

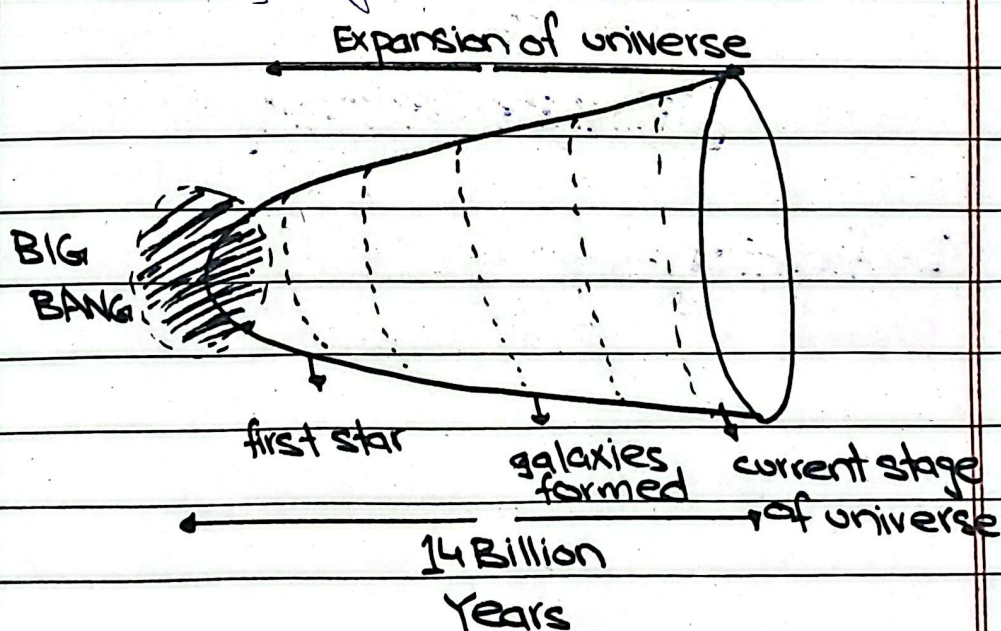
PART-II
SECTION-A
ANSWER-2

(a)

BIG BANG THEORY

The structure and age of the universe is explained by the Big Bang Theory.

The theory states that the universe emerged from a single point 'singularity' and then stars and eventually galaxies were formed.



- Big Bang Theory Explains Structural expansion of universe.

Evidence of Expansion:

Big Bang Theory suggests that the universe is in continuous expansion.

Phenomena of 'Red Shift' of planets validates this claim.

Age of Universe:

$$\text{Age of Universe} \approx \frac{1}{H_0}$$

Where, H_0 = Hubbles Constant

$$= 27 \text{ M/s/Km}$$

$$= 13.8 \text{ Billion Years}$$

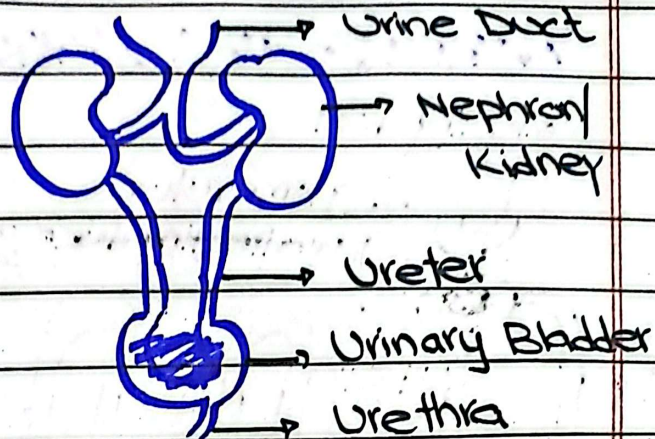
(b)

URINARY SYSTEM

Definition:

"Urinary System is an excretory system that is involved with filtration of blood in kidney, and carrying of toxins/waste fluids as urine to the urinary bladder and then out of the body via urethra."

