



7

Q

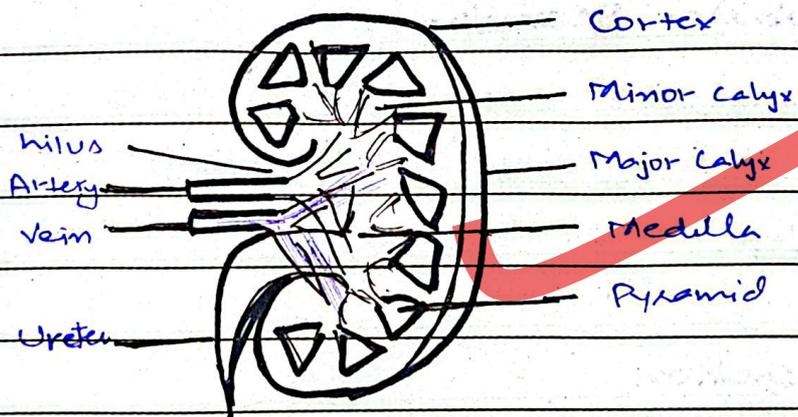
Talal Fatima

GSA - FULL LENGTH

Q no 2(a) Working of human kidney

HUMAN KIDNEYS

Human bodies have a pair of kidney, a bean shaped organ that filter blood and remove wastes from body through urine. Each kidney has about 01 million nephrons that is functional unit of kidney.



Human kidney

STEPS OF URINE FORMATION

1. Glomerular Filtration

Blood is filtered in glomerulus; water, salts, glucose and urea pass into Bowman's capsule

2. Selective Reabsorption

Useful substances like glucose, Amino Acids, Water and Salts are reabsorbed in the tubules

3. Tubular Secretion

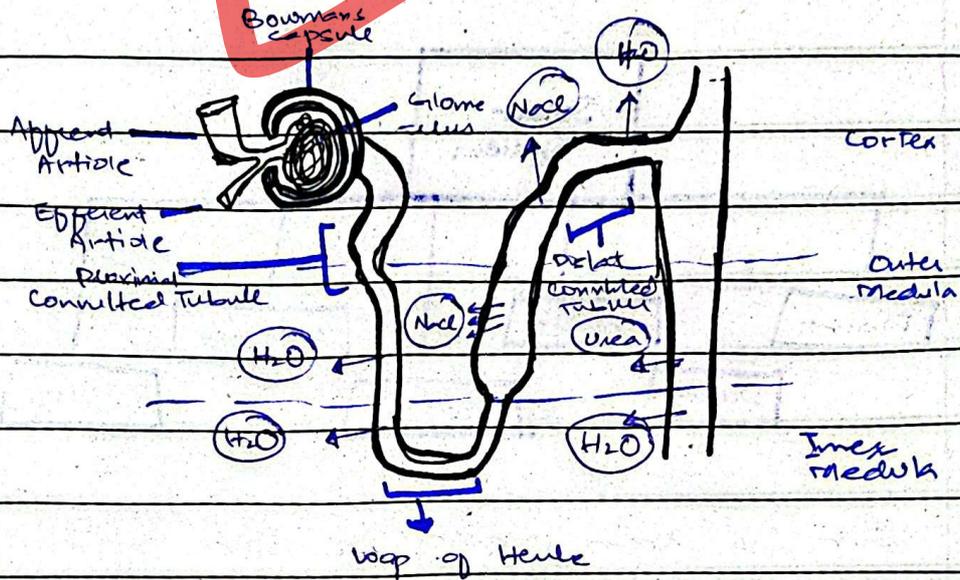
Extra waste like K^+ ion, H^+ ions and drugs are secreted into tubules.

4. Excretion

Final Urine is collected in pelvis through ureter, collects in bladder and is excreted



through urethra out of the body.



