

Sorry I do not have the key for Mock paper

I also don't know which mock is this

The teacher who has checked GSA mocks can assess it

I have checked theory portion

It is relevant

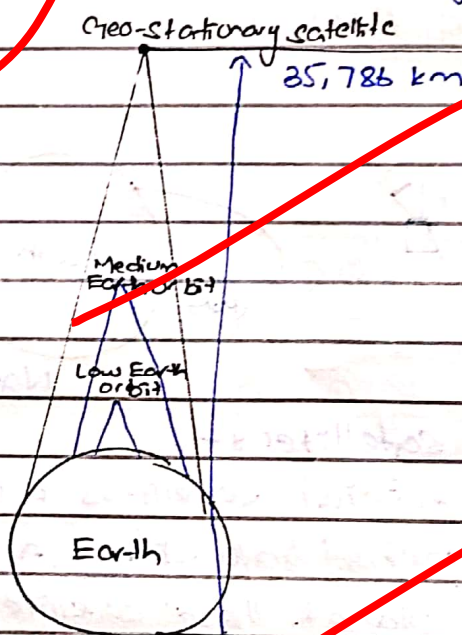
To the point

You need to write 3 sides for 4 marks having diagrams too

Your headings are enough

Increase length

Q. Geo-stationary-satellites :-
A body revolving around a planet is called satellite. Satellites can be natural (i.e. Moon) or artificial. When an artificial satellite reaches a height of 35,786 kilometers above the Earth's surface at high Earth orbit, it enters a "sweet spot" where the orbit of the satellite matches the rotation of the Earth. It means both the satellite and the Earth are rotating in the same speed, so the satellite seems to be remain at a single location. Such satellites are called geo-stationary satellites.



Uses of geo-stationary satellite :-

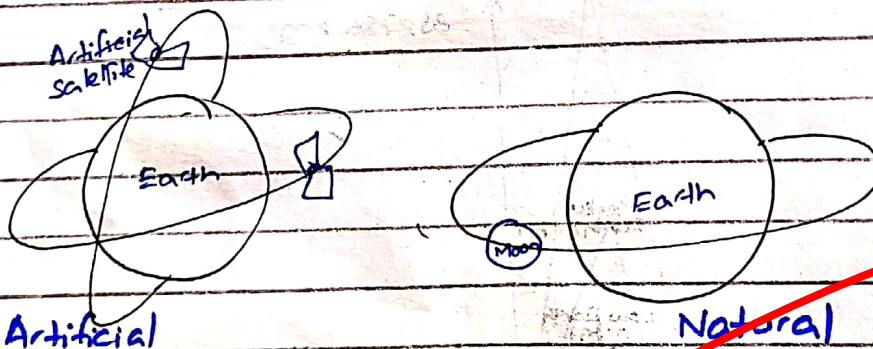
Due to presence of geo-stationary satellite over a single location, these satellites are useful for communication.

Geo-stationary satellites are also used in Global positioning system (GPS) used for determining exact location from anywhere in the world. 24 operational geostationary satellites make up a GPS system.

Difference between natural & Artificial Satellite:-

Natural satellites:-

Natural satellites are natural objects that revolve around a planet in their orbits. These satellites ^{are} were not constructed by humans, but ^{are} naturally present in the universe. For example, moon is a natural satellite orbiting around the Earth.



Artificial satellites:-

Artificial satellites are man-made objects launched into space, and orbit around a planet. These satellites are constructed to serve a specific function in space. For the example, satellite, its purpose, and its orbit are all pre-decided before launching. For example, COSMOS is a satellite used as a weather satellite. It returns photos of Earth's weather for prediction of future weather.

Artificial satellites of Jupiter:-

Jupiter has ~~67~~ artificial satellites or moons. Ganymede is the largest moon of the Jupiter as well as of our solar system.

b.

B. Nibble :-

Data in computer exists in the form of numbers. These numbers are binary number system. In binary digits, there are two possible arrangements ("0" or "1").

One number is called bit. If a second number is added, it can form four possible arrangements i.e. 00, 01, 10, 11.