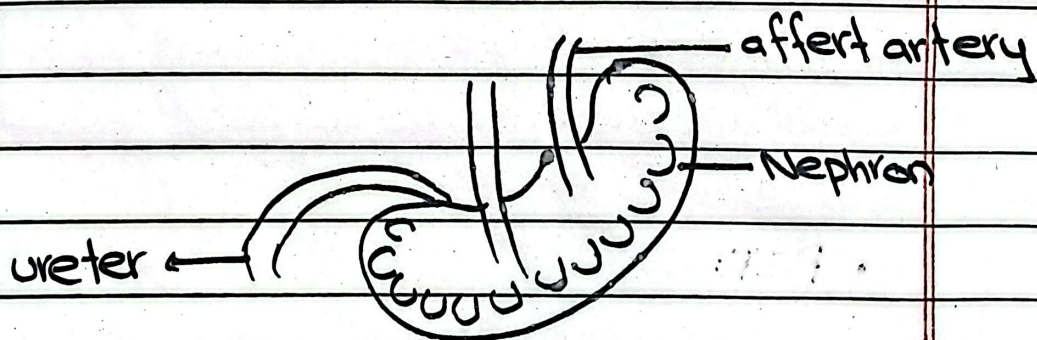
DIAGRAM:



• Urinary System

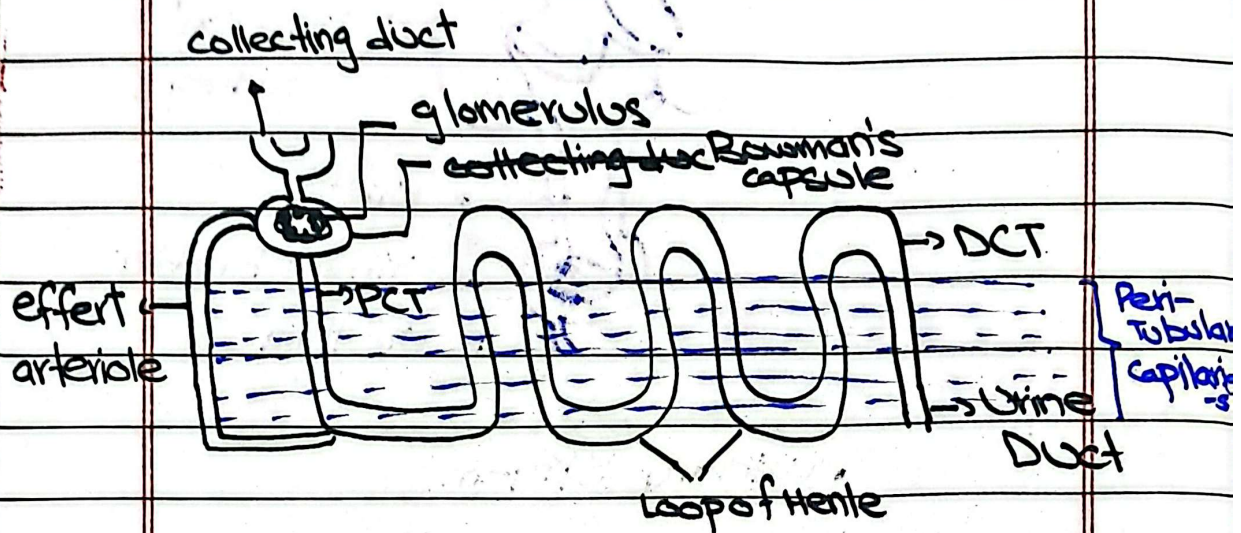
NEPHRON:

The basic structure/functional part of kidney is nephron. Over 1 million nephrons are present inside kidney that filter the urine.



• Structure of Nephron

WORKING OF NEPHRON:



Working of Nephron:

• Glomerular Filtrate:

Urine from collecting duct enters glomerulus & is filtered. Wastes are removed by complex network of capillaries while water, ions, salts, minerals remain as glomerular filtrate.

• PCT:

Reabsorption of water takes place in Proximal convoluted Tubule.

• Loop of Henle:

Excess salts are reabsorbed in loop of henle.

• DCT:

Ions, minerals are reabsorbed in

Distill convoluted Tubule.