Nephron

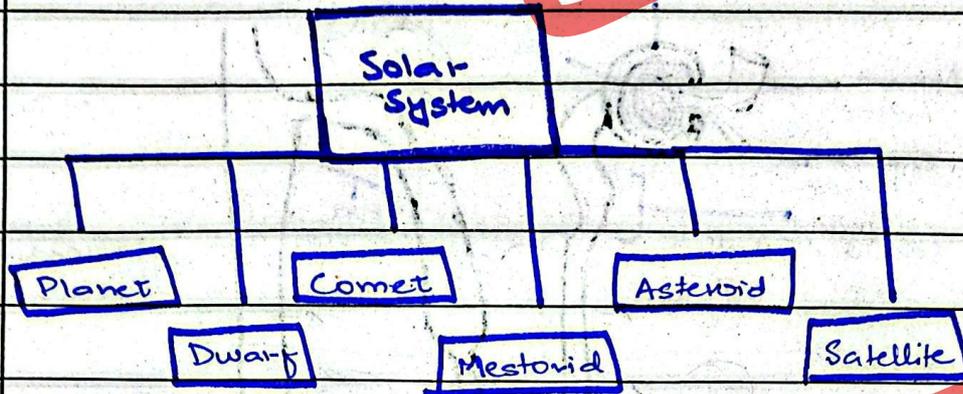
Functions

- * Removes Urea, toxin from body
- * Regulates water and electrolytes in body
- * Maintain pH and regulate blood pressure

(b) SOLAR SYSTEM

Solar system consist of sun

planet, dwarf, moon, asteroid belt
comets, meteors and other objects



Sun is the center of solar system and all other objects in system orbit around sun. Solar system is elliptical in shape which means it is like an egg, around 4.5 billion years old. Formed out of huge cloud of gas and dust called solar nebula. Sun contains more than 99% of the total mass of solar system.

COMPONENTS OF SYSTEM

1- Sun

Sun alone comprise of



99% of total mass of solar system, placed in center and is source of heat and energy for all.

2. Planets - 8

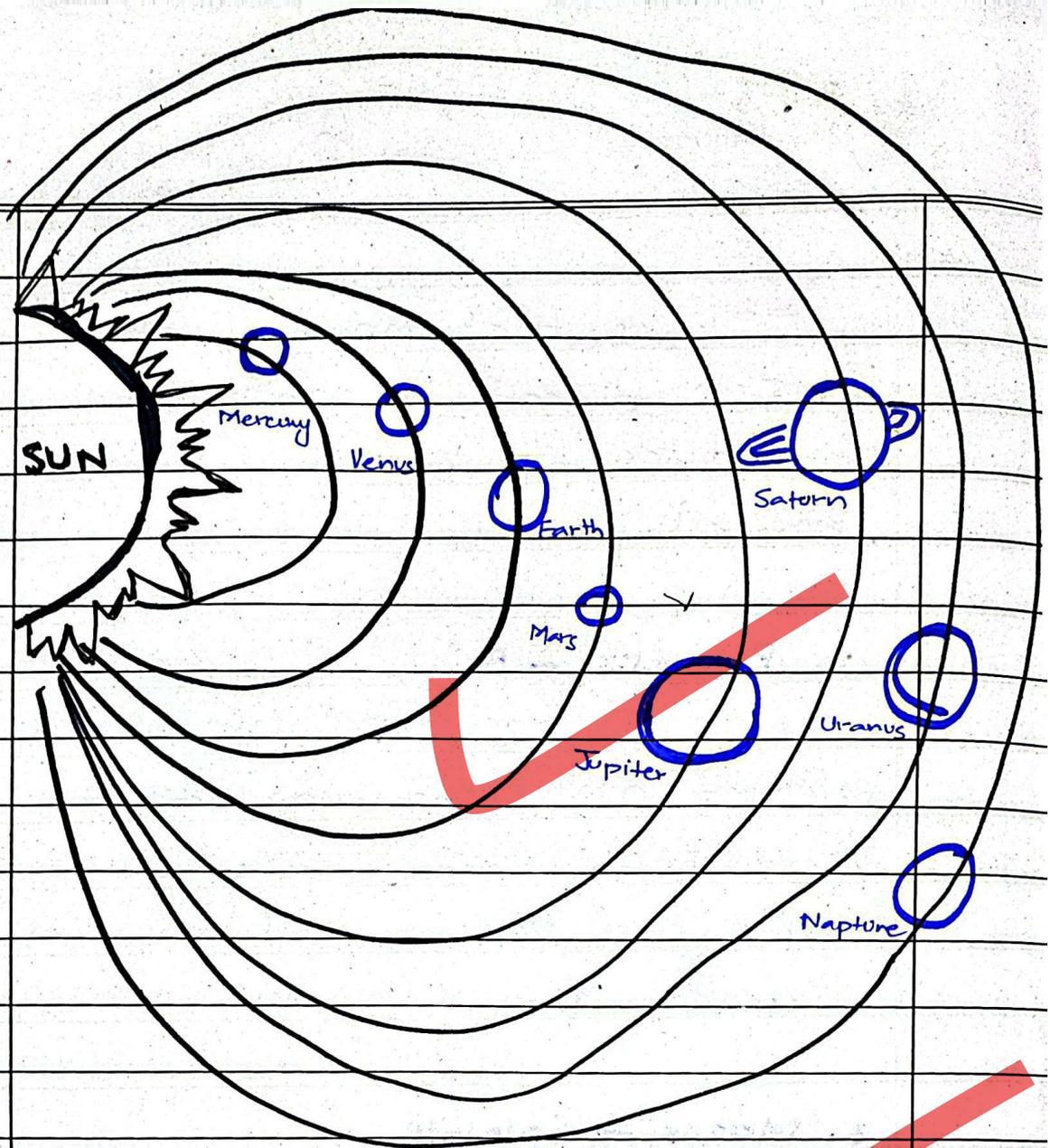
There are eight planets revolving around the sun. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune, all differ in composition from each other.

