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(Section - B)

①

Q Question 7:

- (A) If 40% of a number is equal to two-third of a number. find ratio?

Solution:

Let first number be x Let 2nd number be y

According to given condition:

$$\frac{40}{100} x = \frac{2}{3} y$$

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

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

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

It can be written as

$$x : y = 5 : 3$$

Hence, ratio of 1st number to the 2nd number is 5 : 3

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(B) On selling 17 balls at Rs 720 ---

Solution:

Selling price of 17 balls = Rs 720

Let the cost price of 1 ball = x

Loss is equal to the cost

price of 5 balls. So,

$$\text{Loss} = 5x$$

$$\text{Total balls sold} = 17x$$

According to given condition

$$\text{Selling Price} = \text{Cost Price} - \text{Loss}$$

$$720 = 17x - 5x$$

$$120 \quad 720 = 12x$$

$$\quad \quad \quad \underline{12} \quad \quad \underline{12}$$

$$60 = x$$

Hence, cost price of 1 ball = Rs 60

(C) A man is 24 years older --- ?

Solution:

Let the age of man = x

Let the age of son = y

After 2 years:

Man age will be $x + 2$

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According to given condition:

Man is 24 years ~~you~~ older than son
 $[x = 24 + y] \rightarrow i$

After 2 years:

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

$$x + 2 = 48 + 2y$$

Putting the value of x from i)

$$24 + y = 48 + 2y$$

$$y = 22$$

Hence, the present age of
 son is **22 years**.

(D) Rashid and Kamran are working---

Solution:

Rashid takes 6 hrs to type = 32 pages

In one hour Rashid type = $\frac{32}{6}$ pages

In 1 hour Rashid type = 5.33 pages

Kamran takes 5 hrs to type = 40 pages

In 1 hour Kamran type
 $= \frac{40}{5} = 8$ pages.

In 1 hour Rashid and Kamran
combined type pages =

$$5.33 + 8 = 13.33 \text{ pages}$$

Total Pages need to be typed = 110 pages
Time they take to type
= $\frac{110}{13.33}$

$$= 8.25 \text{ hrs} = 8 \text{ hrs } 15 \text{ min}$$

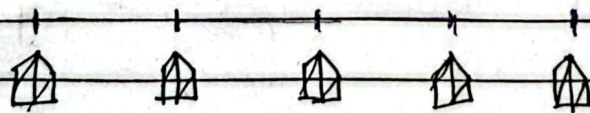
Kamran and Rashid will take
8 hrs 15 min to type 110 pages
if work combine.

Question 8:

(A) There are 5 diff houses A - - - - ?

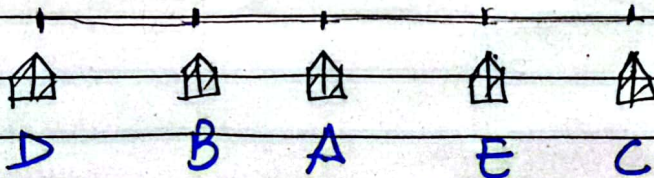
Solution:

5 houses



According to given data :

A is to the right of B
and E is left of C and right of A.



⑤

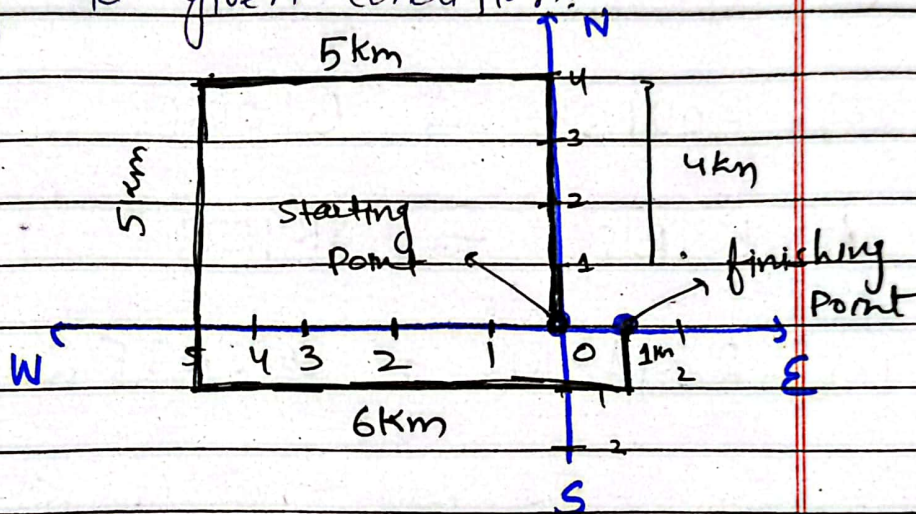
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Hence, **A** is the middle house

(B) If you start running from ---?

