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Section: 216

General Science And Ability

PART - II

(SECTION - A)

QUESTION NUMBER 02

(a) STRUCTURE OF UNIVERSE

The structure of universe can be defined by big bang theory.

BIG BANG THEORY

The term big bang first coined by Sir Fredrick Hoyle.

According to big bang theory, the universe came into an

existence from singularity.

Universe:

All known and unknown matter (Energy and space) is known as Universe.

Known Matter And Energy:

Known matter and energy have well defined chemical properties and can be controlled and used.

Dark Matter And Energy:

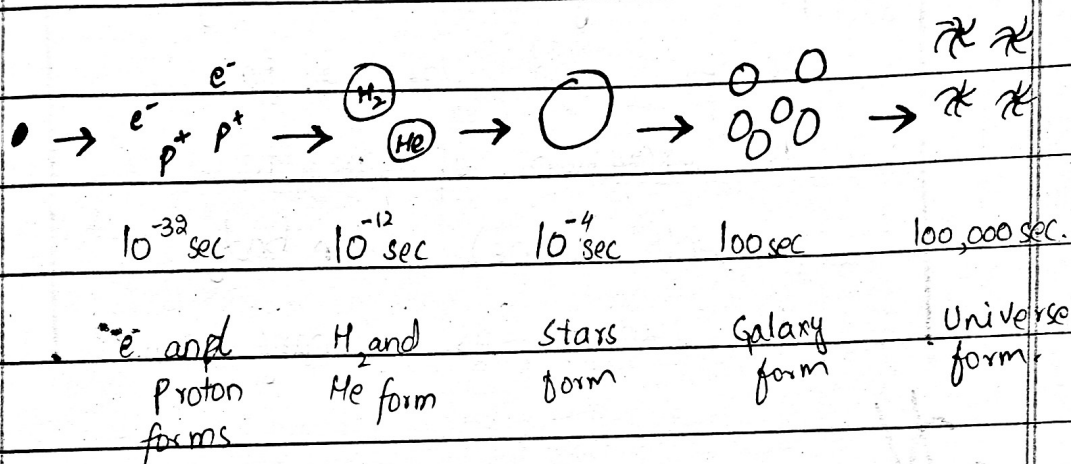
Unknown matter and energy are called dark matter and energy which are non-luminous and cannot be controlled.

STRUCTURE OF UNIVERSE

The universe started from singularity. Heat emitted and from e^- and proton which unite to form atoms like

Date: _____

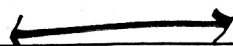
H₂ and He. The atoms combine to form nebulae which form stars. The stars along with planets make a galaxy.



Evidences Of Big Bang Theory

The big bang theory is evident from:

- 1- Microwave emission.
- 2- Existence of gases
- 3- Red shift of galaxies.



(b) - URINARY SYSTEM

"An organ system consists of kidney, ureter, urinary bladder and urethra for the excretion of waste product (urine) from body is known as Urinary System."

NEPHRON:

Nephron is a functional unit of kidney.

