

First Mock

Date _____

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✓ Batch # 60

✓ Lms Id# 32443

✓ Paper # General science
& Ability

2024-2025

Good

Enough length

Enough headings

Keep length equal for all parts

Work on math portion

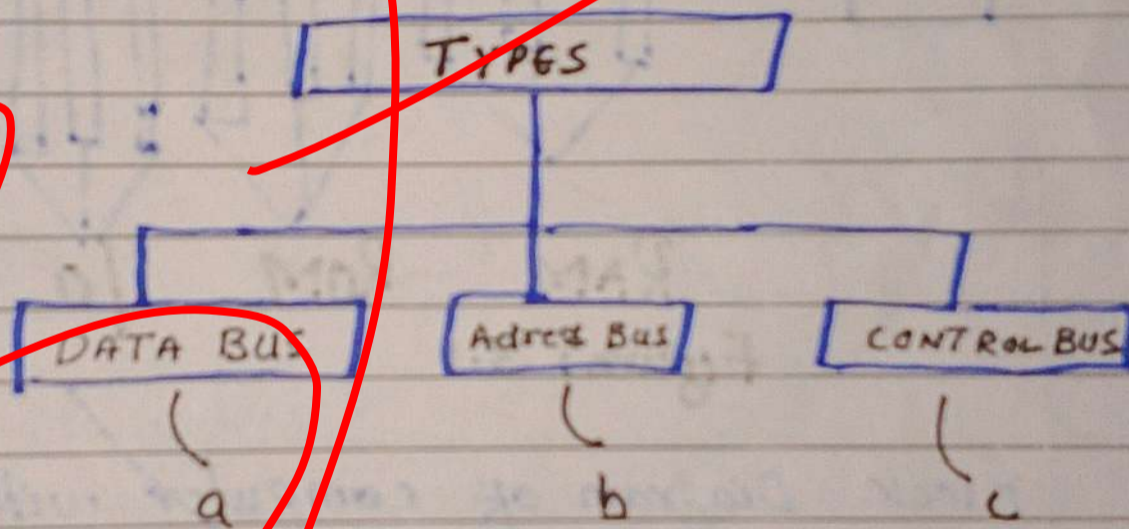
Q.No. 3

Part - a

Ans:

What are Buses?

Buses are the important components of a computer, in which data flows from one part of computer to other one. The pathways through which internal components of a computer are connected together are known as buses.



a. Data Bus:

Data Bus is a bi-directional bus that transfer the information according to the requirement of users.

b. Address Bus

Address Bus is a uni-directional Bus. It identifies the place where data is kept.

C. ~~Address Bus~~

C. Control Bus :

Control Bus carries out different commands from one part of the computer to other. It also helps the processor to control the computer's activities