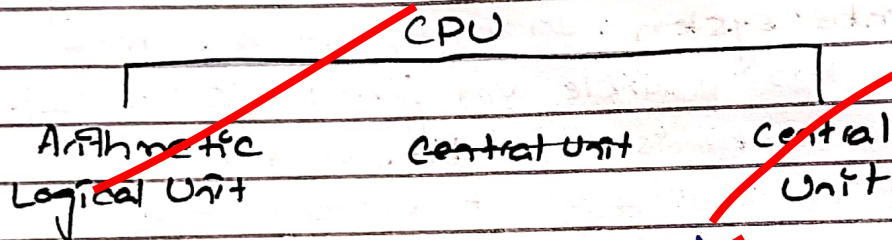
Each time a bit is added, the arrangement becomes double. Similarly, four bits are called nibble. Its arrangement can have 64 possible arrangements.

0000	1000
0001	1001
0010	1010
0011	1011
0100	1100
0101	1101
0110	1110
0111	1111

Arrangement of nibble

Central processing Unit (CPU) :-

A CPU is a microprocessor chip containing many electrical components. Information is stored in CPU. The location where such information is stored is called a register. Thus, CPU maintains memory of a computer and provides information to the user. CPU is called brain of the computer. It is divided into ~~three~~^{two} components



Arithmetic Logical Unit (ALU) :-

ALU performs the actual processing of data. The major functions performed by ALU are addition, subtraction, multiplication, division, logic and comparison. After processing, data is sent to storage unit.

Control Unit (CU) :-

Control Unit supervises the processes. It determines the sequence in which instructions are executed and coordinates activities of input and output units. This way it manages the operations of the computer.

Motherboard :-

Motherboard ties the components of the computer together and allows communication of various hardware and software. It is the computer's central communication device and is a crucial component of a computer.

Random Access Memory (RAM) :-

RAM is a temporary storage of data. It directly accesses the memory when the computer is running. When the computer is shut down, RAM loses all of its data. So RAM temporarily provides data storage while the computer is running.

Read-Only Memory (ROM)

ROM contains instructions that the computer uses when it boots up. The instructions are read in the ROM by BIOS. The storage in ROM is permanent and it cannot be lost or changed. It is a non-volatile memory which can not be changed.

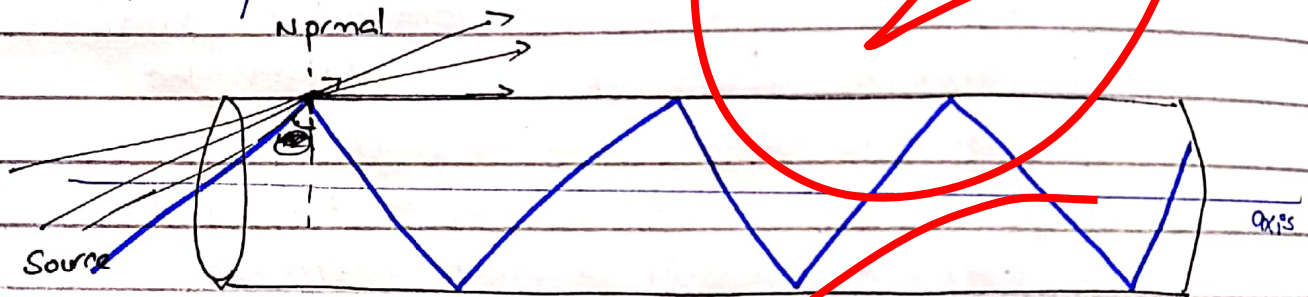
c. Working of Optical Fiber :-

Optical Fiber

Optical fiber is a medium where the information is transmitted as light along a hollow glass tube.

Total internal reflection

The optical fiber works on the principle of total internal reflection.



When light hits the glass at an angle less than critical angle, it reflects back again in the glass, and continues to do so at the same angle throughout the length of the optical fibre. This is called total internal reflection. This way light is kept inside the pipe with minimum loss over long distances.

QNO: 5

a. Relationship between cells, tissues and organs.