- Urine Duct:

wastes are collected in urine duct to be excreted out.

(c)

UN-BALANCED DIET

DEFINITION:

"Diet that lacks balanced proportion of essential micro and macro nutrients is called un-balanced diet."

MicroNutrients → Water
→ Vitamins
→ Minerals

MacroNutrients → Carbohydrates
→ Lipids
→ Proteins

Components:

- Excessive Packaged Food, Junk
- Extremely Processed Food
- Fizzy, Sugary Drinks

- Excess Caffeine
- Inadequate water consumption
- Excess Salt consumption

Affects on Healthy Living:

An unbalanced Diet can adversely affect a person's physical health, mental functioning and lifestyle.

It can lead to :

- Obesity, Leanism
- Brain fog, Insomnia
- Memory Issues
- Weak bones
- Joint Pain
- Swollen Gums → Anemia
- Blood Pressure Fluctuations
- Weak Immunity against pathogens
- Hairfall, brittle nails
- Bad skin health
- Low energy, Lethargy
- Poor Sleep

(d)

CELL WALL:

It is outermost boundary of plant cell. It is absent in animal cells.

Composition:

Cell wall is made up of cellulose in animal cell.

Cell wall in prokaryotic cell is composed of peptidoglycan.

Structure:

Cell wall is rigid. It provides mechanical support to the cell. It is non-permeable.

CELL MEMBRANE:

This organelle is outermost boundary of animal cell. It is also termed "Plasma Membrane".

Composition:

It is made up of lipids, proteins and phospholipids.

Structure:

Cell Membrane is semi-permeable.

It allows transfer of small materials in and out of the cell.

Example:

The fluid-mosaic model of cell-membrane is famous.

Function: - Provides Fluidity & Elasticity to cell.

CYTOPLASM:

It is the structure that exists within the cell membrane till nuclear membrane.

Composition:

It is made of 90% water and 10% of cell organelles.

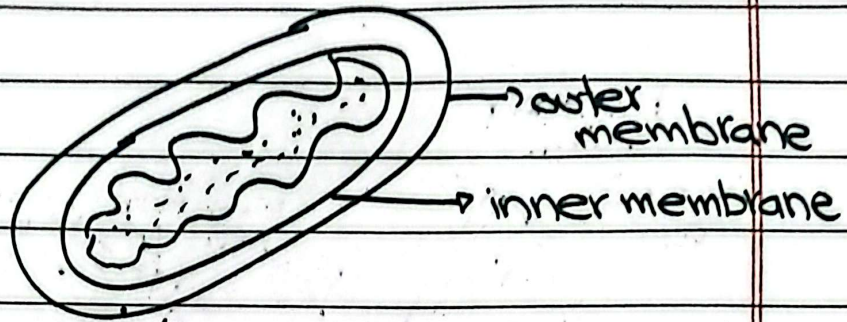
Structure:

It is jelly-like consistency that provides space for majority of cell functions to take place.

Function: The synthesis of proteins occurs here.

MITOCHONDRIA:

It is also called The PowerHouse of cell.



Structure:

- It is double membraneous
- It is self-replicating

FUNCTION:

The production of ~~ATP~~ Ribosomes occurs here.

ANSWER: 4

(3)