Solution:

According to given condition:



→ How many km are you from started?

1km away from starting point

→ In which direction running while finishing?
while finishing running **North** direction.

→ After taking 2nd turn, in which direction you will be running.

After 2nd turn, running in **South** direction.

→ from the finishing point ---?

Turn left, run **1km** towards
West

(C) Find odd one out

Solution:

(a) THRST → SHIRT

(b) AOTC → COAT

(c) EOUBSL → BLOUSE

(d) KTRIS → SKIRT

(e) RETAESWS → SWEATER

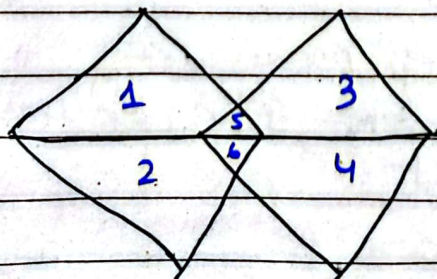
The odd one is Sweater
because Sweater is used
only in winter, other
items can be used through
out the year.

(D) How many triangles?

Solution.

No. of triangles = 2
So,

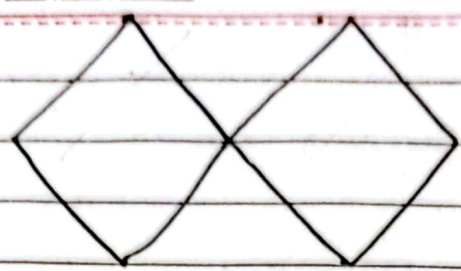
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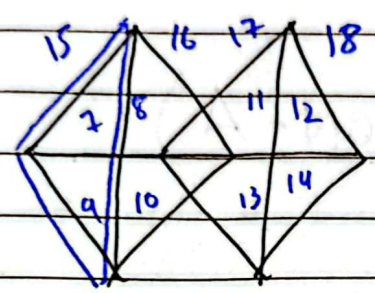
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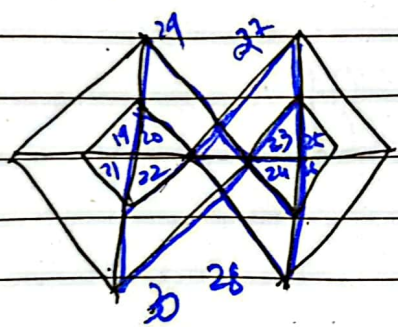
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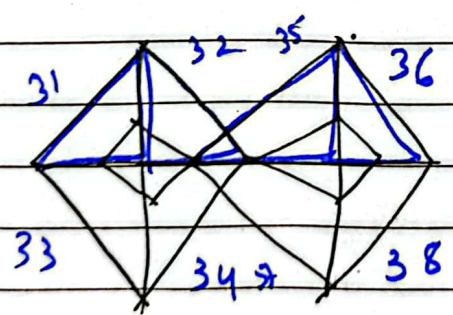
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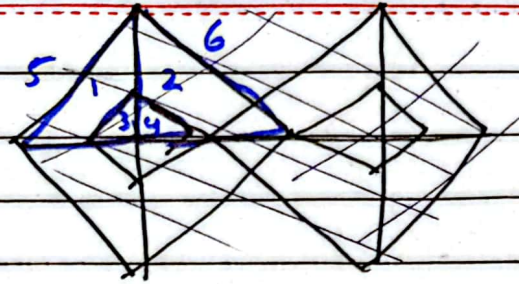
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→



Hence, total triangles are
38



(SECTION - A)

Q. What is the structure of universe according to Big Bang Theory

Big Bang Theory :

According to Big Bang theory universe began 13.8 billion years ago from extremely hot dense particle. At that time space, time and matter came into existence. Since then, Universe is expanding.

Structure of Universe :

→ Galaxies :

Galaxies consist of billion of stars. Stars combined together due to gravity form galaxies.

→ Clusters & superclusters :

Galaxies come together to form cluster & super clusters.

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3. Cosmic web: Huge number of filaments and voids, showing large scale distribution of matter

4. Dark Matter:

Invisible dark matter that affects gravitational pull

• Dark Energy:

A mysterious energy causing expansion of universe.

Universe started from singularity (hot & dense), expanded and cooled to form atoms and stars. The structure of universe consists of ~~fin~~ multiple dark energy, dark matter, cosmic webs, clusters and galaxies.

