

Tooba Suhail

Question no:5

(A) : What is sea surface temperature rise? How does it affect the formation of tropical cyclones?

(i) Sea Surface Temperature Rise:

Sea surface temperature rise refers to the rise in temperature of ocean waters. This is due to global warming. As when the temperature of the earth surface rises it shifted towards the ocean surface. Sea Surface Temperature (SST) is 26.5°C and storm comes when this average temperature rises.

(ii) SST affect the formation of tropical cyclones:

When there is SST rise beyond 26.5°C it led to the storms and tropical cyclones. This warm water changes its physical structure and results in water surges.

(B) How does Optical Fibre work?

1- Optical Fibre Mechanism:

Optical Fibre mechanism depends on total internal reflection process in which data convert from data in to light signal.

2- Process:

(i) Transmission: This is first stage in which transmitter present in optical fibre converts data in to light signal i.e wave signal.

(ii) Core and cladding: Then this light signal move towards core and cladding of the optical

fibre in which core is the internal layer having high refractive index and cladding, the outermost layer to the core has low refractive index ($n_1 > n_2$). This helps in significant total internal reflection and signals remain in the core while travelling.

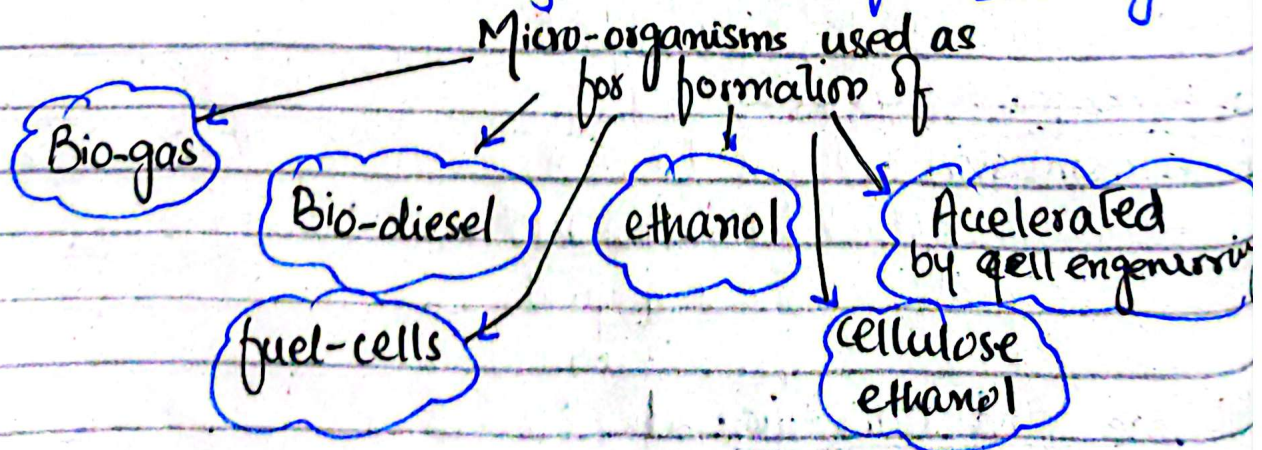
(iii) Propagation of the signals:

Light signals propagate and travel via optical fibre by bouncing horizontally and reflecting continuously refers as core-cladding interface.

(iv) Reception of signals:

Light signals can be received, at the end of the photodiode (receiver) is present which receives the signals and convert into data again.

(c) Discuss different ways in which micro-organisms can help in meeting the current fuel shortage.



Biogas

Micro-organisms convert the organic material i.e. food decay and waste agricultural residue into methane & other gases by breakdown process & such gas used as for heat and electricity purpose and renewable energy systems.

Bio-diesel

Some micro-organisms synthesize lipids can be used as for bio-diesel

Fuel-cells

Some micro-organisms can directly operate the electric-system by enzymes synthesis & transfer of electrons used as for electric vehicles.

Ethanol-formation

By the breakdown the micro-organisms release ethanol which can be used as gasoline (fossil fuel). It is a good source of renewable energy.

Cellulose ethanol

Useable fuel can also be generated by the degradation of cellulose from organic decay so that ethanol produced used as renewable energy resource.

Accelerated by

cell-engineering
Cell engineering can be done to boost the fuel formation by micro-organisms

D- Food preservative

Food preservatives used to increase the shelf-life of food. It also prevents contamination

Food Additives.

Food additives are the components which can be used to enhance food,

from the food-borne
illness and the other
micro-organisms
formation.