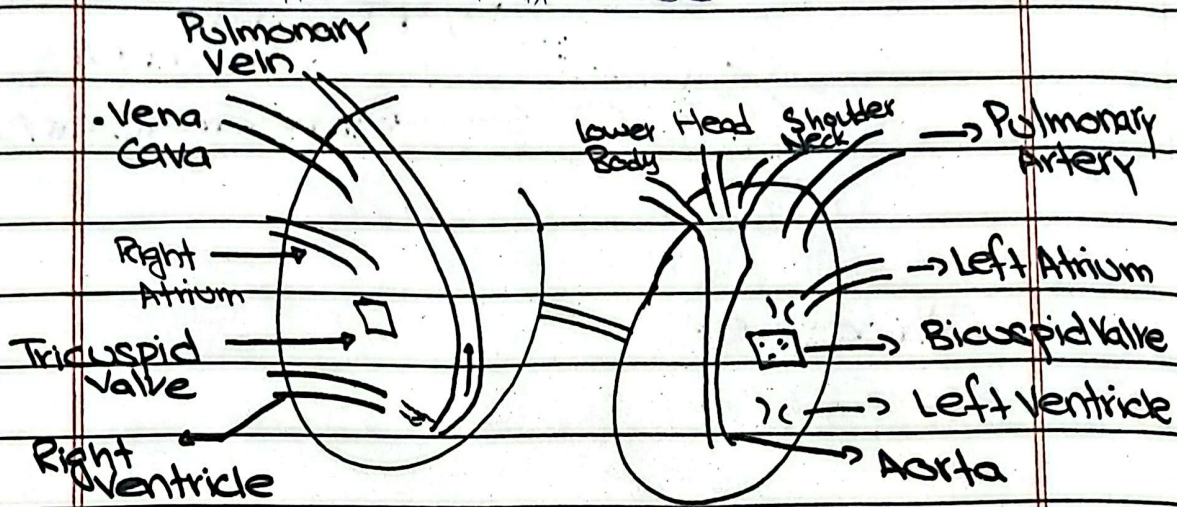
BLOOD CIRCULATION

ROLE OF HEART:

Human Heart is a muscular organ involved in the circulation of blood. It is primarily a "pumping organ".

It has four chambers and two valves to prevent the

backflow of fx blood.



• Structure of Heart.

Brief Explanation of Working:

All deoxygenated blood enters through right side. → Vena Cava & is passed to right ventricle via Tricuspid valve. From here, pulmonary ~~artery~~ vein carries it to Lungs, where it is oxygenated to return back to left chamber via the Pulmonary Artery. Finally, Aorta carries oxygenated blood to body.

ROLE OF BLOOD VESSELS:

THREE TYPES

(core of
circulation
system)

→ **Artery**: carry deoxygenated
blood from body to heart.

- Highest BP.

→ **Vein**: carry oxygenated blood
from heart to body

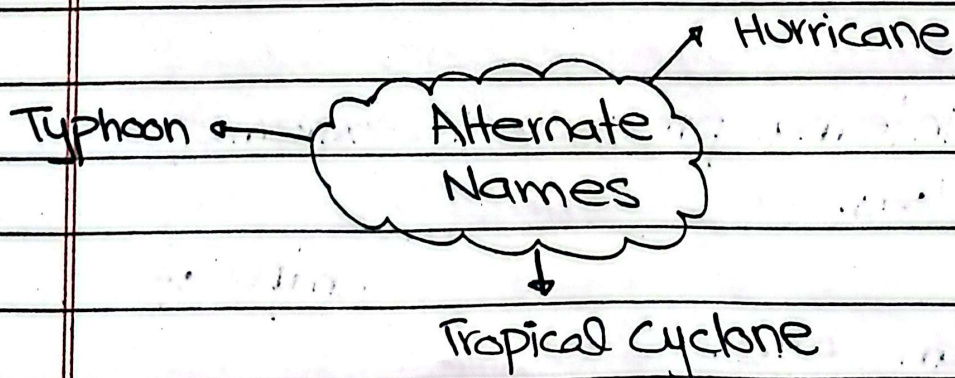
- moderate BP.

→ **Cappillary** carry both
types of blood.

- extremely thin, exchange.
- distributive role.

(b) CYCLONE.

A cyclone is essentially a storm formed
over warm waters. It causes excess
destruction.



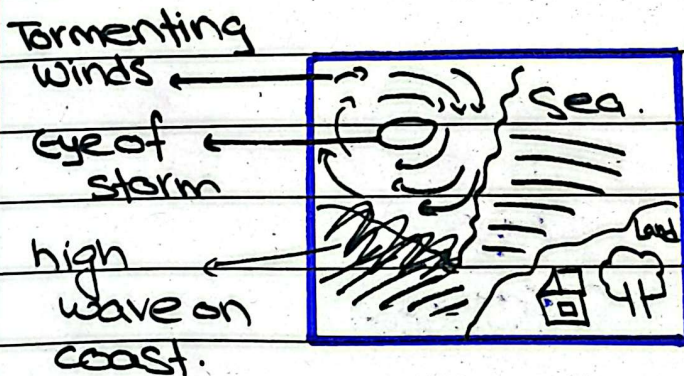
Depending upon geographical regions, names can vary.