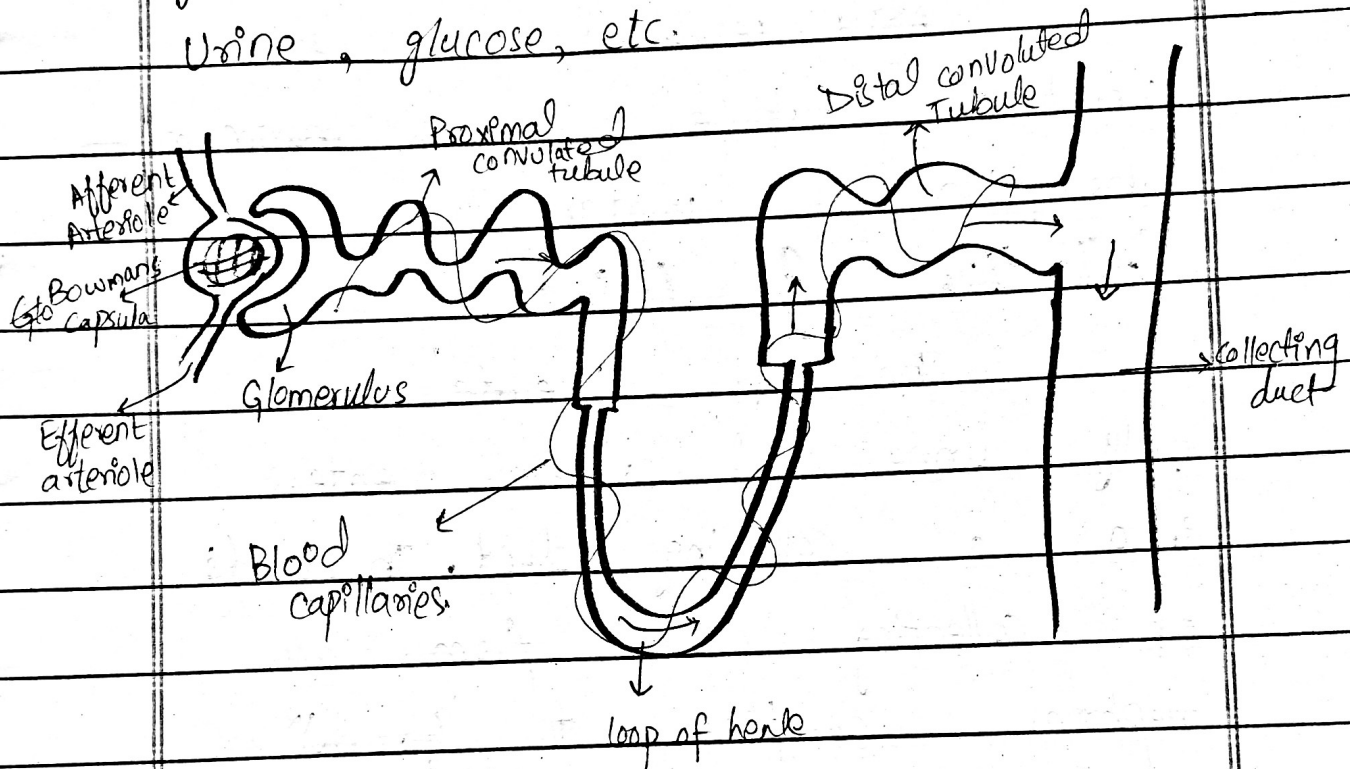
WORKING OF NEPHRON

Nephron filters blood in three steps:

1- Glomerular Filtration:

Blood from afferent arteriole enters into Bowman's capsule. Blood filters and enters into

the glomerulus. The filtrate present in glomerulus is known as glomerular filtrate. It contains urine, glucose, etc.



2. SELECTIVE ABSORPTION:

The majority of glucose is reabsorbed when glomerular filtrate passed from proximal convoluted tubule. About 99% of mass is reabsorbed in the capillaries.

Loop of Henle:

Na^+ ions and H_2O are

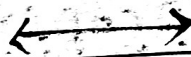
reabsorbed in loop of henle and distal convoluted tubule.

ADH Hormone:

ADH released in distal convoluted tubule ensures maximum absorption of water.

Collection of Urine:

The left filtrate carries only urine and water enters into a collecting duct. Thousands of collecting ducts from all nephrons combine to form open into pelvis.



(c).

UNBALANCED DIET

"The diet carrying nutrients in not a proper ratio is known as unbalanced diet."

AFFECTS ON LIFE:

An unbalanced diet cause severe problems due to malnutrition or obesity.

1. Anaemia:

Anaemia is caused by taking less iron-containing food.

2. Obesity:

Obesity may cause due to excess of junk food.

3. Rickets:

Rickets may cause due to deficiency of calcium.

4. Night Blindness:

The deficiency of Vitamin A causes night blindness and weakening of Retina.

5. Scurvy:

The deficiency of Vitamin C causes Scurvy.