For example:

Sodium benzoate:

It can be used in
soft-drinks, jams &
pickles.

Potassium Sorbate:

It can be used in
cheese and wine.

colour and food taste
as well as food smell.

Desirable smell, colour
and taste also installed

in your food by addition
of food additives.

For example:

Preservatives

Colourants

Flavors

Emulsifiers

Sweetners

**Q.3 (a) What are the proteins and carbohydrates?
Give their digestion.**

Proteins:

These are the large molecules made up of
chain of amino acids which can help in
building and repairing tissues.

Digestion:

Stomach:

Protein present in the food can be converted
in to polypeptides in the pH acidic. This
process can be done by pepsin enzyme.

Small intestine:

The main digestion done in small intestine
where such polypeptides convert in to
small peptides with the help of trypsin.

and cryptopsin.

Furthermore peptidases enzyme breakdown the small peptides into amino acids and it absorbs by blood stream.

Carbohydrate:

Carbohydrates are the large molecules made up by chain of monosaccharides (unit) and converted by amylase and other relevant enzymes.

Digestion:

Mouth:

Starch converted into maltose with the formation of amylase.

Stomach:

HCl present in the stomach & so that it stops the maltose digestion temporarily.

Small intestine:

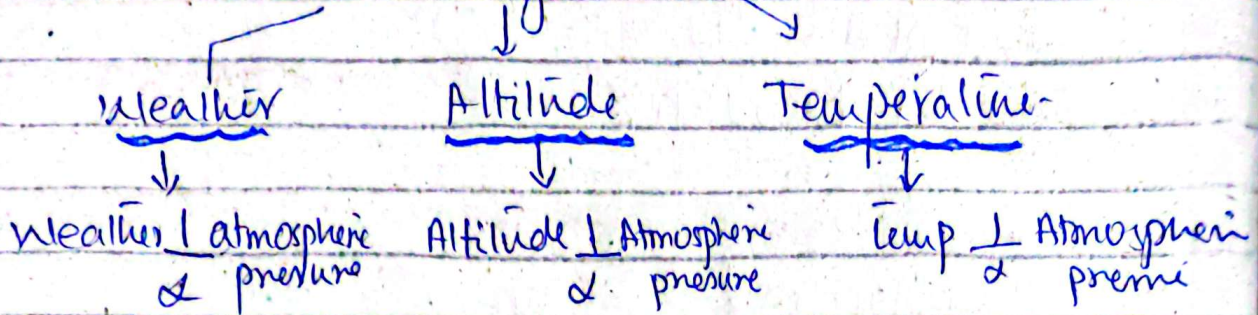
Main digestion of carbohydrate done here. Pancreatic amylase convert further starch into maltose, so that all lactose, maltose further digested into monosaccharides and absorbs in blood stream.

(B) Explain the following.

Atmospheric Pressure:

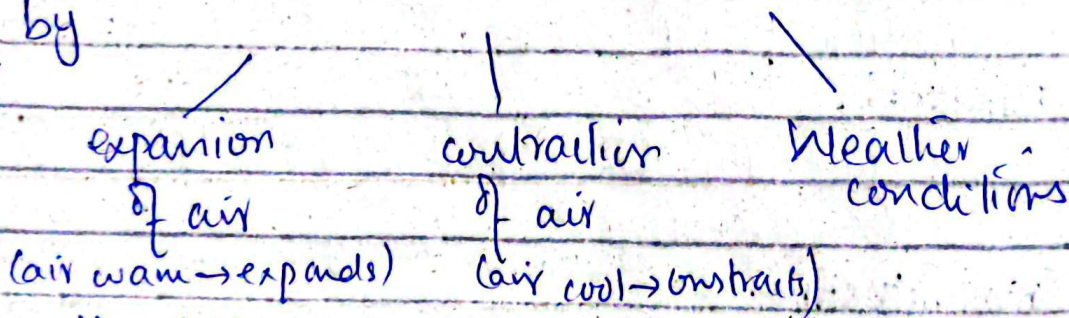
Atmospheric pressure is the force exerted by the weight of the air on a given object. The standardized atmospheric pressure is

considered as factors: Atmospheric pressure can be accelerated by.