Cell

Cell is the structural and functional unit of life. It forms structures as well as differentiate functions for specialized groups of cells.

Tissues

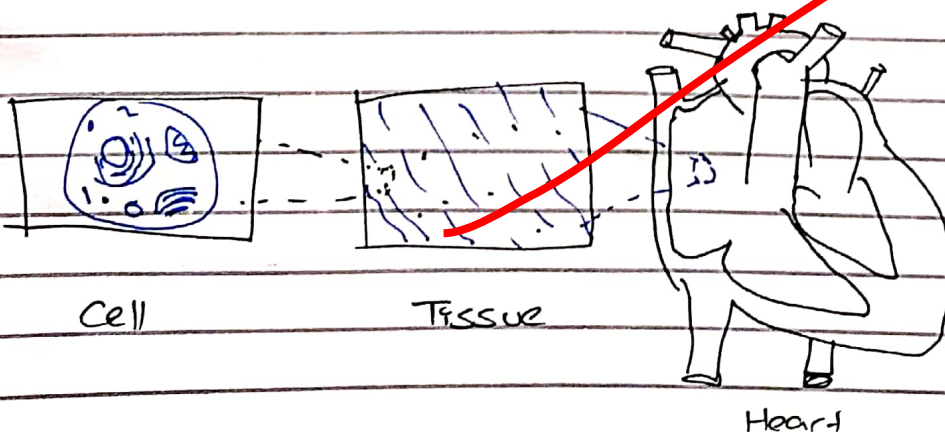
A group of cells performing similar function is called a tissue.

Organ

It is a part of body composed of multiple tissues to perform a specific function.

Example

~~Cardiac muscle cells~~
~~Red blood cells~~ are the structural and functional unit of circulatory system. Multiple red blood cells make up a ^{cardiac} tissue. These tissues combine to form heart.



b. Difference between cell wall and cell membrane

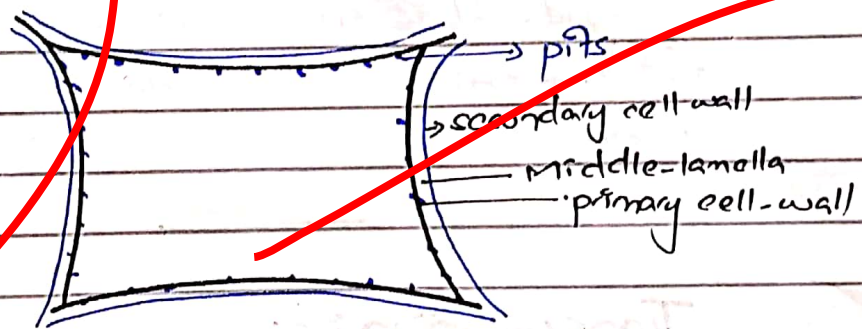
Structural differences

o Cell wall :

Cell wall is the outer most layer surrounding a cell. It is present in plant cells only.

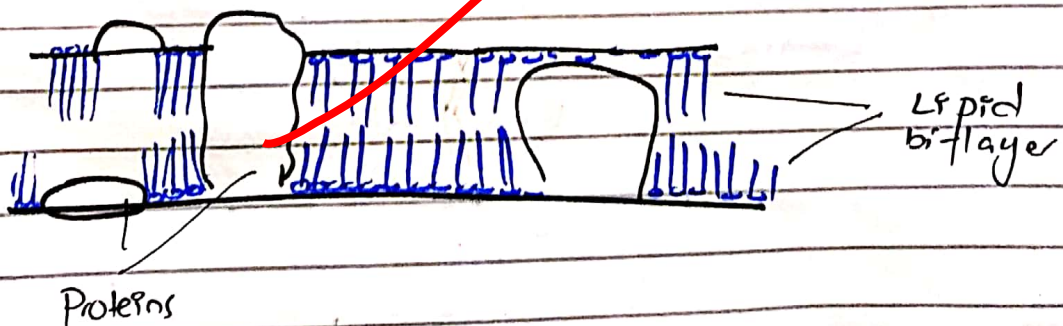
It is composed of three layers primary, middle lamella and secondary cell wall.