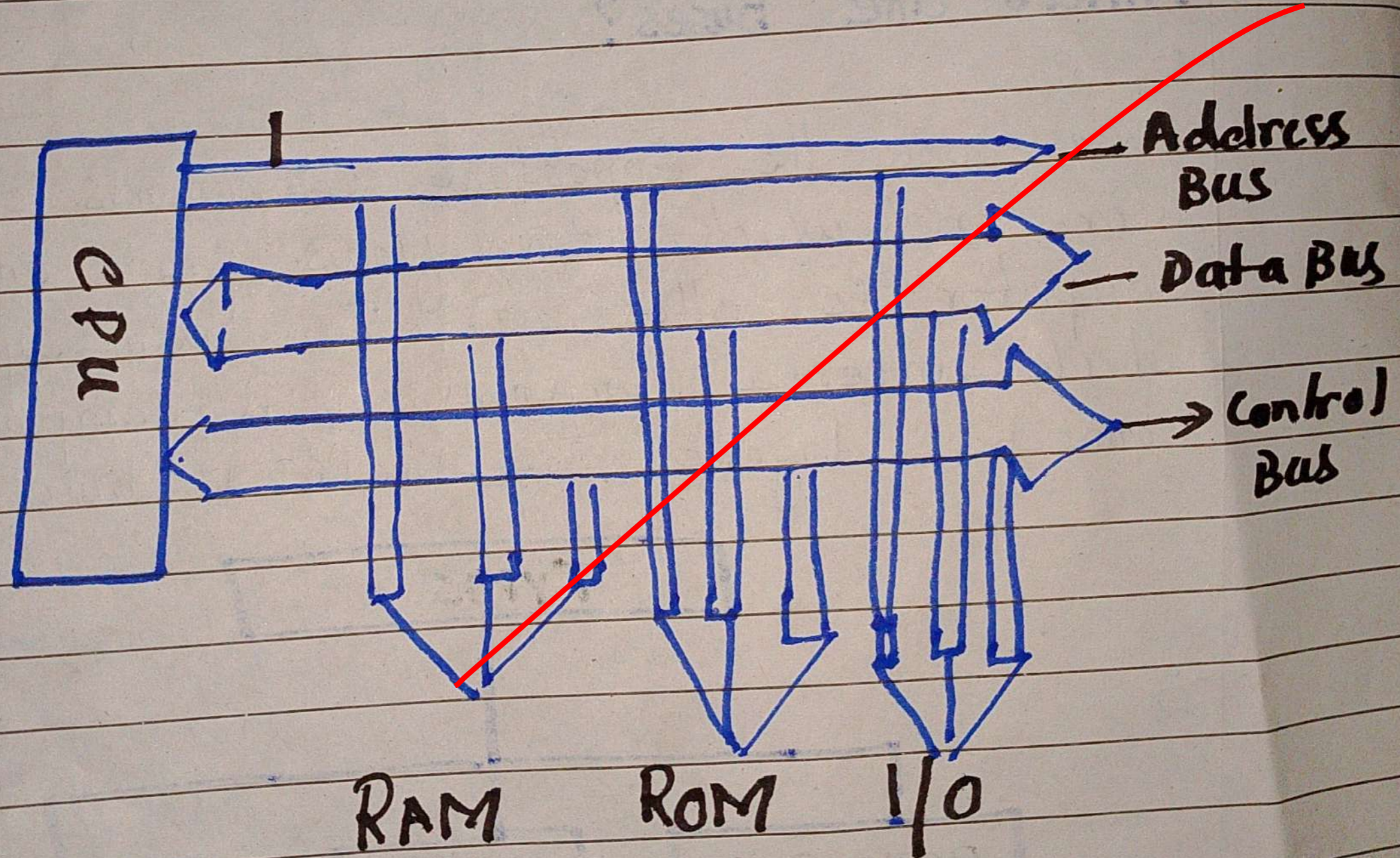


Figure: 3.1

Diagram of computer with its input

Block Diagram of Computer

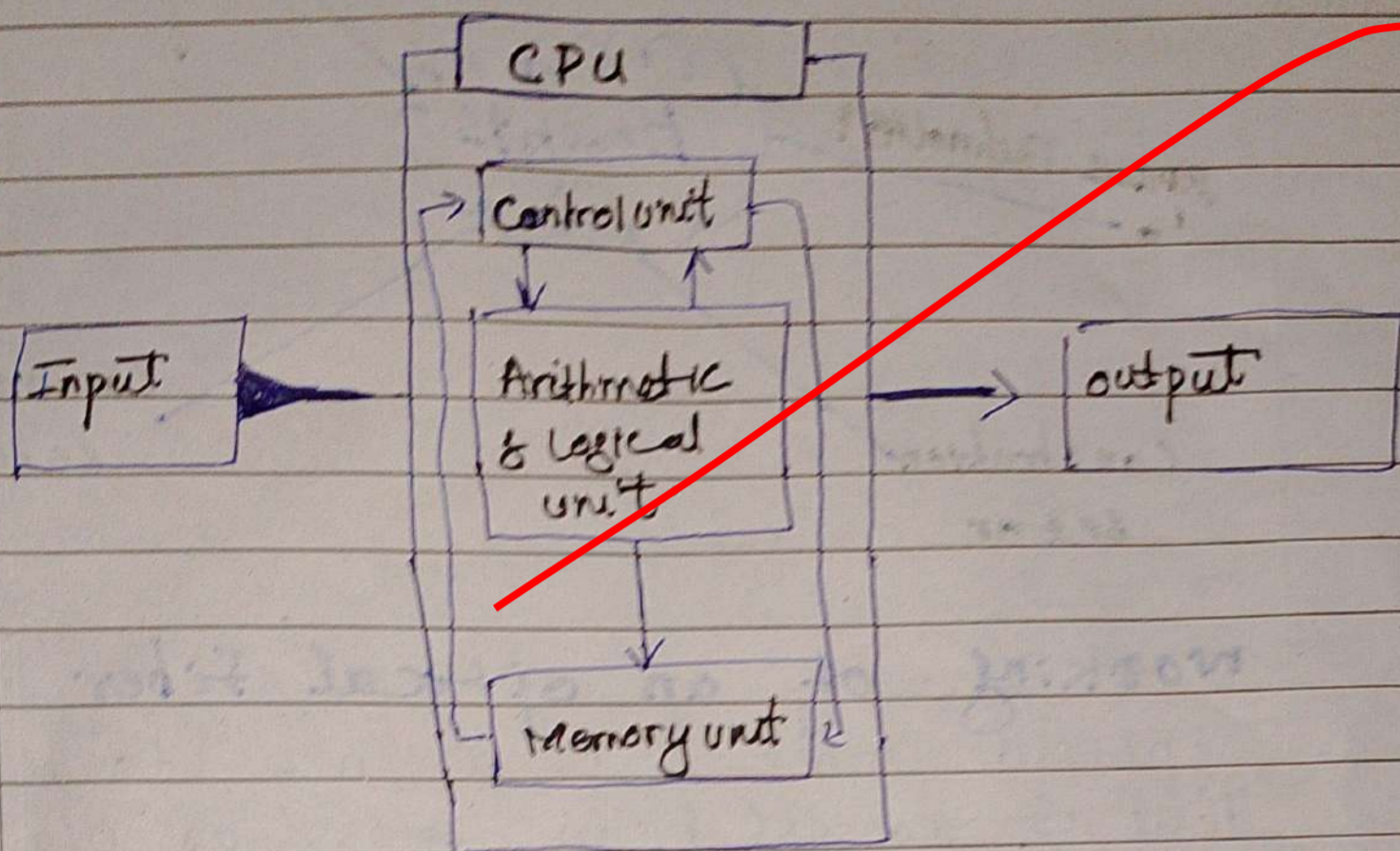


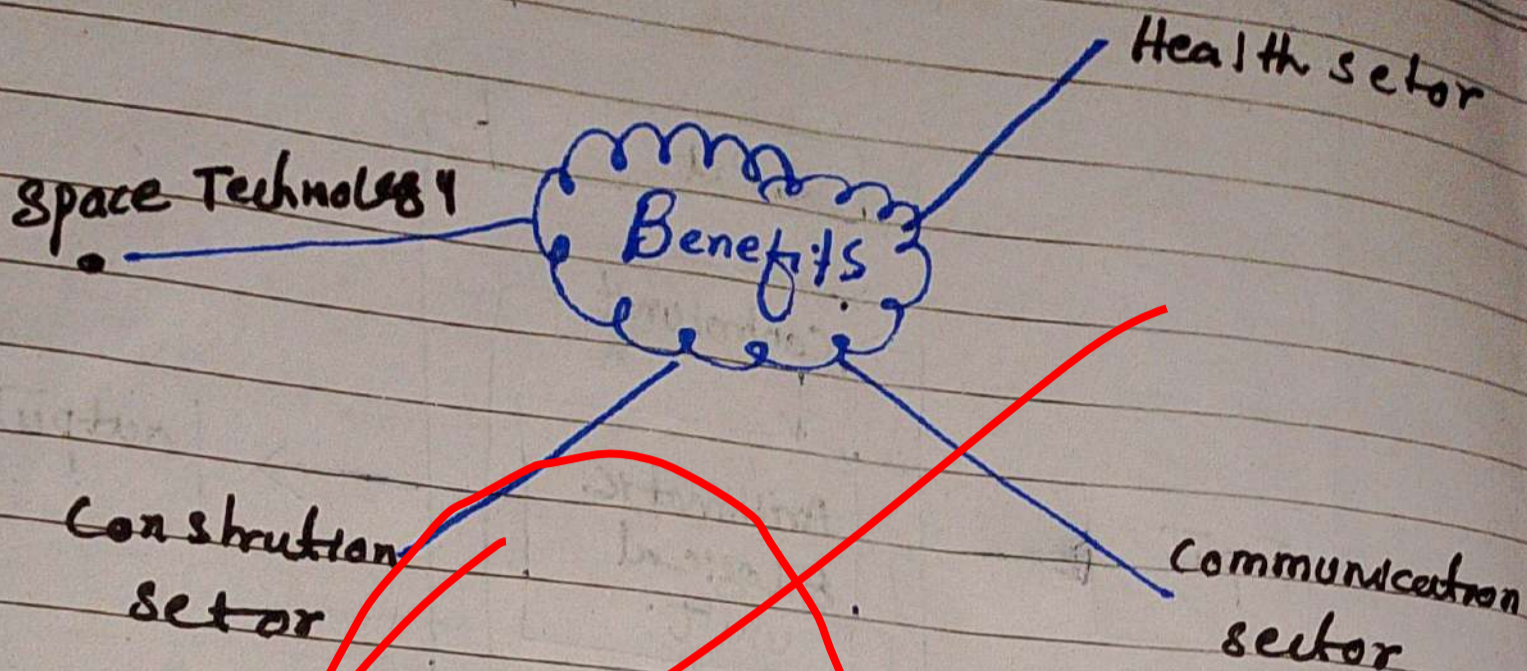
Fig: 3.2

Part - b

What is optics?