(b) Atmospheric temperature:

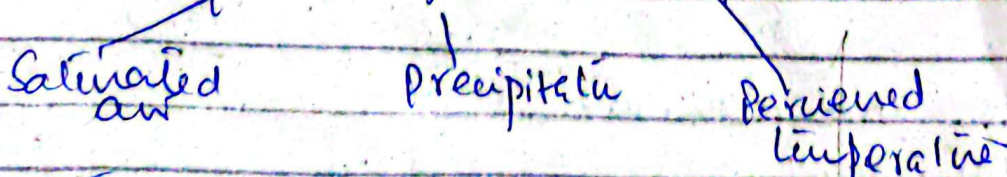
Heat or cold measure in a substance or environment. Temperature is the way of measuring, the ordinary units used Celsius, Fahrenheit and Kelvin. It can be accelerated by:



(c) Humidity:

The amount of water vapour present in the atmosphere referred as humidity. The 100% is the limit of humidity beyond that air cannot hold up further water vapour.

Effect of humidity on the atmosphere.



These are all are the factors (pressure, temp, humidity that can accelerate weather)

(D) Working of RADAR

RADAR refers as Radio Detection and Ranging. It can propagate the data via radio waves. RADAR can be used for the military surveillance, maritime navigation and also for the weather forecasting.

Process:

Transmission → Reflection → Reception → Analyze and processing

① Transmission of signals:

Signals can be transmitted by antenna through a pulse of radio waves.

② Reflection of signals

Such signals strike with the object (target) and reflect back towards RADAR.

③ Reception of signals

The antenna receive the signals again so that the speed of light is constant and compare with the speed of wave coming back from object.

④ Analyze and Detection

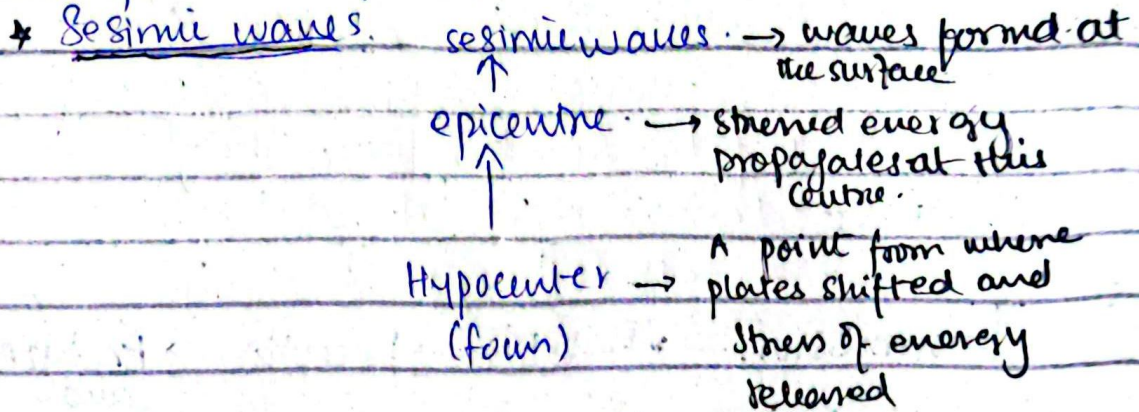
The frequency between sent signal and receive signal can be recorded and measured.

⑤ Processing the signals:

Frequency of wave and speed of wave can be detected.

(C) Epemenon of Earthquake with diagrams.