(b) Define urinary system and explain the working of nephrons.

Answer:

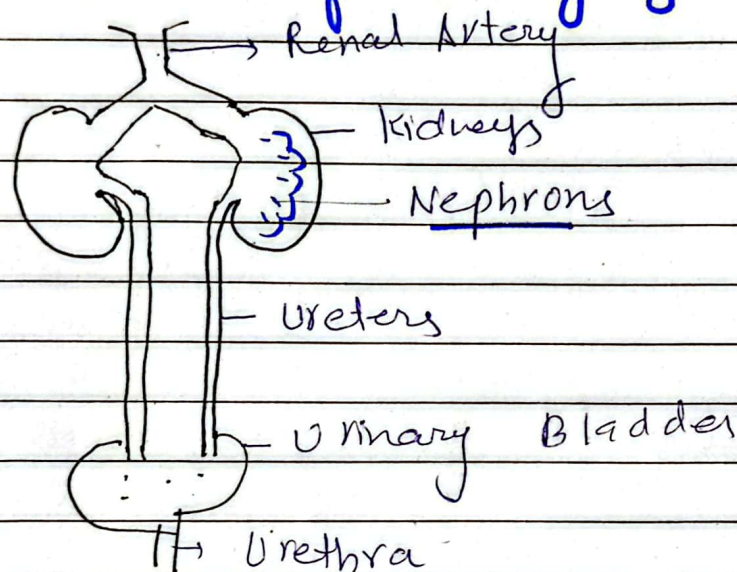
Urinary System:

Urinary System II

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the process of separation of nitrogenous waste in body. It is responsible for the filtration of body. It also removes nitrogenous waste from body.

Components of Urinary System:



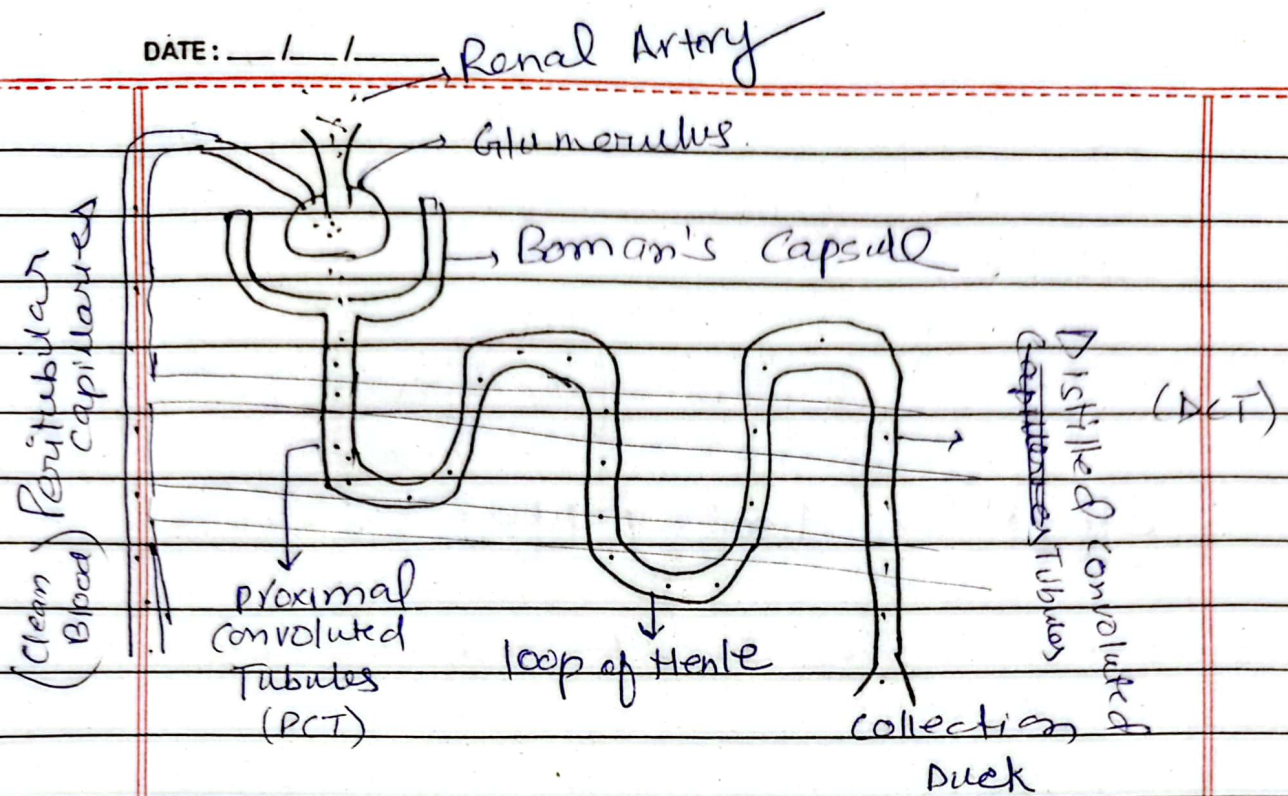
Nephrons and their Working:

Nephrons are the functional units of kidneys. They are responsible for filtering blood, reabsorbing essential nutrients, and removing waste.