- East/West USA : Hurricane
- Asia Pacific/Japan: Typhoon

Example:

- Hurricane Helen in USA
- Hurricane Sandy in USA.

FORMATION:



Essentially extremely high sea-storms or thunderstorms are required to trigger cyclones. It forms a whirlwind of air above warm waters where internal pressure is extremely low. This forms a centre of cyclone to appear in shape of an eye. Such disaster brings

great destruction on land, in seas and coastal areas.

(C)

FUNCTIONS

CARBOHYDRATES:

- They provide energy.
- Enable proper mental functioning.

Proteins:

- Have structural and functional roles in cell membranes.
- Boost body/muscle strength and immunity.
- Enzymes that conduct metabolic processes are proteins.

Fats:

- Used to store Vitamin (A, B, E, K)
- Provide insulation to internal
- × organs (lungs, heart)
- Used to extract oils, nutrients.

Calcium:

- Essential mineral for bone and teeth health.
- Enables body strength/growth.

Iron:

- Essential for growth.
- Important for skin, hair
- Ensures nutrient absorption in blood.

(d)

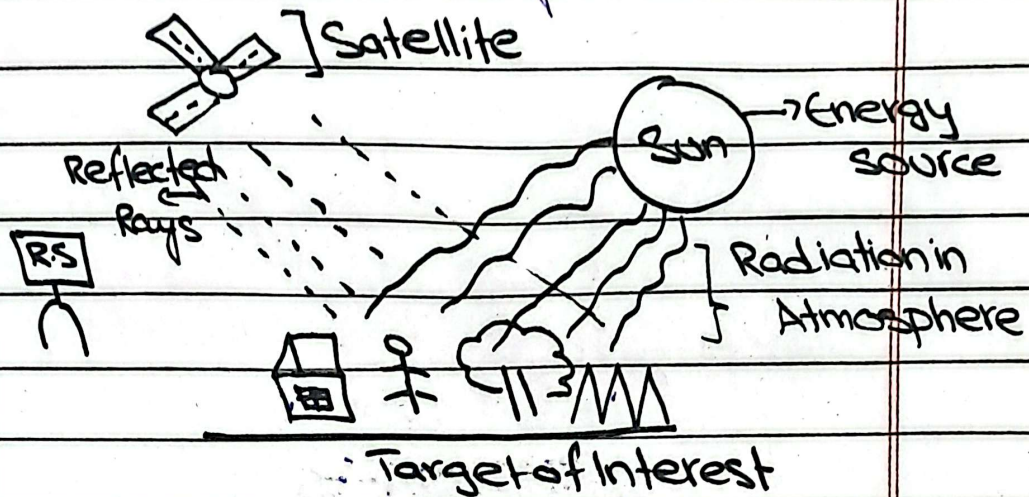
REMOTE SENSING

Remote Sensing Refers to the use of sensors carried via satellites to analyse and utilize land/settlements where human presence is not possible.

Elements:

- Sun / Source of Radiation / Energy
- Atmosphere
- Target of Interest.

- Sensor for data collection
- Unit for Analysis



- Remote Sensing

Environmental Purposes:

- Monitoring Pollution:

We can use remote sensing to analyze SWM issues in far-flung region.

- Forest Cover Analysis:

It enables to access rate of deforestation.

- Disaster Management:

In case of flood, landslide we can use remote sensors to monitor real-time situation. It can help

predict disasters too.

Example:

In case of Avalanches, Remote sensors are used to monitor loss of life. Dead body of Ali Sadpara was found using this technique.

SECTION-B

ANSWER-7

(a)

Let the numbers be x and y .