Earthquake can be propagated by a process of formation of seismic waves



* Seismic waves

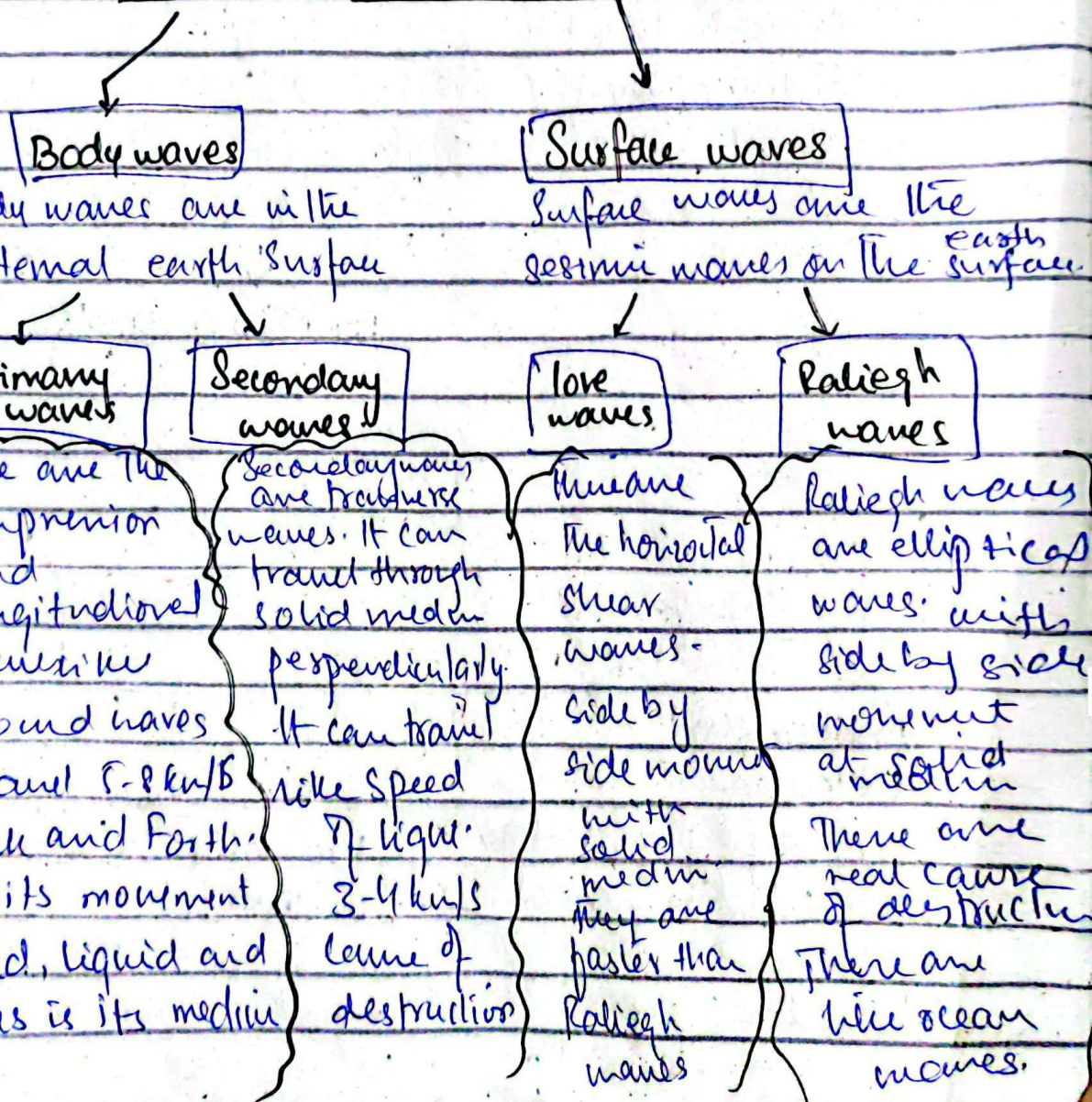
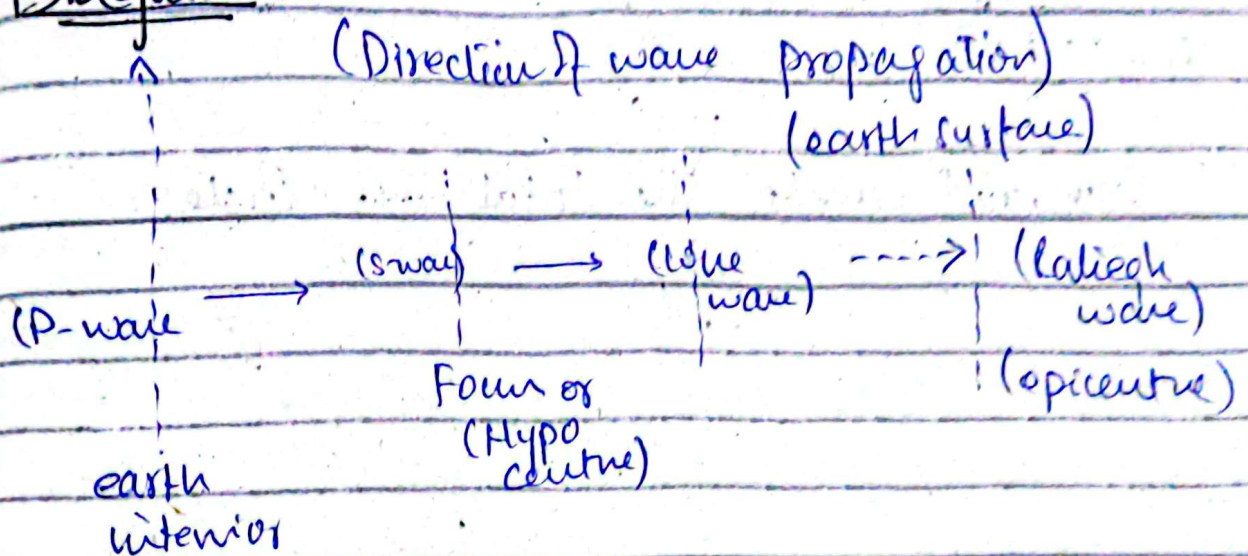


Diagram :



Section III

Q-8

(a) Ali tree.