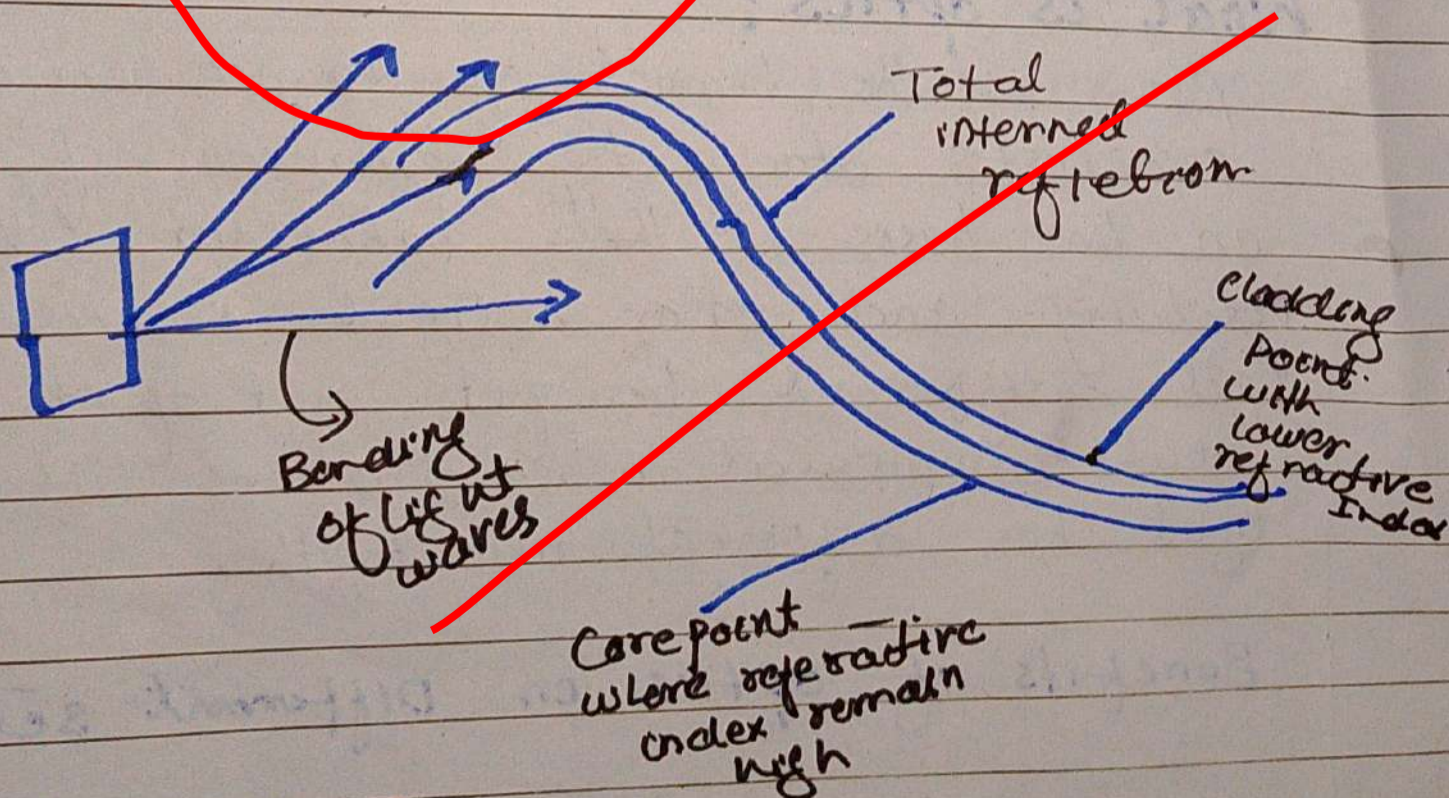
Optics is the branch of science in which scientists study the behaviour of light, on the basis of ~~their~~ ^{its} behaviour like wavelength, visibility and other, light is used to get different benefit out of it such as data communication, and others. However, light has different wavelength.

Benefits of optics in Different sectors



Working of an optical fiber

Optical fiber is a new technology that is consist upon glass or plastic and is used for the transmission of data from one place to another. These optical fibers work on the basic principle of total internal reflection where light is bendel towards the threads made up of glass.



Part - c

i. Hypocenter:

This term commonly used in the field of geology, specifically studying about earthquake. The point where earthquake generates is known as hypocenter or focus point.