(d)-

Cell Wall

STRUCTURE:

It consists of three walls:

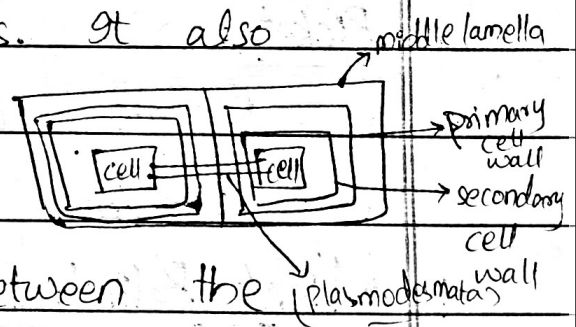
1. Primary Cell Wall:

It is living present in (small) every times of plants. It is made up of cellulose.

2. Secondary Cell Wall:

It is non-living present only in large trees. It also consists of cellulose.

3. Middle lamella:



It is present between the primary walls of two cells and made up of cellulose, hemicellulose and pectin.

4. Plasmodesmata:

Plasmodesmata acts as a bridge between two cells and allow movement of materials between them.

FUNCTION:

It provides strength, shape and structure and rigidity to a cell.

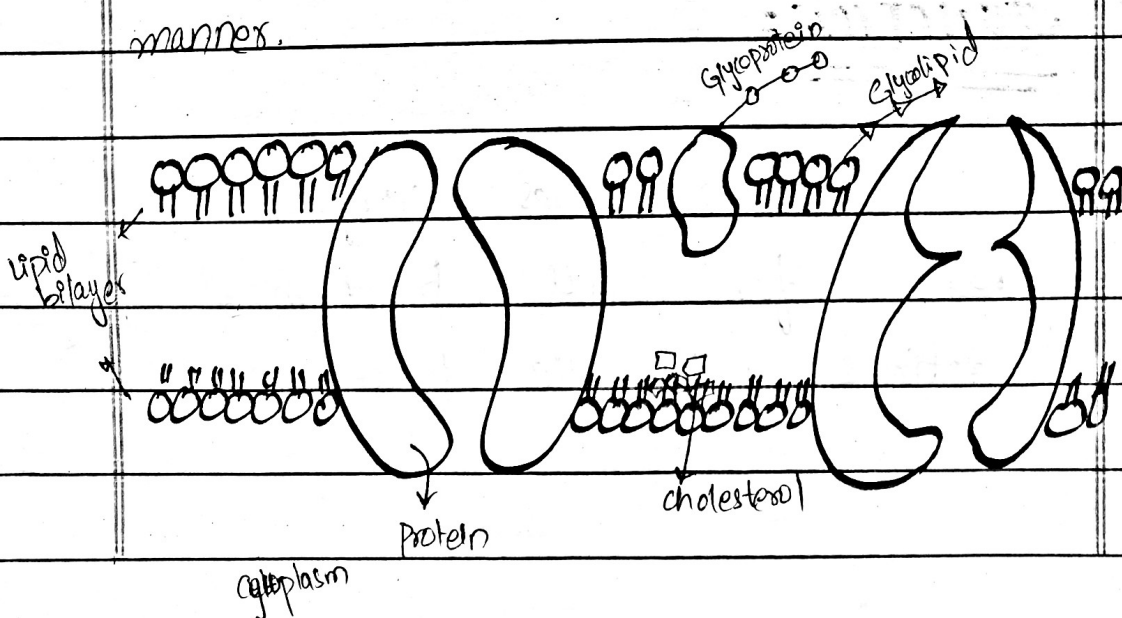
CELL MEMBRANE

STRUCTURE:

It's structure is explained by fluid mosaic model.

FLUID MOSAIC MANNER

The proteins are embedded in a lipid bilayer in a fluid mosaic manner.



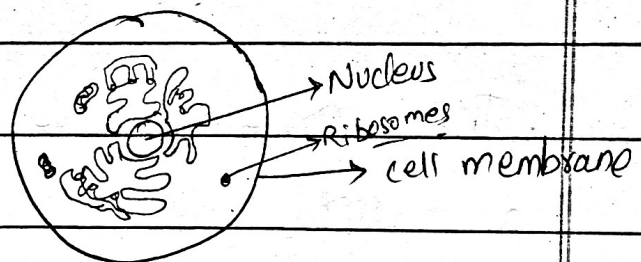
FUNCTION:

It acts as a semi permeable membrane allow only few materials to pass through it.

