

General Science and Ability

part - II

Section - A

Q No 2 (a)

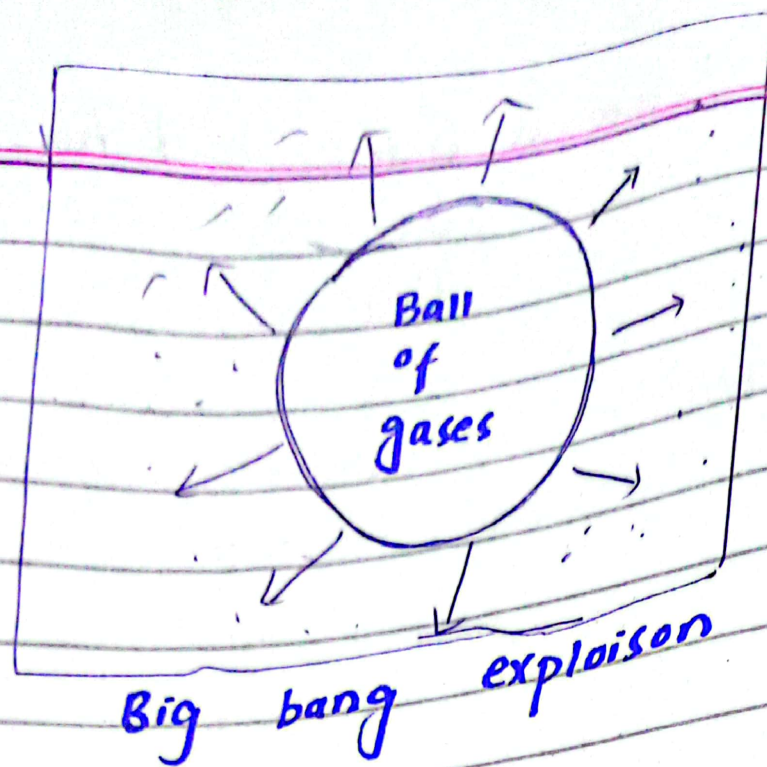
Structure of Universe According to Big Bang theory:

According to Big Bang theory universe was a huge ball of gases before existence of matter and time.

That ball exploded because of huge pressure and matter inside it expanded far away and

Hydrogen, helium gases created and all other matter in universe came into being.

As per this theory This incident of explosion of ball of gases gave birth of universe and space and time started from that explosion. This means universe is constantly expanding into more and more after that explosion.



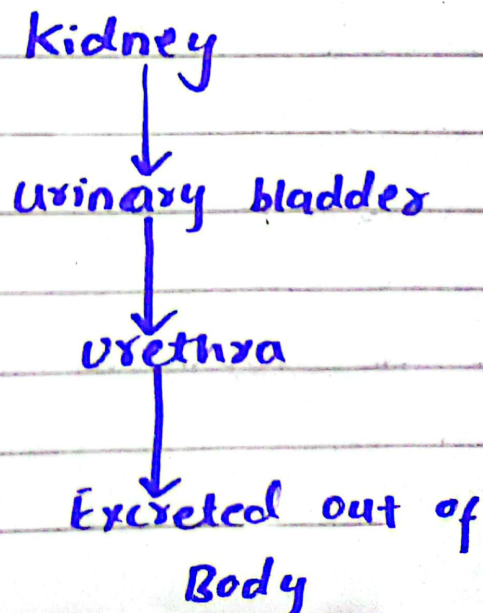
This theory shows this universe came into being by accident and now different theories explain whether it is expanding or contracting. Some theories predict another big bang as end of this whole universe.

As a result of this explosion stars, galaxies, black holes, planets and all other interstitial matter came into existence.

Urinary system:

Urinary system is a system in human body and other living organisms consisting of organs performing specific functions. In human body kidney is the organ that filters blood and produce urine that is excreted out of body via urinary bladder and urethra.

The formation of urine occurs in kidney then it passes from urinary bladder to urethra and then removed out of body.



Working of Nephron:

Nephron is the functional and structural unit of kidney. It performs its specific function to help kidney perform its function of blood absorption. Nephron performs its function with three main steps.

pressure and
filtration



Selective Reabsorption



selection

In pressure and filtration nephron filters the blood, then it selectively reabsorb water and minerals from blood. Last stage is selection and it finalizes the function of Nephron in urinary system.

un-bal

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essen
of
it

Qno2 (c)

un-balanced diet:

The diet which does not contain essential amount and quality of required nutrients and it does not have required amount of proteins, carbohydrates, vitamins and other minerals in body. our body needs a standard amount of nutrients to function properly and that amount and quality is not present in our diet then it is un-balanced and has negative impacts on our health.

