- Conduction is a process in which heat transfer from atom to atom i.e from one object to another object.

Example include:- A Cooking pot top edge get extremely hot when placed on a burner. This is because of Conduction

Conduction is only possible in Solid

K.E theory:- (kinetic particle theory)

According to kinetic particular theory, Solid have tightly bond Lattic Structure due to Strong attractive force. (Force of attraction)

Particles in Solid have less space and they only vibrate in to and fro motion. This motion of This motion of particles Cause transfer of energy in the form of heat (thermal energy).

- In Conductor Heat transfer quickly due to free $\bar{e}$
- In Insulator: Heat transfer Slow due to no free $\bar{e}$

-: Application of Conduction :-

Cooking process:-

In Cooking process, we first provide heat to the Cooking pot from burner.

The Solid metal pot transfer heat energy from atom to atom and thus provide heat (thermal energy) to food for Cooking

- Ifo Copper have free electron So they under go Conduction process more quickly.

Q. No. 3 (Page 2)

Basic difference:-

Basic difference in Conduction and Convection

Basic difference in Conduction and Convection lies in the Conveeclcept that Conduction take place in **Solid** only cohile Convection take place in **liquid** and gas.

Conduction = In Solid only **(Not in liquid)**

Convection = In fluid **(Gas, liquid)**

Copper as a good Conductor:-

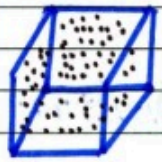
Copper is a good Conducclor tl because they have large number of free ē cohich hold them together and allocw heat transfer easily

Sequence of Conductor and insulator

Besct Conducclor **Besct insulato**

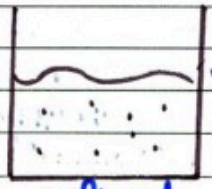
Copper > iron > Carbon > coarter > air > glass > rubber

-: Diagram:-



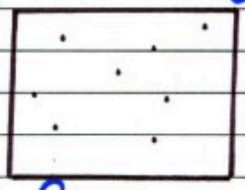
Strongly tight particles

Solid



less space particals

liquid



Free moving particle

Gases

Q. No. 4 (Page 1)

-: Pich of Sound :-

Definition:- Pich of Sound wave is the characteristic of Sound waves by which we can differentiate between Shrill and grave Sound

It is not a physical quantity thats why it cannot be measured **Relation:-**

Pich of Sound ∝ Frequency of Sound

High pich = High frequency = Shrill Sound
Low pich = Low frequency = Grave Sound

Womens having Shrill Sound:-

Womens generally have **Shrill Sound** than the mens have grave Sound because womens have **high frequency** Sound waves while mens have low frequency Sound waves.

-: Loudness of Sound :-

Definition:- Loudness of Sound is Characteristic of Sound wave by which we can differential between loud and faint Sound:-

-: Loudness ∝ Amplitude :-

High amplitude = Loud Sound
Low amplitude = faint Sound

-: Factor affecting Loudness :-

Surface area:- distance:-

Distance is inversely proportion, Less distance Loud Sound while Large distance = Low Sound

Distance ∝ 1/Loudness

Q. No. 4 (Page 2)

Sensitivity of Ear:- Sensitivity of ears is also a factor indicating that more sensitive ear can detect more loudness.

Sensitivity ∝ Loudness

Amplitude of Sound:- Amplitude have a direct relation high amplitude indicate high energy while Low amplitude indicate low energy

Loudness ∝ Amplitude:-

-: Factor affecting pitch:-

Frequency of Sound:- Pich is affected by Frequency of Sound in which high pitch indicate high pitch low frequency indicate low pich

Frequency ∝ Pitch

- Pitch is independent upon the amplitud or energy of Sound
- Loudness is independent upon the frequency of Sound

Condition II:-

Q. No. 5 (Page 1)

Linear Expansion

Defination:- Linear expansion mean increase in Size of matter on heating.
Change in length of Solid object on heating is called linear thermal expansion of Solid:-

Factor affecting linear expansion:-

Temperature:- When a temp of Solid increas its atom gain enough energy and they Start to Vibrate or move around each other.
They increase the gap blw particles which cause them to expand the length
The temp increase length of Solid object.

Original length:- In linear thermal expansion the original length of rod is equal to increase in length of the rode when it is heated

Nature of Material:-
Different material expand different upon heating.
The thermal expansion of matter depend upon the atomic Structure and Strength of attractive force blw the particles
linear thermal expansion depend upon the Structure of matter.
Different material have different expansion.

Q. No. 5 (Page 2)

Mathematically:-

$\Delta L \propto L_o \Delta T$

Proportionality Sign Change

$\Delta L = \alpha \times L_o \Delta T$

$\frac{\Delta L}{L_o} = \alpha \times \Delta T$

alpha is assigned seperately

$\frac{\Delta L}{L_o \times \Delta T} = \alpha$

The Specific formula include

$\alpha = \frac{\Delta L}{L_o \times \Delta T}$

In alpha Case:-

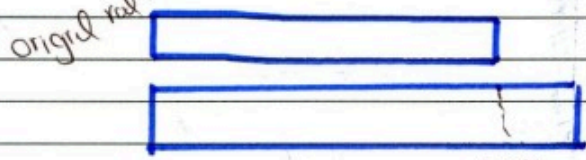
$\alpha 3\alpha = \beta$

$\alpha = \beta/3$ Ans In Specific Condit

-: Condition II:-

-: Space blw railway tracks:-

Expansion joints are blw railway tracks becaus railway track expan in Summer due to heat If there is no space then they may cause damage to Structure of railway.



Linear thermal expansion:-

Q. No. 6 (Page 1)

-: Transformer :-

Transformer is a device that is used to balance the voltage

It is used in our daily life.

Working of transformer:-

Transformer work on principal in which the AC is connected to internal circuit that cause change in current direction and magnetic field Vp.

They are then transformed to the Secondary Coil called the Vs.

An induced e.m.f is produced that cause the Secondary Coil called Np to current flow

Secondry coil depend upon the position of turn in Secondary Coil to primary Coil

Mathematically $\frac{Vs}{Vp} = \frac{Ns}{Np}$

Types of transformer:-

Two ideal types of transform

Step-up-transformer

No of turn in Secondary Coil is greater than no of turn in primary Coil

So voltage across Secondary is greater than the primary

Step down transformer

No of turn is Secondary is less than no of turn in primary Coil

So voltage across Secondry is less than voltage

Q. No. 6 (Page 2)

across primary.

ideal transformer:-

Ideal transformer work on the principal that the power across secondary is **equal** to power to primary.

There is no **distribution** of power by itself

Mathematically:

$$I_S V_S = I_P V_P$$