Basic structure contains:

- Renal corpuscle: for filtration
- Renal tube: for reabsorption & waste removal

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Glomerulus is a part of Nephron where filtration of blood takes place. Excessive things will separate called filtrate. Filtrate reaches PCT. Filtrate passes through PCT, moving through Loop of Henle and DCT collected at collection duct.

(c) What is Un-Balanced diet? How it affects healthy living?

Un-Balanced Diet:

Un-Balanced Diet lacks in essential Nutrients-like vitamins, minerals, proteins etc. or, essential of nutrients require excess

for proper growth, energy
& health

Example:

- 1) Junk food, cold drinks etc.
High on fat and sugar

Effect on healthy life:-

- 1) Cause underweight and overweight issues.

Excess calories intake cause obesity that can lead to heart disease. Whereas lack of calories can cause weakness, fatigue

- 2) leads to nutritional deficiencies
Lack of iron can cause anemia.
Lack of calcium leads to weak bones

- 3) Affects Mental health
Poor diet affects mental health issues. for instance, stress, anxiety

- 4) Weakens Immunity power
Lack of vitamins (V) and minerals can reduce body's ability to fight against infections

- 5) Affects Growth & development
Stunted growth can also cause due to unbalanced diet.

(a) Describe the structure & functions of:

Cell wall:

|| Structure ||

- * Only present in plant cells
- * Made of cellulose
- * Rigid and strong
- * Permeable - allow water & molecules to pass through it.

|| Functions ||

- * Provide support to cell and maintains shape
- * Contributes to tissue formation

Cell Membrane

|| Structure ||

- * Present in all cells (animal, plants)
- * Made of phospholipid bilayer with embedded proteins
- * semi-permeable

|| Functions ||

- * Act as barrier
- * Protects cell from environment
- * Involved in cell signaling
- * Facilitate communication with other cells via receptors

3. Cytoplasm

Structure

- Gel like semi fluid
- * Made of water with salts and molecules
- ~ contains organelles

Function

- Medium provide for chemical reaction
- Supports organelles
- helps movement within cell

4. Mitochondria :

Structure

- Double-Membrane organelle.
- contains enzymes, DNA, ribosome
- found in all cells

Function

- Also called power house of cell
- convert glucose to energy
- Regulate metabolism

Q5 (a) What is DRM ? Importance

Disaster Risk Management:

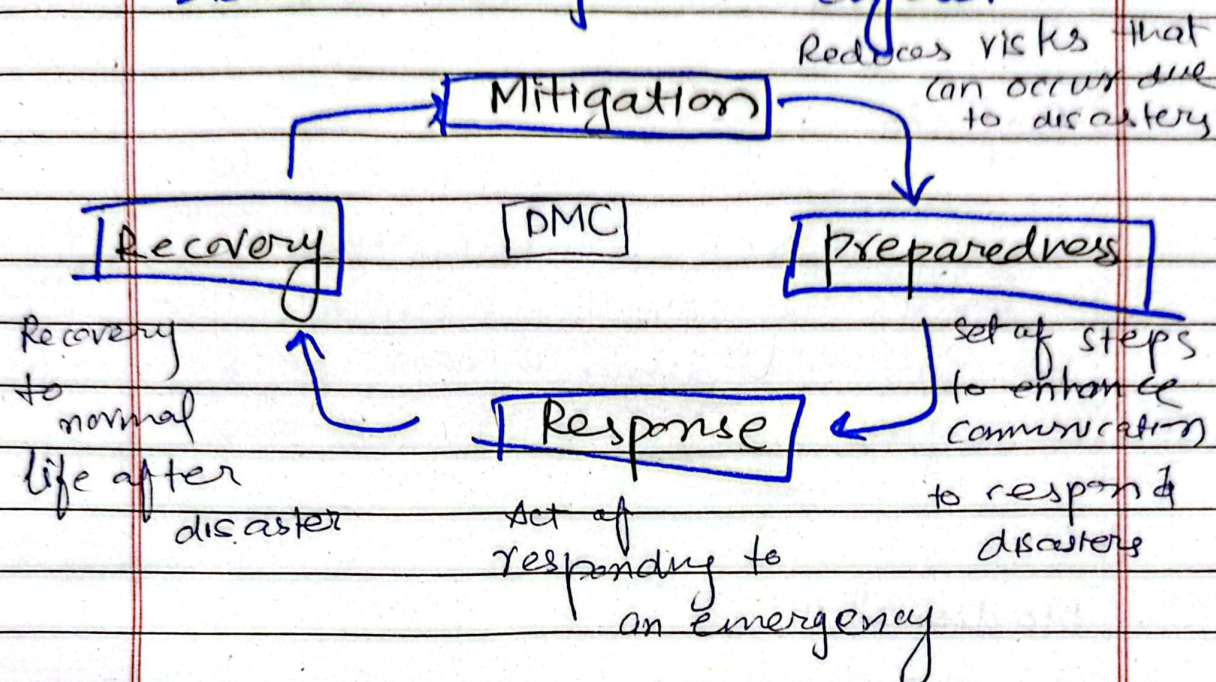
A systematic approach to identify, assess and reduce of disasters using