It is mainly composed of cellulose and lignin. It is rigid in nature. Pores are also present in cell wall called pits.



o Cell membrane :

Cell membrane is the outer-most covering in case of animal cells. It is present after cell wall in plant cells. It is composed of proteins and lipids. It is elastic in nature. It is also selectively permeable.



Functional differences:

• Cell Wall

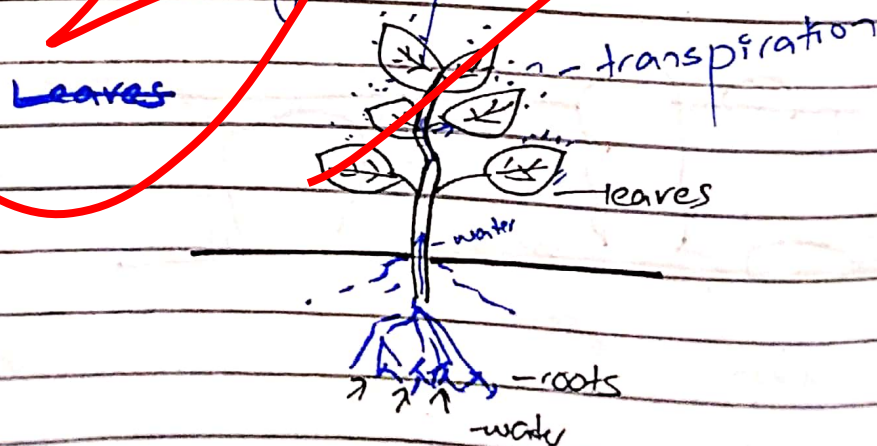
Cell wall provides protection and mechanical support to plant cell. It also gives shape to the cell. It is rigid in nature and allow exchange of material through pits.

• Cell membrane

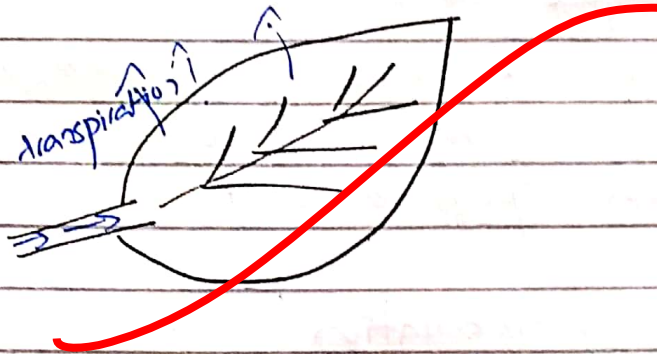
Cell membrane provides protection to the cell and give shape. It also provides mechanical support. It is flexible and non-rigid. It is also selectively permeable and maintains concentration gradient within a cell.

c. Transpiration :-

Transpiration is the movement of water from roots to leaves and its evaporation through leaves. The plant utilizes a small amount of water absorbed and the rest is transpired by it. About 97-99% water is lost by transpiration.



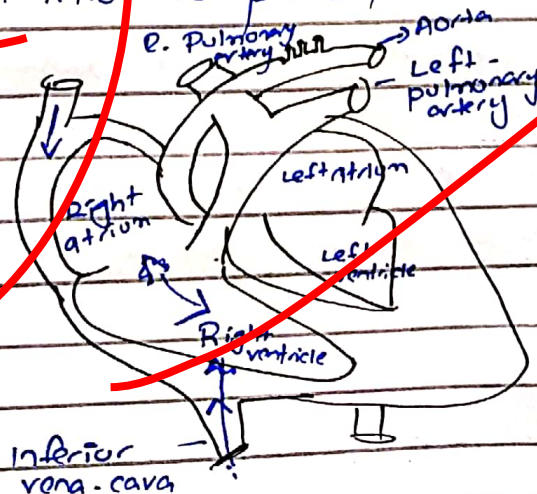
Importance of leaf structure:-



Leaf structure provides a large surface area for transpiration. The small pores present on leaf surface result in evaporation of water from its surface. Transpiration, thus cools down the plant, so that the plant can survive in hot summer weather.

d. Double circulation:-

Heart circulates blood in the body. It takes oxygenated blood from lungs and circulates it throughout the body. Similarly, it takes deoxygenated blood from the body and takes it to the lungs where it is oxygenated. Its circulation can be divided into two parts/circuits.