CYTOPLASM

STRUCTURE:

It consists of cytosol and cyto gel. The organelles ATP, RNA are embedded in it.



FUNCTION:

It provides surface area for all biochemical reactions to take place in.

MITOCHONDRIA

STRUCTURE:

It consists of:

1- Membrane:

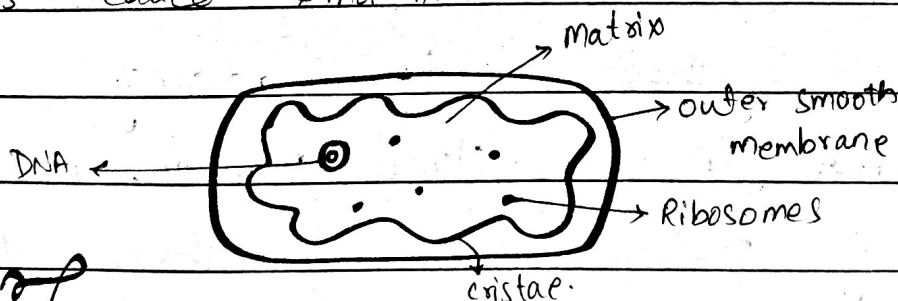
It consists of two membranes

2- Organelles And DNA:

It contains ribosomes and circular DNA in it.

3- Outer to Inner Membrane:

It consists of outer smooth and inner curved membrane called cristae while fluid inside is called matrix.



FUNCTION:

It involves in Aerobic respiration and produces ATP. It is also known as power house of a cell.

QUESTION NUMBER 05

(b). BIOFUELS

"Biofuels are synthesized from living organisms directly."
--

• PRODUCTION OF BIODIESEL

• AND BIOGAS •

Biodiesel and Biogas can be synthesized by adding litter in a closed cylinder. At high pressure and in absence of air (O_2), bacteria decay organic matter and produces biogas and biodiesel.

(1) DIGESTIVE SYSTEM

"A group of organs (mouth, oesophagus, intestine, stomach) and glands that involve in digestion of food is called digestive system."

Role of Stomach:

Stomach helps in digestion of protein.

Role of Pepsin:

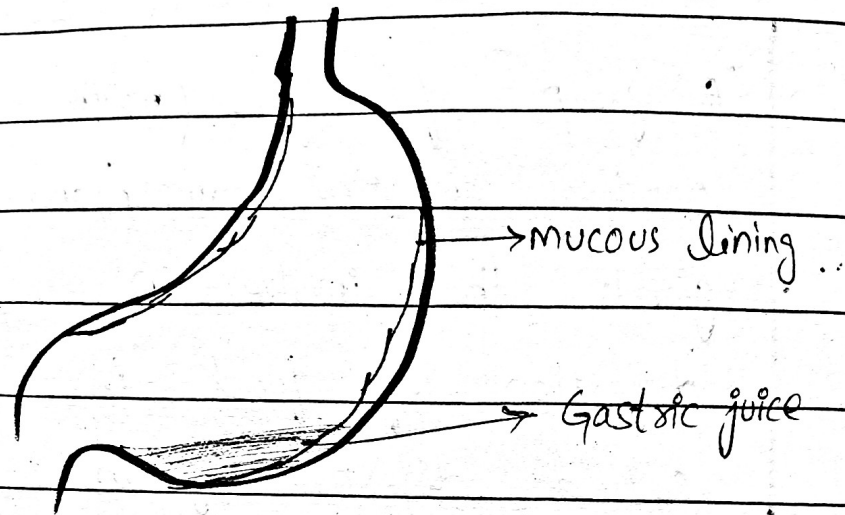
A protein digesting hormone pepsinogen is released in the stomach.

Role of HCl:

HCl kills the microbes present in food and activate Pepsin enzyme (convert pepsinogen into pepsin)

Circular Muscular Membrane of Stomach

mixes food with gastric juice
by contraction and relaxation.



ROLE OF INTESTINE (SMALL)

Small intestine consists of

- 1- Duodenum
- 2- Jejunum
- 3- Ileum

1- DUODENUM:

It involves the further breakdown of remaining protein, carbohydrate and lipids.