3. Moons - Satellite

Moon is a natural satellite and part of solar system that orbits planets.

4. Asteroid

Asteroids are the rocky bodies between Mars and Jupiter.



5. Comets

Comets are long tails of ice and dust present in outer solar system, usually known as dirty snow balls

6. Meteoroids

Small rocky and metallic bodies originating from



Comets

(c) BALANCED DIET

Definition

A balanced diet provides all essential nutrients, carbohydrates, proteins, fats, vitamins, minerals, water and fibers in correct proportion for energy, growth and overall health.

Components

* Carbohydrates

Primary energy source of body present in grain, fruits

* Proteins

Nitrogenous Amide linkages essential for growth and maintenance of body.

* Fats

Source of energy and insulation, needed for cell

functioning

* Vitamins and minerals

Required for vital
body process obtained from
fruits, vegetables

* Fiber

Aids digestion present
in fruits and whole grains

* Water

Essential for transport
and metabolic reactions

IMPORTANCE OF BALANCED DIET

1- Disease prevention

- Reduce risk of heart disease or stroke
- Maintain all organs in healthy position and avoid Type-II diabetes or other chronic pathologies.



2. Energy and Mood

- Provide sustained energy and supports the normal functioning of brain cells.

- Regulate hormone on rhythm that improves mood and emotional well-being.

3. Weight Management

- Helps maintain a healthy weight by balancing calories and nutrients.

4. Strong Immunity

- Supplies vitamins and minerals to strengthen immune system to fight against infection or microbes.

5. Better Sleep

• — Healthy and balanced diet contributes to better sleep patterns.

6.

6. Digestive Health

• — Fiber promotes better digestion, leading to better absorption of nutrients.

7. Physical Health

• — Supports strong bones, healthy skin, teeth and muscles, shaping into healthy fit human being.

(d)