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Strategies & policies

Disaster Management cycle:



Importance of DRM:

- * Hazards Identification: Help us to differentiate b/w manmade disasters and natural phenomena.
- * Vulnerability Analysis: Enable us to detect disaster prone and high risk areas.
- * Resource allocation: Provide us data to allocate resources according to the required need.
- * Reducing loss: Prepare well by strong communication to reduce loss.
- * Faster Recovery: Strategies to make faster recovery after disaster.

(B) Define Biofuels. Explain the production of biodiesel & biogas.

Biofuels :

Biofuels are renewable energy source. Biofuels consists of Biodiesel and biogas.

- These are derived from biological materials like animals plants

Biodiesel :

- * Biodiesel can be produced from ~~animal~~ animal fats, vegetable and cooking oils
- * Oil + Methanol (alcohol) $\xrightarrow{\text{catalyst}}$ Biodiesel
process called **transesterification**
- * It is used in engines as diesel.

Biogas

- * Organic waste such as sewage, kitchen waste react with bacteria in the absence of oxygen from biogas.

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• Organic Matter + Anaerobic
Bacteria
↓
Biogas
+ Slurry

• Bio gas use as ~~cooker~~ electricity
generation & fertilizer.

C. What is digestive system — — —

Digestive System.

Digestive system is the
process of breaking down food into
nutrients, absorbing them and
eliminating waste.

Stages of Digestive system:

(1) Ingestion :

is act of eating

(2) Digestion

Breaking down of food

(3) Absorption of food

Simpler particles are absorbed
in blood

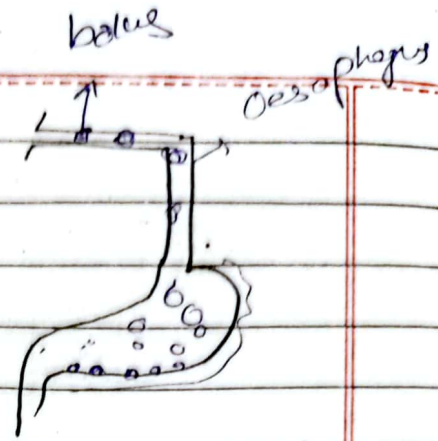
(4) Excretion

elimination of wastes

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Role of Stomach:

- Responsible for receiving bolus.
- Contains HCL and enzymes like Pepsin.



Functions:

- Breaks down proteins into peptides
- Kills bacteria
- Mixes food with gastric juice to form chyme.

Role of small Intestine:

- Long tube ~ 6m divided into duodenum, Jejunum, Ileum.

Functions:

- Completes digestion using enzymes and bile
- Absorb nutrients into blood
- Moves undigested waste to large intestine.

(D) Define Plastic, properties

1a

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Plastic Definition:

- Plastics are synthetic or semi-synthetic organic polymers. They can be molded into different shapes.

Properties.

- Light - weight and durable.
- Good electric and thermal insulator.
- Non-biodegradable.

Applications:

- Household items such as boxes, plates, toys.
- Packing materials, bottles.
- Industrial materials.
- Medical equipments etc.

Environmental Risk.

Non -

- Biodegradable - It takes longer to decompose.
- Release toxic chemicals when burn.

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- Harmful for animals and plant when absorb is soil or water in the form of microplastic

x ——— x