2- Jejunum:

It contains enzymes for remaining digestion of food.

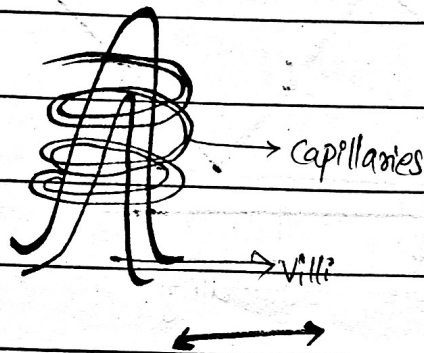
3- Ileum:

It involves in the absorption

of food.

Villi:

It consists of finger like projections called villi which are surrounded by capillaries for the absorption of food.



(c) WORKING OF OPTIC FIBERS

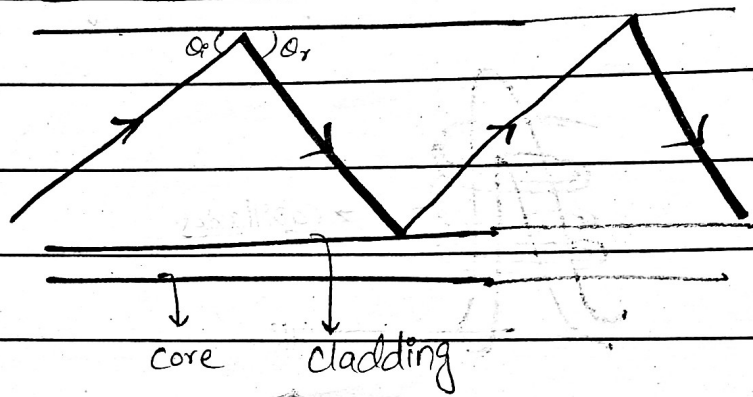
Total Internal Reflection:

The working principle of optic fibers is total internal reflection.

Working:

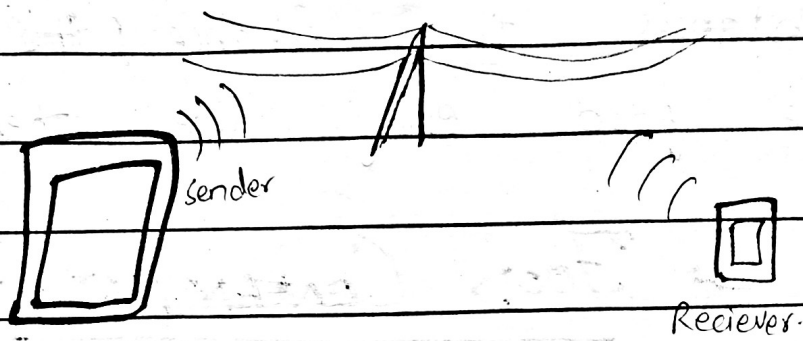
The angle of incidence of a ray when greater

than the critical angle.
Some of the rays are
absorbed and some are
reflected from the cladding.



WORKING OF MOBILE PHONE

Mobile phones consists of receptors, assimilator, sender. A part of mobile phone that sends signals to another phone. The tower receive signals and send to the reciever of mobile. The mobile then translates the data into language and interpret it.



(d). FOOD ADDITIVES

Food additives are the substances added to the food to enhance its taste, quality and durability of the food. like food color.

FOOD PRESERVATIVES

Food preservatives are the substances added to the food to enhance its time of usage like vinegar.

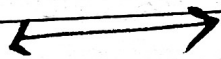
FOOD ADULTERATION

Food adulteration are the

substances that enhance / tho' ripe
the food early like ethene.

Food Contamination

Food contamination are the
substances that deteriorate the
quality of food like bacteria.



SECTION - II

QUESTION # 06

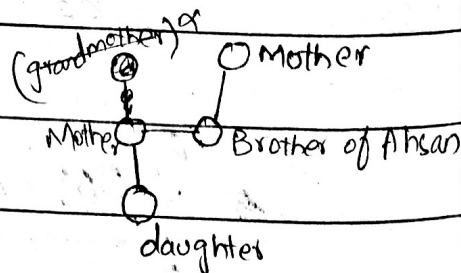
(A)-

Given:

Ahsan



woman.