According to given situation:

$$\begin{aligned} 40\% \text{ of } x &= \frac{40}{100} (x) \\ &= \frac{2x}{5} \end{aligned}$$

So,

$$\frac{2x}{5} = \frac{2}{3} y$$

$$6x = 10y$$

$$\therefore \frac{x}{y} = \frac{10}{6}$$

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

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

Hence,

The ratio of the first number to second is $5:3$.

$$x:y = 5:3$$

(B)

Given:

Price of 17 balls = 720 Rs.

Loss = cost price of 5 balls

$$\begin{array}{r} 217.17 \\ \underline{68} \quad \underline{74} \\ 42.3 \\ 17 \overline{) 720} \\ \underline{68} \\ 40 \\ \underline{34} \\ 60 \\ \underline{51} \\ 9 \end{array}$$

Sale/Marked Price of 1 Ball =

$$= \frac{720}{17}$$

$$= 42.3 \text{ Rs.}$$

$$(-2) - y = 24$$

$$-2 - 24 = y$$

$$y = -26$$

(c)

Let,

Present age of man = x

Present age of son = y

Acc. to given condition:

$$x = y + 24$$

$$\text{So, } y = x - 24 \quad \text{--- (1)}$$

In two years:

$$x + 2 = 2(x - 24)$$

$$x + 2 = 2x - 48$$

$$x - 2x = -48 - 2$$

$$-x = -50$$

$$\boxed{x = 50}$$

Substituting ' x ' in (1)

$$y = x - 24$$

$$= 50 - 24$$

$$\boxed{y = 26 \text{ years}}$$

Present age of son is 26 years.

(D)

$$\text{Rate of work of Rashid} = \frac{1}{6} \text{ hours}$$

$$\text{Rate of work of Kamran} = \frac{1}{5} \text{ hours}$$

$$\text{Together} = \frac{1}{6} + \frac{1}{5}$$

$$= \frac{1}{30} \text{ hours}$$

$$\begin{aligned} \text{Work} &= 32 \text{ pages} + 40 \text{ pages} \\ &= 72 \text{ pages} \end{aligned}$$

$$\therefore \text{Total pages} = 110$$

$$\text{Time required per page} = \frac{30}{72}$$

$$= 2.4 \text{ hours}$$

$$\text{To do 110 pages} =$$

$$= 110 \times 2.4$$

$$= 264 \text{ hours}$$

03/01/2026

Day: Saturday

ANSWER: 8

(A)

5 Houses:

A, B, C, D, E

Acc to given statement, the houses are in following order:

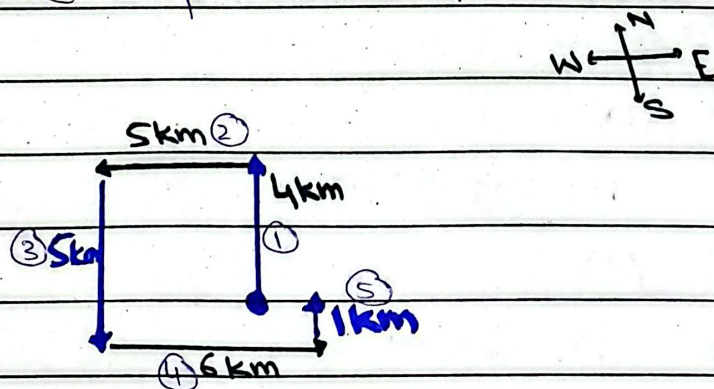
D, B, A, E, C

Therefore,

A, B and E are houses in the middle.

(B)

Figurative explanation of condition:



- I am at a displacement of 1 km (Eastwards) from my starting point
- Distance covered:

$$= 4\text{km} + 5\text{km} + 5\text{km} + 6\text{km} + 1\text{km}$$

$$= 21\text{ km ;}$$

- I will be running towards North upon finishing.
- After second turn, I will be running in Eastward direction.
- In order to reach my starting point from finishing point, I shall need to move 1 km in the eastward direction.

(C)

(a) SHIRT

(b) COAT

(c) BUSOLE

(d) SKIRT

(e) SWEATER

(C) is odd one out.

___/___/202

Day: ___

(D)

The figure shows 24 Triangles.