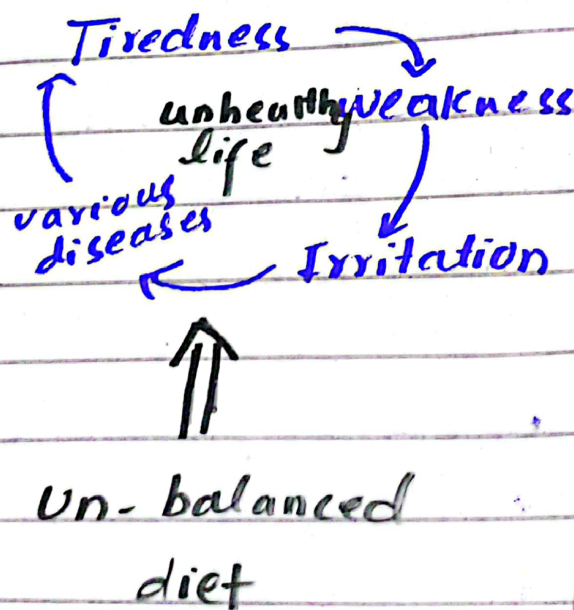
Affects of un-balanced diet on the healthy living:

Its effects include

- Malnutrition
- Weakness
- Weak immune system

- Digestive disorders
- Heart diseases
- Skin diseases
- Intestinal disorders.

It affects the whole living of a person. If body does not take required nutrients that it will not be able to work properly. The body will feel tired and unable to perform daily life functions of life. It results in a cycle of problems in life.



Q No 2 (d) Structure and functions of Cell wall:

Cell wall is the outermost layer of plant cell. Its structure is made of different composition in different living things. Plant cells' cell wall is made of cellulose. In fungi it is made of chitin. It is a semipermeable membrane that allows selective passage of material and maintains shape of cell.

Its functions are:

- Give support to cell body
- Give shape to cell
- Maintains proper functioning of cell
- protect the cell from external environment
- Maintains pressure in cell

Structure and functions of cell Membrane:

It is the outermost layer in animal cell and it is a semipermeable membrane made up of proteins and lipids. It allows certain materials to move in and out of cell and stops others. Its functions include:

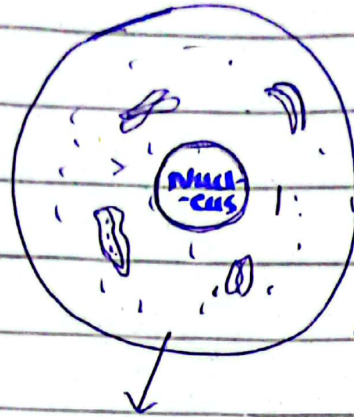
- Give support to cell body
- Give shape to cell body
- Give protection
- Maintains proper functioning of cell

Structure and functions of cytoplasm:-

Cytoplasm is outermost or internal environment in cell surrounding the nucleus and present between cell wall or membrane and nucleus.

Cytoplasm is fluid material that support all organelles present outside the nucleus of cell. Its functions are:

Structure of cell:



- Support
- Maintains Internal environment
- Support organelles

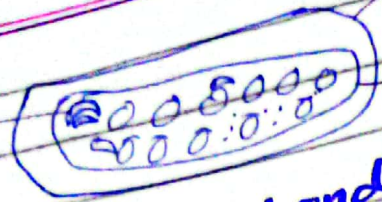
Cytoplasm

Structure and Functions of Mitochondria:

Mitochondria is an organelle in the cytoplasm of cell that performs specific functions. It has membrane and it:

- produces Energy for cell
- Provides / maintains proper functioning of cell
- It gives food or energy in form of ATP.

mt DNA



outer membrane

inner membrane

Mitochondria

It has its own DNA and is known as power house of cell.

Q nos (a) Disaster Risk Management (DRM) :-

DRM is a process or cycle that prepares world, states, communities and individuals to cope with disasters and to take all possible actions to control them or prevent them, minimize their effects and make them recover to normal life. It has a cycle of steps that are explained below:

1. Mitiga

things
chance

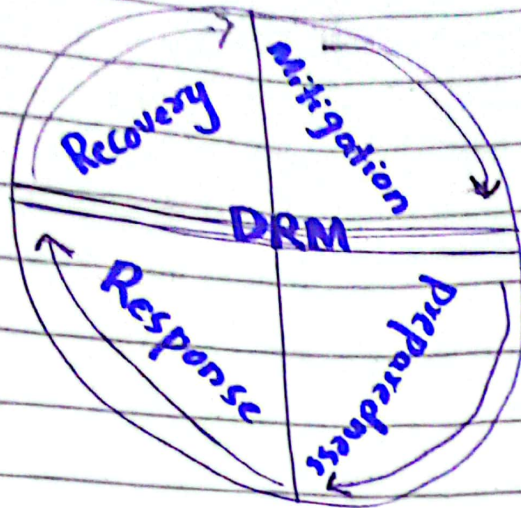
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Disaster Risk Management cycle:



1. Mitigation:-

This steps involve things that minimizes the chances of disaster to occur and minimizes effects of it. It involves risk assessment.