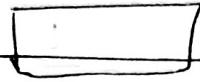


Final Result: woman is the

mother of Ahsan.

(B) Given:

$$\frac{l}{w} = \frac{3}{2}$$



$$v = 12 \text{ km/hr} \quad t = 8 \text{ min.}$$

Find:

$$\text{Area} = ?$$

Formula:

$$\text{Area} = l \times w.$$

Solution:

$$v = \frac{12 \times 1000 \text{ m}}{60 \text{ min}}$$

$$v = 200 \text{ m/min.}$$

$$\begin{aligned} \text{boundary - perimeter} &= v \times t \\ &= 200 \times 8 \\ &= 1600 \text{ m.} \end{aligned}$$

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

$$\text{Perimeter} = 2(l + w)$$

$$1600 = 2\left(\frac{3}{2}w + w\right)$$

$$\text{As } \frac{l}{w} = \frac{3}{2}$$

$$l = \frac{3}{2}w.$$

$$1600 = 2\left(\frac{3w + 2w}{2}\right)$$

$$1600 = 2\left(\frac{5w}{2}\right)$$

$$w = \frac{320}{81}$$

$$w = 320 \text{ m.}$$

$$\frac{L}{w} = \frac{3}{2}$$

$$\frac{L}{320} = \frac{3}{2}$$

$$L = \frac{3}{2} \times 320$$

$$\begin{array}{r} 160 \\ \times 3 \\ \hline 480 \end{array}$$

$$L = 480 \text{ m.}$$

$$\text{Area} = L \times w$$

$$= 320 \times 480$$

$$A = 153600 \text{ m}^2$$

$$\begin{array}{r} 320 \\ \times 480 \\ \hline 25600 \\ 128000 \\ \hline 153600 \end{array}$$

$$\text{Area} = \frac{153600 \text{ km}^2}{(1000)^2}$$

$$= \frac{153600}{1000000}$$

$$\text{Area} = 0.1536 \text{ km}^2$$

C. Given:

$$\begin{matrix} T & U \\ x & y \end{matrix}$$

$$y = x + 2$$

$$(xy)(x+y) = 144$$

find:

Number = ?

Solution:

$$(72)(16) = 144$$

$$y = x + 2$$

$$(x)(x+2)(x+x+2) = 144$$

$$(x^2 + 2x)(2x+2) = 144$$

$$x^2(2x+2) + 2x(2x+2) = 144$$

$$2x^3 + 2x^2 + 4x^2 + 4x = 144$$

$$2(x^3 + 3x^2 + 2x) = 144$$

$$x^3 + 3x^2 + 2x = 72$$

$$x(x^2 + 3x + 2) = 72$$

$$x(x^2 + 2x + x + 2) = 72$$

$$x(x(x+2) + 1(x+2)) = 72$$

$$x(x+1)(x+2) = 72$$

$$x(x+1)(x+2) = 72$$

$$x = 72$$

$$x+1 = 72$$

$$x+2 = 72$$

$$x = 71$$

$$x = 70$$

$$(AS, x)^2$$

AS,

$$(xy)(x+y) = 144$$

$$\left. \begin{array}{l} \text{For } 72, \\ (72y)(72+y) = 144 \end{array} \right\} x$$

$$x = \frac{72}{16} = 7$$

AS

$$y = x + 2$$

$$y = 7 + 2$$

$$y = 9$$

So, the number is 79

D).

$$x \cdot y$$

$$L.C.M = 48$$

$$\frac{x}{y} = \frac{2}{3}$$

Find: sum of no. = ?