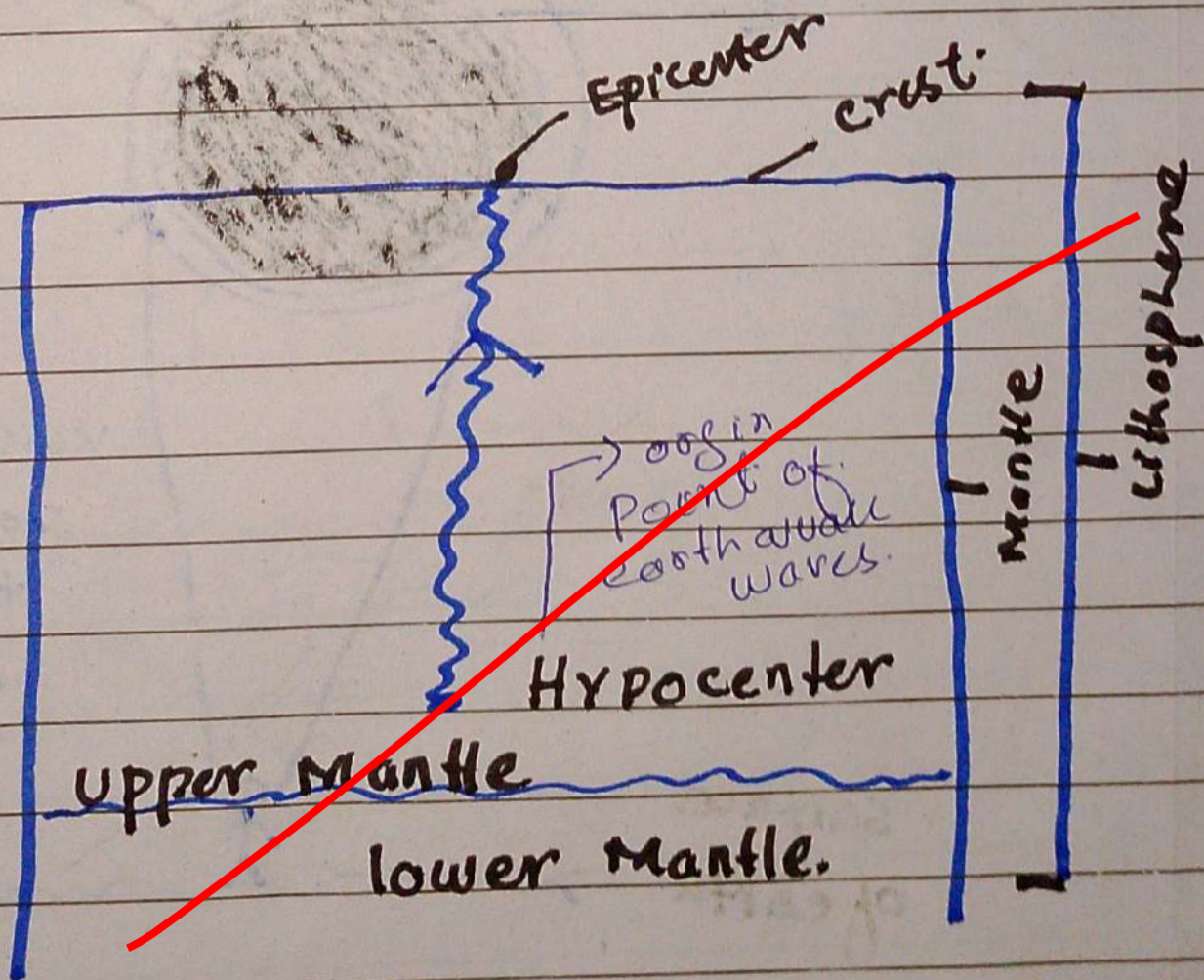
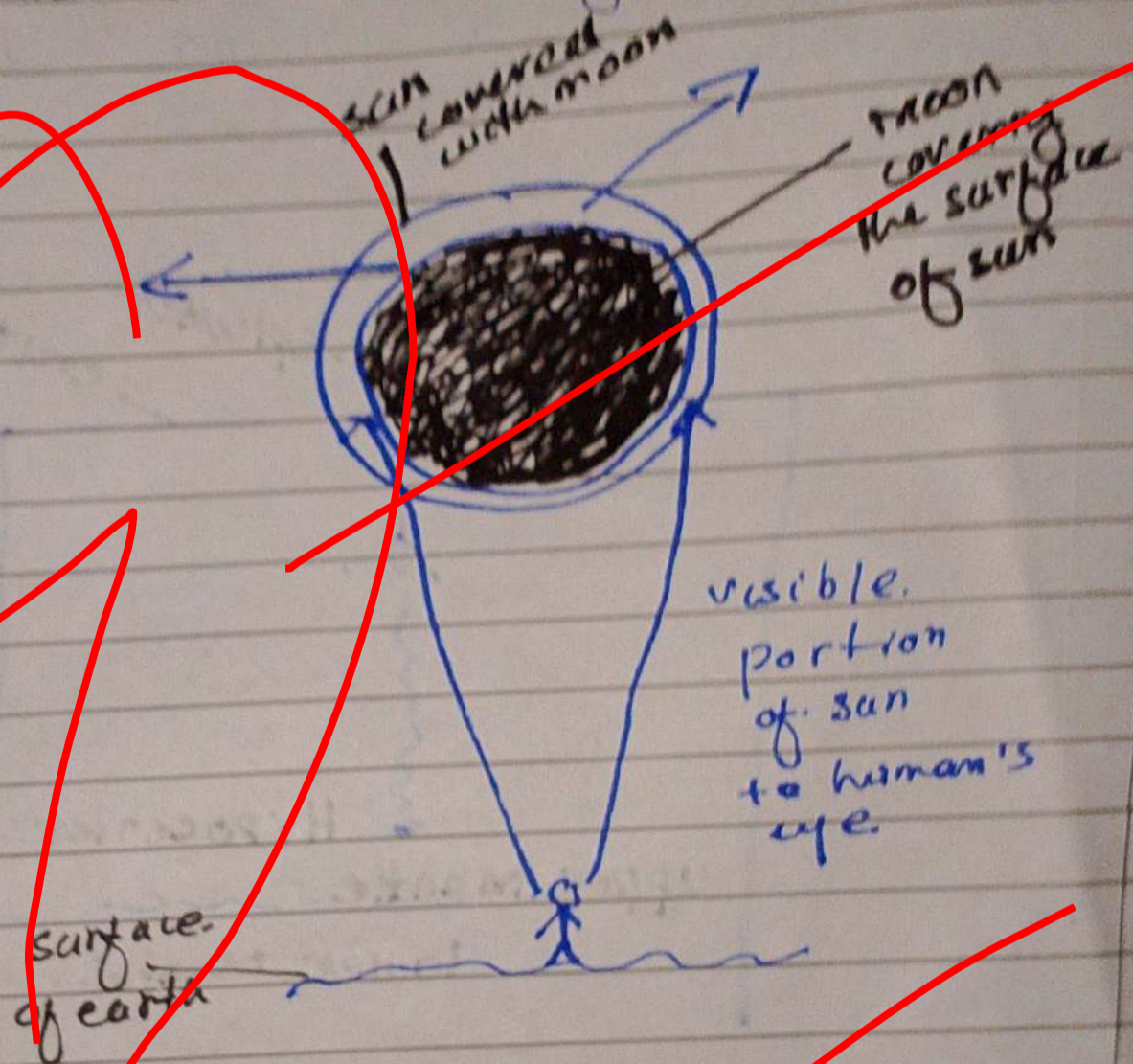


Figure: Diagram showing exact location of hypocenter.

ii. Annular eclipse

Annular eclipse occurs when sun is covered by the moon to an extent where sun appears like a ring and this is also known as ring effect. This natural phenomena can be observed only in few regions.



Figure; showing lunar Annular eclipse.