Systemic circulation

The heart takes oxygenated blood from heart to the body. The left side of the heart is responsible for it.

Pulmonary circulation

The heart takes deoxygenated blood is taken from the heart to the lungs to oxygenate it. Right side of the heart is responsible for it.

Cardiac cycle

The heart is adapted to keep the blood flowing through cardiac cycle. One heartbeat completes a cardiac cycle.

Systole:

Ventricles contract and send blood to systemic circulation. The valves close to prevent backflow of blood, and create a "lub" sound. This is called a systole.

Diastole:

After the ventricle relax, aortic and pulmonary valves close to prevent backflow of blood into the ventricles. This creates a "dub" sound. This is called a diastole.

Section-II

Q NO 26

- (a) Average = 63
Numbers = 11
1st 6 numbers = 60
last 6 numbers = 65
6th number = ?

$$\text{Average} = \frac{\text{Sum of numbers}}{\text{Total numbers}}$$

Let the 6th number be x

$$\Rightarrow 63 = \frac{60 + x + 65}{11}$$
$$63(11) = 60 + 65 + x$$
$$693 = 125 + x$$
$$x = 693 - 125$$

Average of 1st 6 numbers

Putting values in formula

$$\Rightarrow 60 = \frac{x}{6}$$

$$360 = x$$

The sum of the first 6 numbers is 360.

Average of last 6 numbers

Putting values in formula

$$\Rightarrow 65 = \frac{x}{6}$$

$$390 = x$$

The sum of last six numbers is 390.

$$\begin{aligned}\text{The sixth number} &= \text{Average} \\ &= (\text{Average of first six numbers} + \text{Average of last} \\ &\quad \text{six numbers}) \text{ minus } (\text{Average of eleven numbers}) \\ &= (360 + 390) - (63 \times 11) \\ &= 750 - 693 \\ &= 57\end{aligned}$$

So the sixth number is 57.

b. Identify the series

i) 4, 18, —, 100, 180, 294

Cube of a number - Square of a number

$$2^3 - 2^2 = 8 - 4 = 4$$

$$3^3 - 3^2 = 27 - 9 = 18$$

$$4^3 - 4^2 = 64 - 16 = 48$$

$$5^3 - 5^2 = 125 - 25 = 100 \quad \text{and so on.}$$

So, the number is 48.

ii) 48, 24, 72, 36, 108, —

Dividing the first term by two gives the second

$$\frac{48}{2} = 24$$

$$\frac{72}{2} = 36$$

$$\frac{108}{2} = 54$$

So, the number is 54.

c.

i) SRHEA

HEARS

By re-arranging the letters

ii) ANIRGNE

d.

Let the age of person = x

Let the age of mother = y

Present age $x = \frac{2}{5}y$ — (i)

Future age $x + 8 = \frac{y}{2}$ — (ii)

putting (i) in (ii)

$$\left(\frac{2}{5}y\right) + 8 = \frac{y}{2}$$

$$\frac{2y}{5} + 8 = \frac{y}{2}$$

$$\frac{2y}{5} - \frac{y}{2} = -8 \quad 8 = \frac{y}{2} - \frac{2y}{5}$$

$$4y - 5 = 5y - 4y \quad 8 = \frac{5y - 4y}{10}$$

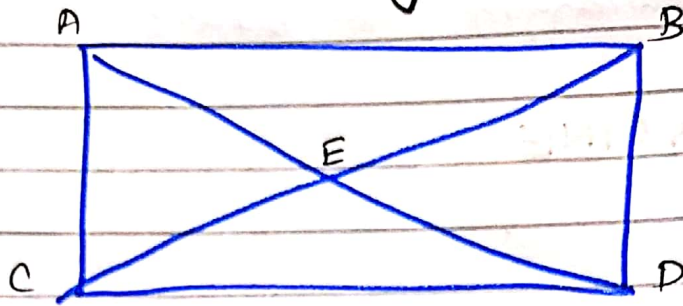
$$80 = y$$

$$\begin{aligned} \text{Present age} &= 80 - 8 \\ &= 72 \text{ years} \end{aligned}$$

Mother's present age is 72 years.