**CELL, PLANT, ANIMAL
AND MICROORGANISM**

Definition

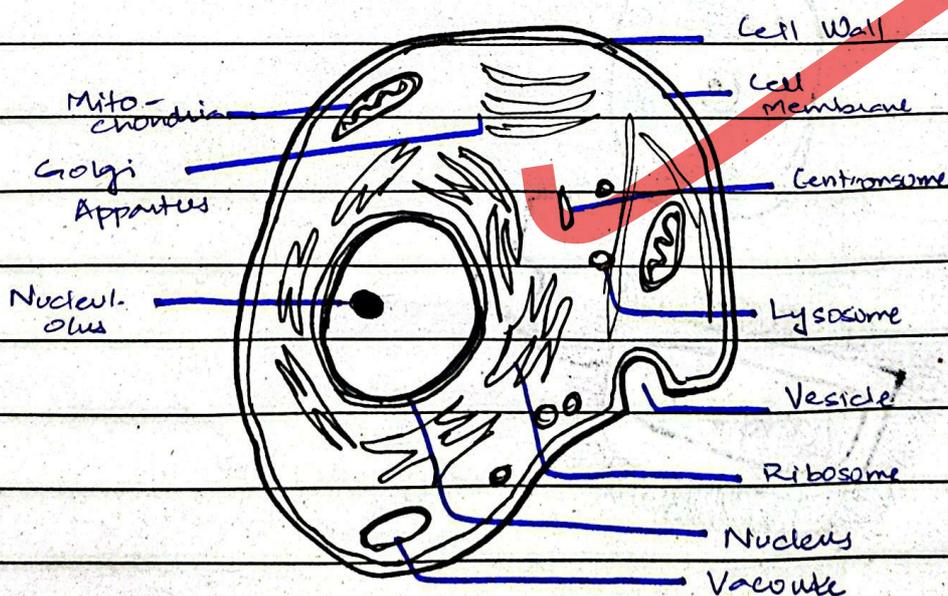
Cell is the fundamental

building block of all organism
Or in other words structural
and functional unit of life.

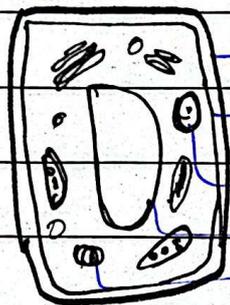
Cell contain cytoplasm,
genetic material that is surrounded
by cell membrane.

Main functions of cell are
nutrient processing, energy conver-
-sion and carrying hereditary info-
-mation.

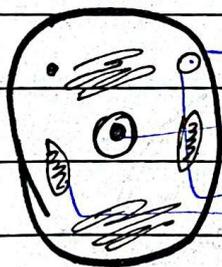
Cells are categorized as
Simpler prokaryotes — bacteria Or
Complex eukaryotes — Plant, Animal.
with membrane bounded organ-
-elles



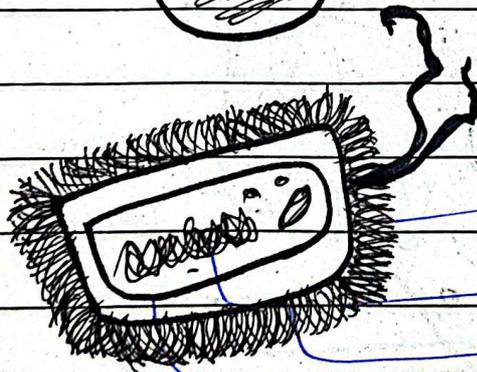
Features	Plant Cell	Animal Cell	Microorganism
Cell Wall	Present	Absent	Present
Chloroplast	Present	Absent	Absent
Shape	Rectangular	Irregular	Variable
Nucleus	Present	Present	Absent



Cell Wall
 Cell Membrane
 Nucleus
 Vacuole
 Chloroplast



Cell Membrane
 Nucleus
 Vacuole
 Mitochondria



Tail
 Villi
 DNA
 Envelope
 Capsule

4.5



Q NO 3 (a)

CAUSES OF GLOBAL WARMING

Definition

As per the report of IPCC, Average and gradual increase in the temperature of Earth, from 1850-2024 was 1.2°C in temperature.

Background

Industrial and Agricultural revolutions have contributed tremendously towards social, political, economical and scientific development in the world. But due to these revolutions the intensity and frequency of human activities within natural setting increased and further increased the risk of global warming.

CAUSES OR CONTRIBUTING FACTORS

1- Enhanced Green House

Effect

Normal and natural green house effect has been accelerated due to increasing levels of green house gases in atmosphere.

All such gases that have the ability to absorb, trap and scatter heat are green house gases