iii. Epicenter

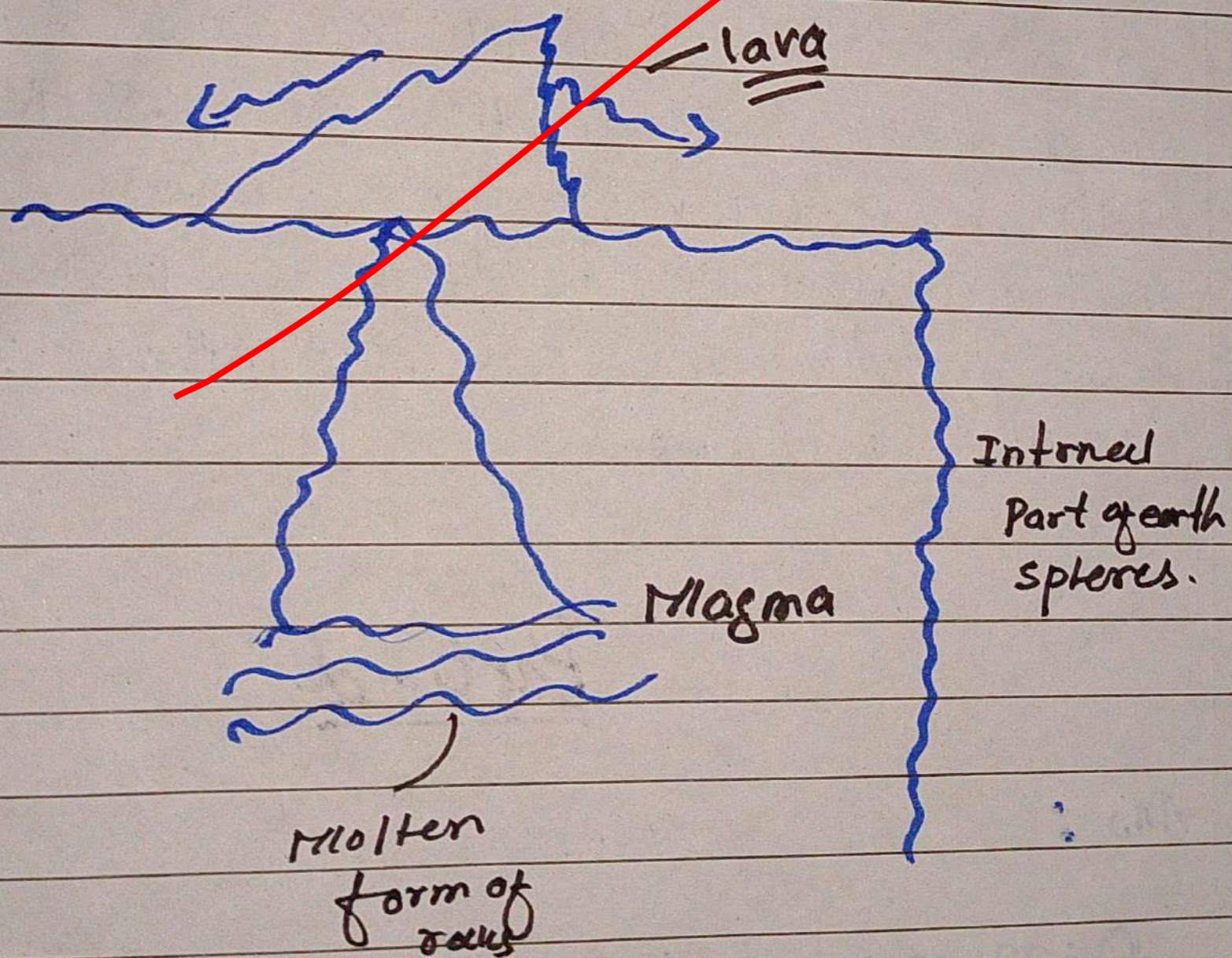
Present on the upper surface of the earth, epicenter lies directly above the focus point. This is the point where seismic waves are generated.

into surface waves.

Date: _____

iv. Magma

Magma is the semi molten state of materials present in lithosphere. When this semi molten form of materials reaches at the surface of earth, it becomes lava. Magma and lava are the name of ~~some~~ same material but studied differently due their location.



Dark Matter:

V. Dark matter

Dark matter is a invisible force that is found on galaxies. This force allows the galaxies to hold stars around them due to their gravitational pull. Because of the dark matter, galaxies absorb other small galaxies, mainly depend upon their size. According to NASA, About 90% of universe is made of Dark matter. However, this is just an assumption made by the scientist, further research is still continued.

Part. d

Ans :

Difference between Big Bang Theory and Big crunch Theory

Big Bang

- Explains origin of the universe
- Universe is a result of Big explosion.

Big crunch

- Explain how this world is going to end
- Explains due to constant expansion universe is moving towards it end

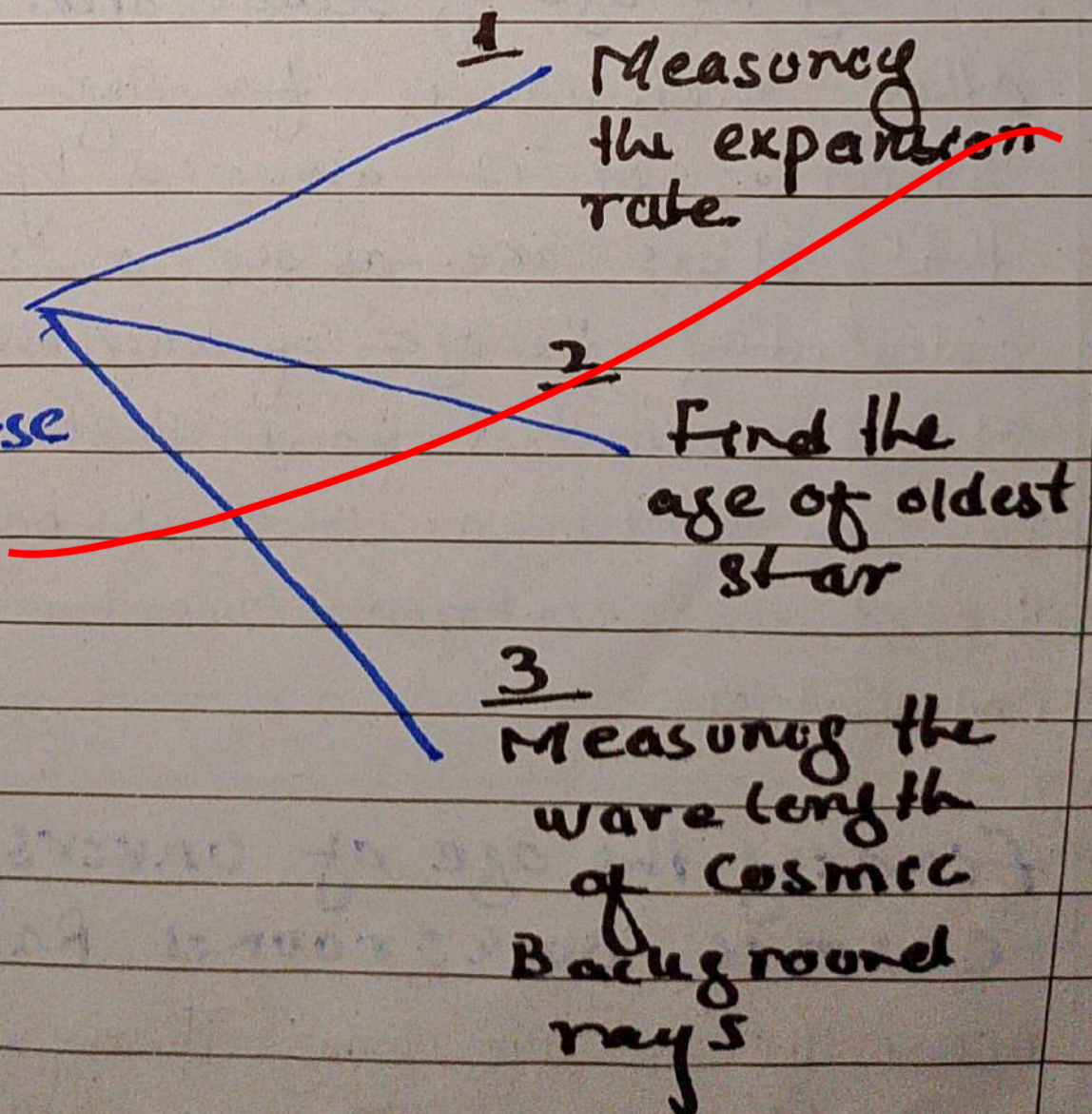
• Explains the structure of galaxies and stars

• Explains their due to constant conversion of hydrogen into helium, stars will be cold one day.