Importance of Risk Assessment in DRM:

- 1- It gives early warning
- 2- It gives time to prepare ourselves to cope with the disaster.
3. It enables us to know the causes of disasters

2- Preparedness:- This involves the preparedness to cope with disasters to minimize its effects.

3- Response: The on-moment response include

- saving lives
- helping others
- co-operating with DRM team
- Avoid panic things and others.

4- Recovery:

After disaster Recovery phase includes doing thing to bring life to pre-disaster level. These include:

- 1- Giving Funds
- 2- Giving Medical assistance
- 3- Infrastructure rebuilding
- 4- Reforestation
- 5- Climate awareness.

Bio-fuels:-

Bio-fuels are a non-renewable form of energy that are produced from waste materials of living things. These include

1- Bio-diesel

2- Bio-gas

Bio-diesel:

A kind of bio-fuel that is produced from animals and plants wastes.

Its process of production is called tran-esterification.

It is a non-renewable form that can alternate or replace petrol in life if used properly.

Bio-gas:

It is a type of bio-fuel that involves production of gas by

dumping and processing of animals and plants waste. Their decomposition and heat produce gas that can be processed and used as replacement of normal gas.

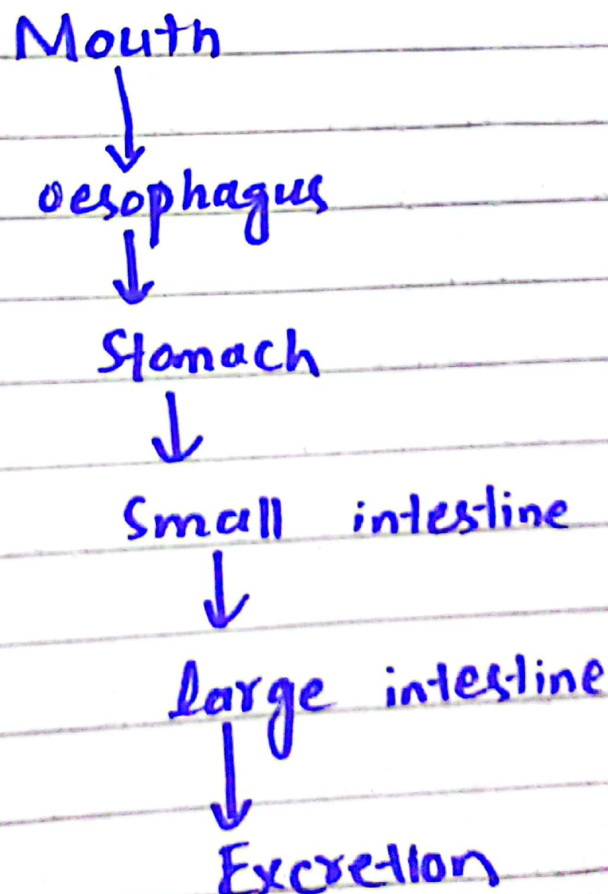
Importance:

1. produce less pollution as compared to coal, oil and gas.
2. Initial cost is high but later becomes cheap.
3. Their source is natural and pollution-free in many ways.
4. They help in solid waste management.
5. It helps to cope with energy needs of today's life.
6. It helps to cope with climate change.

Digestive system:

Digestive system of living body involve many organs that help in digestion of food we take daily. The food is digested and made bio-available to be used by body for its normal functioning.

It includes organs known as digestive organs like, mouth, stomach, and small intestine. The process of digestion occurs via:-



Role of Stomach:

In stomach food is digested mainly by many enzymes and chemicals released by pancreas. These chemicals break food particles to simpler forms that are then digested. Stomach has hydrochloric acid that helps in digestion.

Role of Stomach Intestine:

In Small intestine the food is then absorbed where water, minerals and nutrients are absorbed and remaining is passed to large intestine from where then it is moved to anus and moved out of body.

Q no 5 d)

plastics:-

Plastics are polymers made up of many monomers and they have unique properties as can be molded into various forms and shapes. They can be natural or artificial. Its types are:

- 1- Thermosetting: They can be hardened by heating and softened by cooling.
- 2- Thermoplastic: They are once set and cannot be reshaped.

Properties of plastics:

- Flexible
- Cannot be recycled (hard to recycle)
- Molded into various shapes.
- Made of natural or artificial monomers.