QNO: 7

a). No. of Triangles



No. of triangles = AEC, CED, DEB, BEA,
BCD, BAD, CAB, ACD,

= 8 triangles

There are eight triangles in the figure.

b. 20 kg apples

30 kg grapes

Ratio of quantities = ?

Percentage occupied = :

$$\text{Ratio} = \frac{\text{sum of parts}}{\text{Total number of parts}}$$

$$= \frac{20 \text{ kg} + 30 \text{ kg}}{50 \text{ kg}}$$

$$= \frac{20}{50} : \frac{30}{50}$$

$$= \frac{2}{5} : \frac{3}{5}$$

or

$$2 : 3$$

The ratio of apples to oranges is 2:3

$$\text{Percentage} = \frac{\text{Number}}{\text{Total number}} \times 100$$

Percentage of apples:

$$= \frac{20}{50} \times 100$$
$$= 40\%$$

Forty percent of the space in the bag is occupied by apples

Percentage of grapes:

$$= \frac{30}{50} \times 100$$
$$= 60\%$$

Sixty percent of the space in the bag is occupied by grapes

C. Sale price = Rs. 13,600
Loss % = 15%
Cost price = ?

$$\text{Cost price} = \text{loss} + \text{Sale price}$$

$$\text{Loss percentage} = \frac{\text{Loss}}{\text{Cost price}} \times 100$$

Consider cost to be Rs. 100, loss = Rs. 15

$$\text{Sale price} = \cancel{100} - 15 = \cancel{85}$$

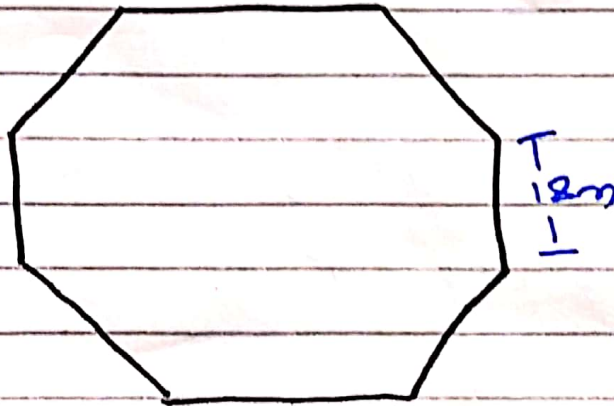
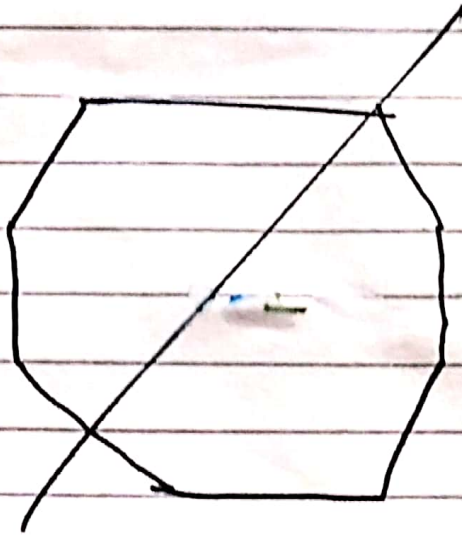
From last percentage formula

$$\text{Cost price} = \frac{100}{100-15} \times \text{Sale } 13,600$$

= Rs. 16,000

So, cost price is Rs. 16,000

d.



Octagon

$$\begin{aligned} \text{Perimeter} &= 8a \\ &= 8(18) \\ &= 144 \text{ m} \end{aligned}$$

The perimeter of Dome of Rock is 144 meters