Measurement of universe's Age.

There are three different methods on the basis of which age of universe can be calculated.

Methods to calculate Age of universe



Measuring the Expansion Rate of universe

Age of universe can be calculated through measuring its expansion rate. It was observed with the help of a telescope ~~that~~ unknown as Hubble Telescope that ~~the~~ objects of solar system are moving with constant speed. Later on, it was given with the name of Hubble constant v_0 . After measuring the age of ~~with the help of~~ Hubble constant, scientists found that age of universe is in between 7 to 14 billion year.

Finding the age of oldest star

Other method is finding the age of oldest star. It is assumed by the scientists that stars are as old as universe. After calculating the age of universe by the age of stars, scientist find that age of universe lies in between 17 to 18 billion years. However, there are certain uncertainties in these calculations.

Finding the age of universe through Cosmic Background Radiation (CBR)

According to Big Bang Theory, during Big Bang explosion a certain amount of energy was generated, whose radiations are still travelling around space. After measuring the wave length of these radiation, scientist found that age of universe is about 13.4 billion. In addition, all above method showed their major concern on this calculation.

Q. NO. 2

Part-a

Ans :-

Difference Between Climate and Environment

Climate

• As compare to the environment, climate is a smaller term which is mainly used to discuss weather change.

• Change in temperature, weather variables such as rainfall, snowfall, fog and are the components of climate.

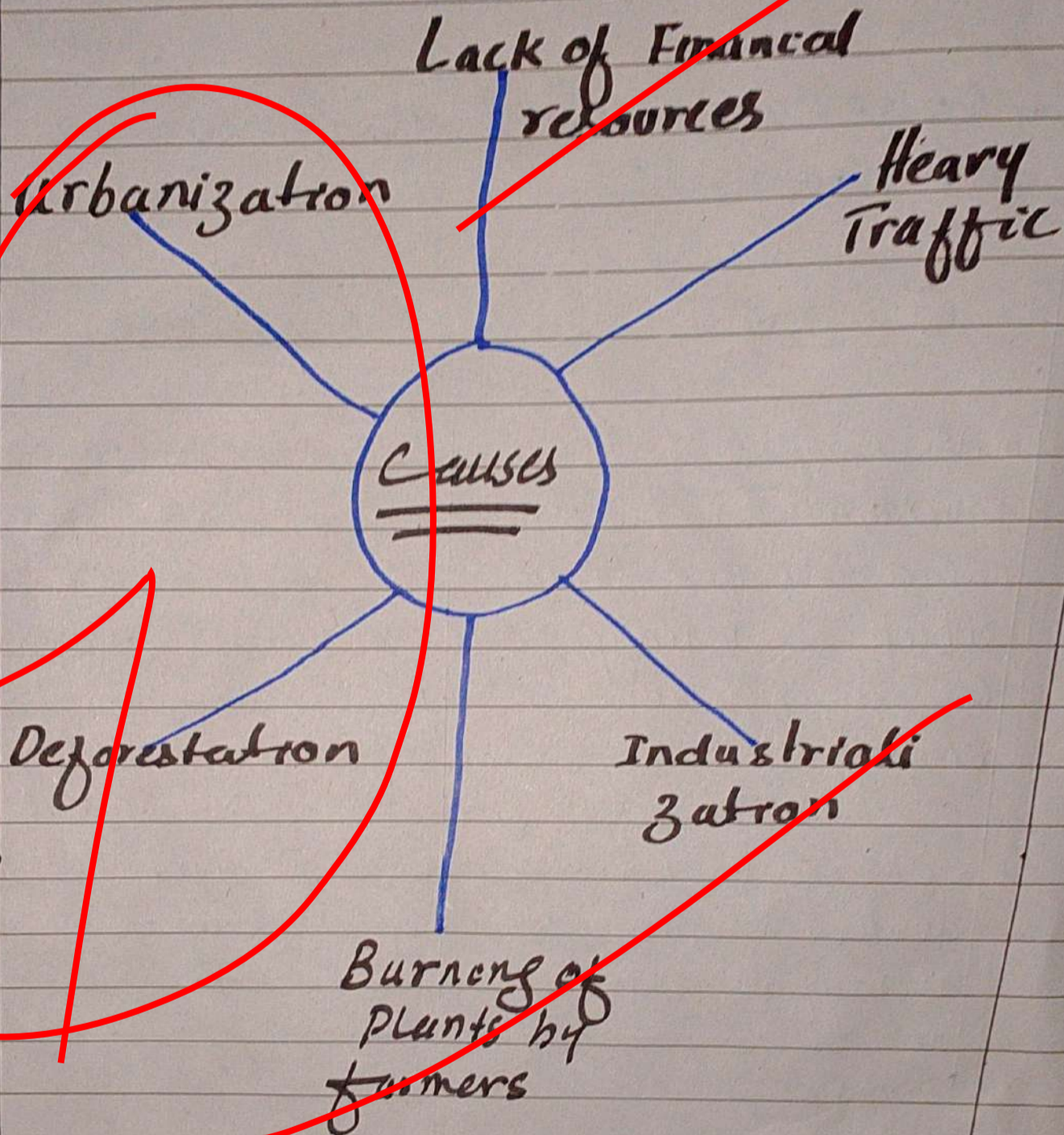
Environment

• Whereas environment is a broader term which is used to discuss overall surroundings including atmosphere and surface of the earth.

• On the other hand all spheres of earth including atmosphere and internal sphere are the major components of environment.

Causes of Air Pollution in Pakistan

There are several causes of air pollution in Pakistan. Some of them are given in below block diagram



Part-b

Ans:

What are vitamins?

Vitamins are chemical compounds which

play important role to regulate internal system of living beings. Some vitamins are generated within the body of living beings whereas some are needed to be consumed. on the basis of their consumption and creation, vitamin can be classified in two types: water soluble vitamin and fat soluble vitamin. water soluble vitamin are those vitamin which stay in body for short period of time and get drained through urinary system and sweating. whereas fat soluble vitamin are those vitamin which remain in the body of living beings for longer period of time and these vitamins are more important on the basis of their longer stay. such vitamin are A, D, E and K. Main sources of vitamin A are vegetable fruits, eggs etc. they are very important for good eye vision. However, their deficiency can cause short sight problems. Similarly, all vitamins are important to obtain a healthy lifestyle.