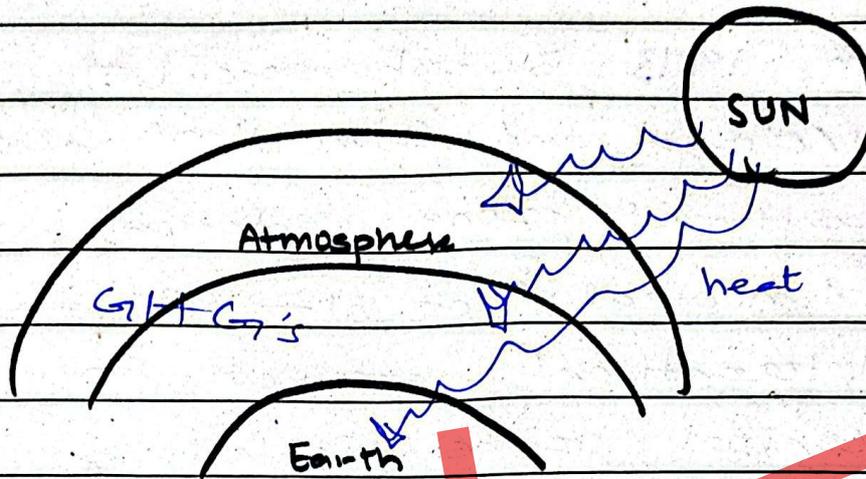
— IPCC

Contribution in Global Warming

CO ₂	61%
Methane	15%
CFC's	11%
N ₂ O	04%

— IPCC

The following stats are given in IPCC report.



The heat absorbed in Earth cannot be reflected back.

2. Ozone Depletion

Thin layer or shield present in Stratosphere made up of Ozone (O_3) gases. Ozone is responsible for the filtration of radiations coming from sun to avoid UV rays to reach earth.

But now declining trend is observed.

British Antarctic Survey, 1985 has confirmed ozone depletion. Later

In 1973 British scientist
Melonia and Shear Wood also
confirmed ozone depletion.

Montreal Protocol - 1987 an
International agreement to
control ozone depleting
substances.

3. Population Explosion

Massive
uncontrolled explosion of
population, with limited resource
and resource management
strategies, resulting in more
use ODS - Ozone depleting
substances like CFC's through
refrigerator resulting in global
warming.

4. Massive Deforestation

In order
to accommodate the huge popul-

-ation - people are cutting trees and forest, disturbing the balance between atmospheric gases ultimately leading towards global warming.

5. Rapid Urbanization

is another factor, becoming requirement to adjust the population by creating more cities without town planning resulting in water scarcity, soil wastage reduction in greenery and more production of contributing factors of global warming.

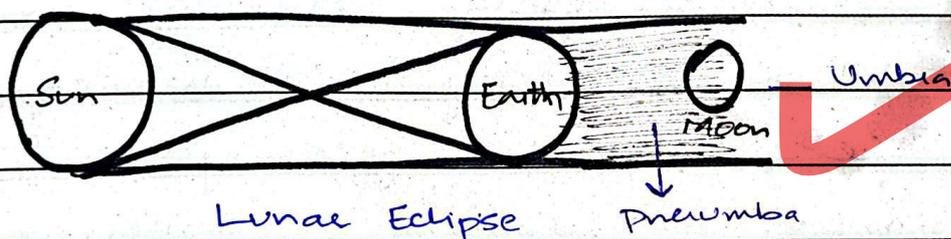
(b) ECLIPSE

Eclipse take place when one

heavy body like moon
or earth move in shadow
of other heavy body.

LUNAR ECLIPSE

Moon moves
on orbit around Earth and the
same time Earth moves around
Sun. keeping Earth in between
moon and Sun.



Types

* Penumbral Eclipse

Moon only pass
through penumbral shadow
of Earth

* Partial Lunar Eclipse

Part of moon pass

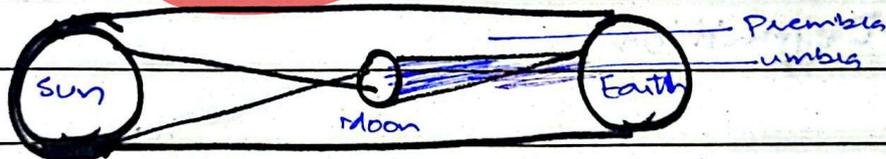


through umbra of shadow
of Earth
* Total Lunar Eclipse

When entire
moon pass through umbra
shadow.

SOLAR ECLIPSE

Moon orbits
around Earth, moves between
Sun and Earth. This is
called Solar Eclipse.



Solar Eclipse

Types

* Total Solar Eclipse

Moon completely
covers the Sun, very small area
on Earth, but completely becomes
dark.