Distance from tree to Ali = 10m

Distance from feet to eye = 1.5m

From eye to tree top = 15m

Height of the tree = ? ($h - 1.5$)

Use pythagoras theorem

$$(\text{hyp})^2 = (\text{perp})^2 + (\text{base})^2$$

$$15^2 = (h - 1.5)^2 + (10)^2$$

$$225 = (h - 1.5)^2 + 100$$

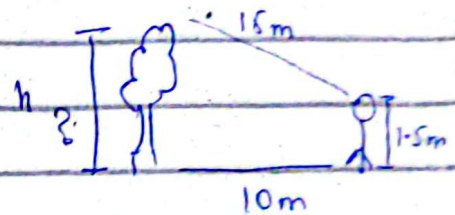
$$225 - 100 = (h - 1.5)^2$$

$$\sqrt{125} = \sqrt{(h - 1.5)^2}$$

$$11.8 = (h - 1.5)$$

$$11.8 + 1.5 = h$$

$$\boxed{12.6 \text{ m} = h}$$



(b) Find out the correct word.

SONCUCOISIENT : consiquentions

EIVENPRAOAST : preservations

UORSIUEDC : Cuisoluid

NMILAOPC : Complain

(c) Draw and write the total circle?

Hexagon:

It has 6 lines of symmetry and all are planes through opposite vertices or the midpoints of opposite sides

e.g.

benzene structure

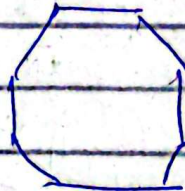


Octane

It has 8 lines of symmetry and all are planes through opposite vertices or midpoints of opposite sides

e.g.

⇒ High octane - 8

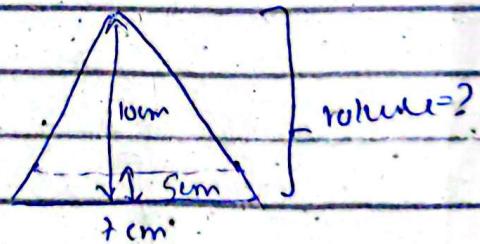


(d) Base

Height of the pyramid = 10 cm

Volume = ?

$$\text{Volume} = \frac{1}{3} \times \text{Base Area} \times \text{Height}$$



$$\text{Area} = L \times W = 7 \times 5 = 35 \text{ cm}^2$$

$$\text{Volume} = \frac{1}{3} \times 35 \text{ cm}^2 \times 10 \text{ cm}$$

$$= \frac{1}{3} \times 350 \text{ cm}^3$$

$$= \boxed{116.6 \text{ cm}^3}$$

a) Formula of depreciation:

$$\text{Future} = \text{Present} \times (1 - \text{Depreciation rate})^t$$

$$8748 = ? \times (1 - 0.10)^3$$

$$8748 = \text{Present value} \times (0.90)^3$$

$$\frac{8748}{0.729} = \text{Present value}$$

$$\boxed{12000} = \text{Present value}$$

b) Father's Age of daughter = x

$$\text{Father} = 4x$$

After 5 years. daughter

$$3(4x+5) \quad (x+5)$$

How many times of daughter age

$$3(4x+5) = x+5$$

$$3(4x+5)$$

$$3(12+5)$$

$$3(15)$$

$$= 45$$

$$\boxed{30 \text{ years}}$$

15
35

$$\text{After 5 years} = 4x+5$$

$$\text{daughter} = 3(x+5)$$

$$4x+5 = 3x+15$$

$$x = 10$$

$$4x+5$$

$$4(10)+5 = 45$$

3x current

$$4x = 4 \times 10$$

$$= 40$$

$$x = 10$$

Further After 5 years $40+10 = 50$

$$40+10 = 50 \quad 10+10 = 20$$

$$\frac{50}{2.5} = 20 \quad \boxed{20 \text{ times}}$$