Part - C

Ans :-

A comparison between the goals of cap 27 and cap 28

COP27

- Enhancing NDCs (Nationally Determined Contributions).

Cop27 aimed to strengthen the goal of NDCs which were conducted under Paris agreement on terms of financing and adaptation of climate change mitigation policies.

- Accelerating climate actions
- Addressing loss and damage funds
- Scaling up climate finance
- Strengthen the international cooperation

COP28

- Quick shift towards green energy

- Private cooperation

- Financing the countries to adopt climate change policies

- 1.7 billion. finance allocation. for Amazon forest

- Continue the policies of cop27.

Part-d

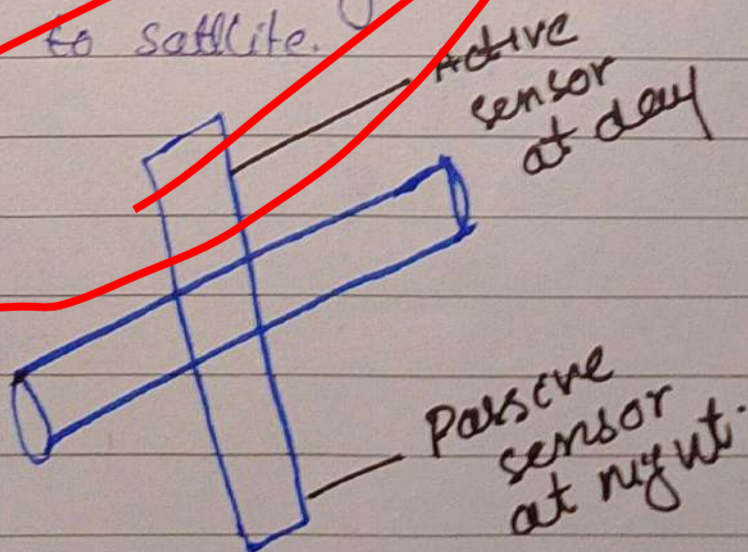
Ans :-

What is a sensor?

Sensor is the self observation of machines with the help of their artificial intelligence. Sensor is a common device which is used into several other devices such as mobiles, planes, washing machines, weather satellites and others. In satellites sensors are used to activate their active and passive function.

Active and Passive sensors ~~in satellites~~ and their use in G.I.S

Active sensor enables satellites to directly absorb the sun ray as a source of energy. Whereas, passive sensor enables satellite to rely on its own batteries. So, when there is a night, satellites use their passive sensor and at day, active sensor sends the data to satellite.



SECTION - II

Q. NO. 7↳
Part - C

Ans:-

Given Data:

Weight of one Tablet = $w_1 = 30 \text{ mg}$ weight of x Tablet = $w_2 = 240 \text{ mg}$

one

 $Q_1 \rightarrow 1$ $w_1 \rightarrow 30 \text{ mg}$ $Q_2 \rightarrow$ unknown $w_2 \rightarrow 240 \text{ mg}$

Required:

 $Q_2 =$

Solution

using formula.

~~Q1~~
~~30~~

$$\frac{Q_1}{w_1} = \frac{Q_2}{w_2}$$

~ Putting values

$$\frac{1}{30} = \frac{Q_2}{240}$$

$$Q_2 = \frac{240}{30}$$

$$Q_2 = 8$$

So, 8 tablets will be needed to provide Ms. Smith 240mg of medication.

Part d.

Ans :-

Given Data:

A

$$\text{Total Average} = 50$$

$$\text{Total Numbers} = 20$$

$$\text{Discarded Numbers} = 37 \text{ and } 43$$

Required:

$$\text{Remaining Average} = ?$$

Solution

$$\sim \text{Average} = \frac{\text{sum of all no}}{\text{total nos}}$$

\sim Let the remained no be X .

~~Put~~ Putting values in above formula

$$\sim 50 = \frac{X}{20}$$

$$\sim \boxed{1000 = X} \quad \text{or} \quad \boxed{X = 1000}$$

\hookrightarrow

Removal of 37 and 43

R.W

$$\begin{array}{r} 50 \\ \times 20 \\ \hline 00 \\ 1000 \\ \hline 1000 \end{array}$$

~~27~~
6

Remaining Numbers

$N = 48$

total sum = 920

New average =

$\frac{1}{58}$
 $\frac{1}{40}$
 $\frac{1}{230}$
 $\frac{1}{400}$
 $\frac{1}{920}$
 $\frac{1}{48}$
 $\frac{1}{24}$
 $\frac{1}{12}$
 $\frac{1}{6}$
 $\frac{1}{3}$
 $\frac{1}{1}$

New number after taking

Average $\hookrightarrow 19 = 166$

1000
 80
 $\frac{1920}{80} = 37$
 $+ 43$
80

920

12

19.5

87.5

115

230

460

920

48

24

12

6

3

Part b

Given Data:

Chocolates : Ice cream cones = 5 : 8

~~Total~~ No of chocolates = 30

Given Data:

First ^{wrong} number = $\frac{3}{5}$

Second ^{correct} number = $\frac{5}{3}$

Required

To Find: Percentage of error

Solution

~ let the unknown number be x

~ Multiply x with both number

$$= \frac{3}{5} \times x \quad \text{and} \quad \frac{5}{3} \times x$$

$$= \frac{3}{5}x \quad \text{and} \quad \frac{5}{3}x$$

~ Find the difference

$$= \frac{5}{3}x - \frac{3}{5}x$$

$$= \frac{3 \times 5}{3}x$$

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

$$= \frac{25}{15}x - \frac{9}{15}x$$

$$= \frac{25x}{15} - \frac{9x}{15}$$

$$= \frac{25x - 9x}{15}$$

$$= \frac{16x}{15}$$

Formula.