* Partial Solar Eclipse

When
do not align in perfectly
straightly line, leading
little less dark on earth.

* Annular Solar Eclipse

When
moon appears smaller than
Earth and pass centrally

(C)

TUSNAMI

Definition.

Series of large
ocean waves caused by sudden
displacement of seawater due
to an underwater earthquake,
volcanic eruption, land slide
or meteor impact.

Causes

There are few most



highlighting causes of
Tsunami.

- 1- Submarine Earthquake
- 2- Volcanic Eruption
- 3- Under sea landslide
- 4- Meteorite Impacts

Characteristics

- — Travel very fast in deep oceans upto 800 km/h
- — low height in open sea, but very tall in near shore
- — Cause massive costal destruction.

Impacts

- — Loss of life and Property
- — Flooding the costal Areas
- — Soil Salinity
- — Spread of disease

Example

- — 2004 Indian Ocean Tsunami
- — 2011 Japan Tsunami

CYCLONE

Definition

A cyclone is a large rotating storm system formed over warm oceans with strong winds, heavy rainfall and low pressure at center.

Types

There are mainly three types of cyclones

- * Tropical Cyclone — Asia
- * Hurricane — America
- * Typhoon — Pacific

Conditions

- — Warm Ocean Water
- — Low Atmospheric Pressure
- — Moist Air
- — Centripetal force

Characteristics

- — Spiral wind pattern



- — Heavy Rainful
- — Storm Surges
- — Thunder storm

Impact

- — Flooding
- — Power failure
- — Infra structure Damage
- — Crop Destruction

(d)

FOOD PRESERVATION METHODS

Definition

The process of preventing spoilage of food by slowing the growth of microorganism and enzymes.

Methods

1- Drying

Water is removed from food to stop microbial growth — Dried Fruits

2. Refrigeration

low temperature
slows bacterial activity
Frozen Meat, Veges

3. Freezing

Very low temperature slows enzyme and bacterial action
Meat and Peas

4. Canning

Food is heated and sealed in airtight containers
Canned beans

5. Salting

Salt draws out moisture from food
Salted Fish

3

SECTION # 11

Q 6 (a)

Zahid : Basit

3 : 2

After 5% charity —

remaining 95%

$$\text{Zahid share} = \frac{3}{5} \times 95\%$$

$$= 8550$$

$$\text{Total Profit} = \boxed{\text{Rs } 15,000}$$

(b)

$$20\% \text{ of } a = b$$

$$b\% \text{ of } 20 = \frac{b}{100} \times 20$$

$$= \frac{0.2a}{100} \times 20$$

$$= 0.04a$$

$$\boxed{4\% \text{ of } a}$$

(C)

$$\text{LCM} \times \text{HCF} = \text{product} = 294$$

$$\text{Let Number} = 2n, 3n$$

$$\text{LCM} = 6n$$

$$\text{HCF} = n$$

$$6n^2 = 294$$

$$n^2 = 49$$

$$n = 7$$

$$\text{Number} = 14, 21$$

(D)

$$\begin{aligned} \text{Wall Volume} &= 8 \times 6 \times 0.225 \\ &= 10.8 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \text{Brick Vol} &= 0.25 \times 0.1125 \times \\ & \quad 0.66 \\ &= 0.0016 \text{ m}^3 \end{aligned}$$

$$\begin{aligned} \text{No. of Brick} &= 10.8 / 0.0016 \\ &= 6400 \end{aligned}$$

$$\begin{aligned} \text{Cost} &= 6400 \times 30 \\ &= \text{Rs } 192,000 \end{aligned}$$

Q NO 08
(a)

Rows = 10, gaps = 9
Columns = 12, gaps = 11

Distance b/w Trees = 2m

$$\text{Length} = (11 \times 2) + 2$$

$$= \boxed{24\text{m}}$$

(b)

Sitting order from
left to right

E - B - A - C - D

So A is sitting
in 3rd position

(c)

$$\left(\frac{1}{3}\right) \times \left(\frac{1}{4}\right) n = 15$$

$$\frac{n}{12} = 15$$

$$n = 180$$

$$\frac{.3}{10} n = 54$$

(D)

Movement

North 15 km

West 10 km

South 5 km

East 10 km

Net = 10 km North

Total Distance = 40 km