Solution:

$$L.C.M = 2 \times 2 \times 2 \times 2 \times 3$$

$$L.C.M = 48$$

$$\begin{array}{r|l} 2 & 48 \\ \hline 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\text{let } x = 2 \times 2 \times 2 \times 2 = 16$$

$$y = 2 \times 2 \times 2 \times 3 = 24$$

sum of numbers

$$x + y = 16 + 24$$

$$= 40$$

Question No. 08-

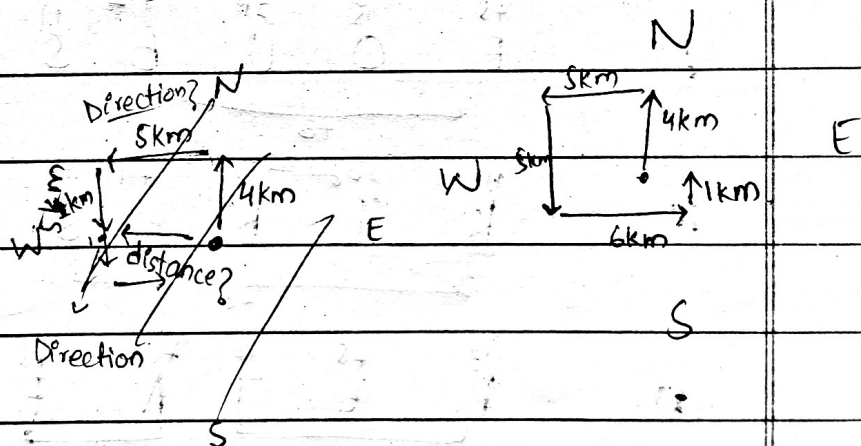
(A)

D B A E C

E C

A is in the middle.

(B)



Answer:

$$\text{Displacement} = -4 \text{ km} + 5 \text{ km} - 5 \text{ km} + 6 \text{ km}$$

$$= 2 \text{ km}$$

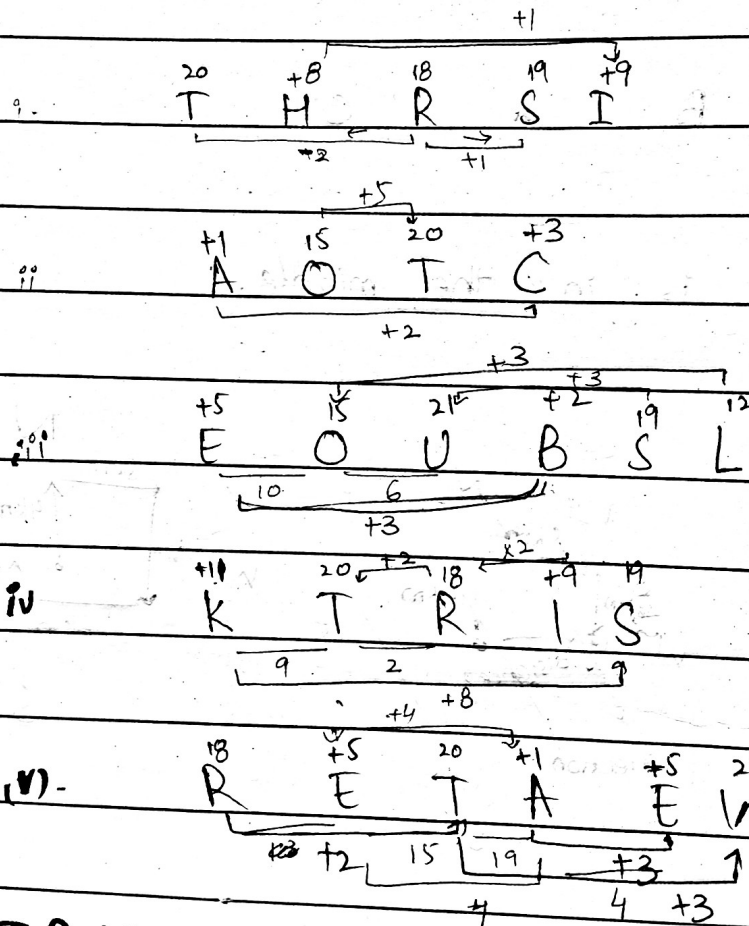
$$= 2 \text{ km}$$

Direction While finishing
(South) North

Direction after Second turn
South

Direction: (From finish to start).
West

(c)



k T R I S is odd one.

D

~~30 triangles~~

32 triangles