$$\text{Percentage error} = \frac{\text{Difference}}{\text{Correct result}} \times 100$$

$$= \frac{16x}{15} \times 100$$

~~$\frac{5x}{3}$~~

$$= \left(\frac{16x}{15} \div \frac{5}{3} \right) \times 100$$

$$= \left(\frac{16x}{15} \times \frac{3}{5} \right) \times 100$$

$$= \frac{16x}{25} \times 100$$

$$= 16 \times 4$$

$$= 64\%$$

The Percentage error is 64 Percent

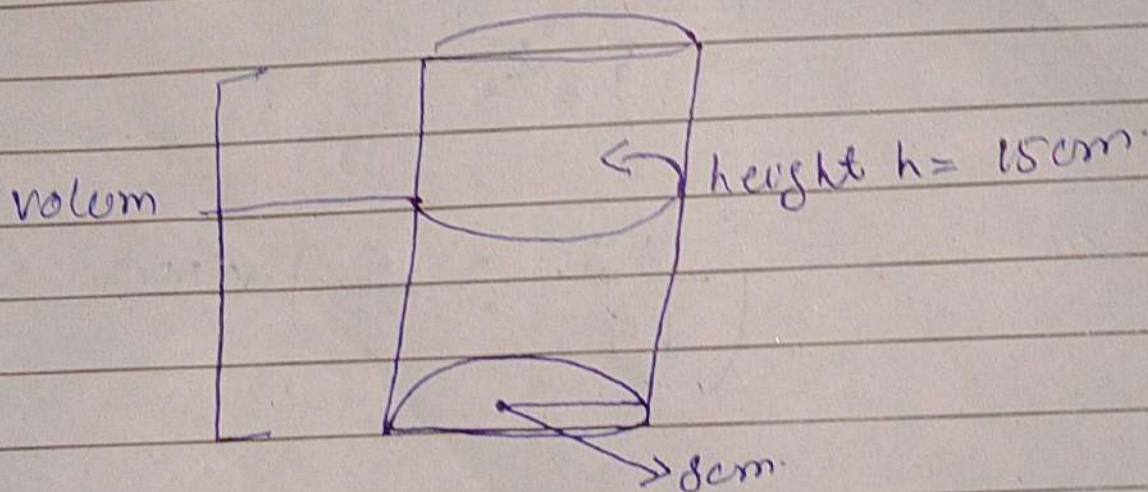
Q. No. 6

PART - a.

Given Data

Radius = $r = 8\text{cm}$

Height = $h = 15\text{cm}$

RequiredVolume of cylinder = ~~?~~ ?Solution

✓ Let the volume be x .

✓ Where as formula specified radius = $\pi r^2 h$.

✓ Value of $\pi = 22/7 = 3.14$

✓ Putting value in formula

$$= 3.14 (8)^2 \times 15$$

$$= 3.14 \times 64 \times 15$$

Date: _____

Volume of cylinder = 292.40 cm^3

Ans

$$\begin{array}{r} 64 \\ \times 15 \\ \hline 320 \\ 640 \\ \hline 960 \\ \times 3.14 \\ \hline 3440 \\ 25800 \\ \hline 29240 \end{array}$$

Part - b

Ans :

Given Data :

$$n = 8$$

$$\text{Angle} = 180^\circ$$

Required Data :

Angle of each side of octagonal shape ?

Solution :

Formula for finding total number of angles of octagonal.

$$\sim (n-2)180$$

$$\sim (8-2)180$$

$$\sim 6 \times 180$$

$$\sim ~~30~~ 1080$$

 \sim Angle of each side.

$$\sim 1080/8 = \boxed{145^\circ}$$

So, the angle of each side is $\boxed{145^\circ}$

Part - C

Given Data.

length = 4.6 mile

width = 2.2 mile

height = 4.6 mile

Required.

to find surface area.

Solution

~ let surface area = x

~ Formula

$$\text{Area} = L \times W \times h$$

So

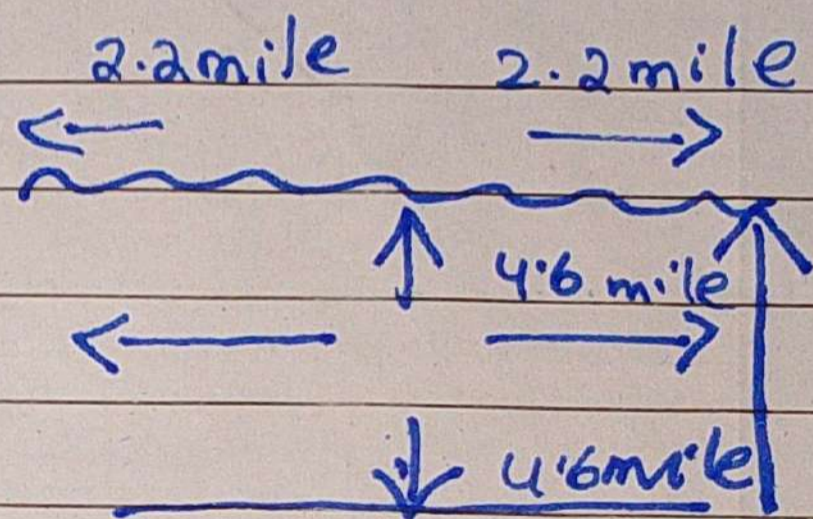
~~Area~~

~~$$x = 4.6 \times 2.2 \times 4.6$$~~

~~$$x = 46.55$$~~

Surface area will be

$$\boxed{46.55}$$



4.6
mile

$$\begin{array}{r} 4.6 \\ \times 2.2 \\ \hline 92 \\ 920 \\ \hline 1012 \end{array}$$

Part - d

Ans:

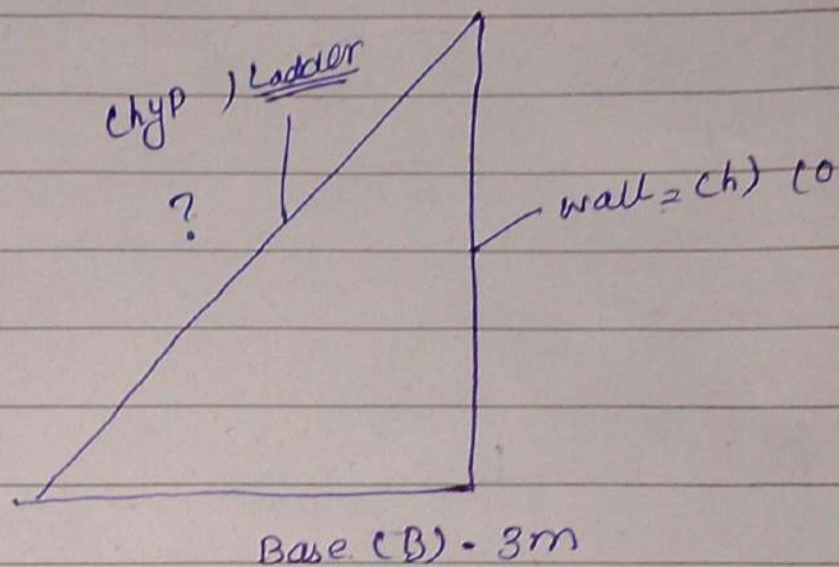
Given Data:

- Height of the wall = 10m
- Base (b) = 3m.

Required:

- Height of the ladder.

Solution:



Let the

$$\text{hyp} = \text{be} = x.$$

$$\text{Base} = b$$

$$\text{and height} = h$$

Formula =

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

$$x^2 = (3)^2 + (10)^2$$

$$x^2 = 9 + 100$$

Date _____

$$u^2 = 109$$

Taking square on b/s

$$\sqrt{x^2} = \sqrt{109}$$

$$x = \sqrt{109}$$

$$x = 10.44$$

EWWD