Applications:-

- Packaging
- processing

- Portable cockeries
- Portable devices
- Sweets Packaging
- Drinks packaging

Environmental Risks with plastics:

- 1- Plastics are hard to recycle or cannot be recycled at all.
- 2- They cause production of solid waste.
- 3- They increase pollution in environment.
- 4- They are accumulated in sea water and land.
- 5- Micro-plastics enter our body by many ways and damage our brain.
- 6- It cause various health problems.

Section-B

Q No 6 (a)

Given data:

Ahsan pointed to a man and said, "Her granddaughter is only daughter of my brother."

To Find:

How is woman related to Ahsan.

Solution:-

Ahsan to → Woman

Siblings → child = Ahsan

↓
daughter (only daughter of Ahsan's brother)

It shows the child of woman is brother of Ahsan. So, Ahsan himself is also son of that woman.

Answers:-

Woman is ~~not~~ Mother of Ahsan.

Q no 6 (B)

Given data:

Rectangular park's
length : breadth

$$l : b$$

$$3 : 2$$

Man's speed = 12 km/hr

time = 8 minutes

To Find:

Area of park in

Sq. m.

Formula:

$$\text{distance} = \text{speed} \times \text{time}$$

$$S = vt$$

perimeter of rectangle = P

$$P = 2(l+b)$$

Rectangle's Area = $l \times b$

Solution:

$$l : b$$

$$3 : 2$$

$$3b : 2b$$

'b' is common multiplier

$$v = \frac{12 \times 1000}{60 \times 60} \text{ ms}^{-1}$$

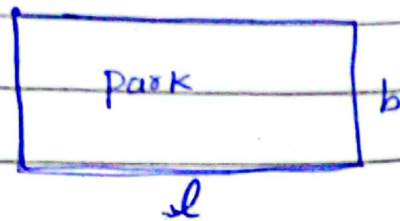
$$t = 8 \times 60 \text{ seconds}$$

$$S = vt$$

$$S = \frac{12 \times 1000}{60 \times 60} \times 2 \times 60 \text{ m}$$

$$S = 1600 \text{ m}$$

$$S = p = 1600 \text{ m}$$



$$p = 2(l + b)$$

$$1600 \text{ m} = 2(3b + 2b)$$

$$1600 = 2 \times 5b$$

$$1600 = 10b$$

$$b = 160$$

$$\text{So length} = 3b = 3 \times 160 = 480 \text{ m}$$

$$\text{breadth} = 2b = 2 \times 160 = 320 \text{ m}$$

$$\text{Area} = l \times b$$

$$A = 480 \text{ m} \times 320 \text{ m}$$

$$A = 153,600 \text{ m}^2$$

Answer:

Area of Park is
153,600 m².

Q No 6 (C)

Given data:

→ 2 digit number
→ unit's digit exceeds its ten's digit by 2

Suppose number = xy

x = Tens y = ones

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

To Find = $xy = ?$

Solution:

if $x = 2$ $y = 4$
then $xy = 24$

Then

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

$$24 \times (2+4) = 144$$

$$24 \times 6 = 144$$

$$144 = 144$$

Answer:

The Number is

24.

Given data

number

48

2.

To find

Solu

Q6 D)

Given data:

L.C.M of two numbers (suppose x, y) = 48

$$x:y = 2:3$$

To find:

$$x+y = ?$$

Solution:

$xy = \text{L.C.M of } xy \times \text{highest common divisor (b)}$

$$xy = 48b$$

$$x:y = 2:3$$

$$x:y = 2b:3b$$

'b' is common multiplier

$$x = 2b$$

$$y = 3b$$

$$\text{So } xy = 48b$$

$$2b \times 3b = 48b$$

$$6b^2 = 48b$$

$$6b = 48$$

$$b = 8$$

$$\text{So, } x = 2b = 2 \times 8 = 16$$

$$y = 3b = 3 \times 8 = 24$$

$$x = 16, \quad y = 24$$

$$x+y = 16+24$$

$$x+y = 40$$

Answer: The sum of the number is 40

Q.8 (A)

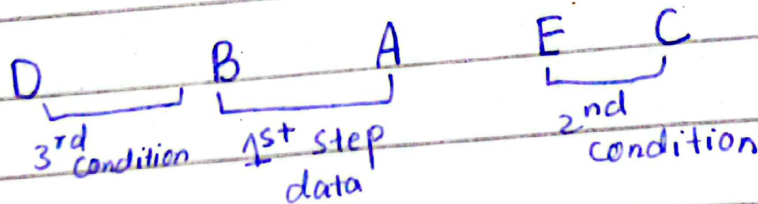
Given data:

- Five houses A to E in a row
- A is right of B
- E is to left of C and right of A.
- B is to right of D.

To find:

House in middle

Solution:



So D B A E C in row
 ↓
 Middle

Answer:

'A' house is in the Middle.

Q No 8 B

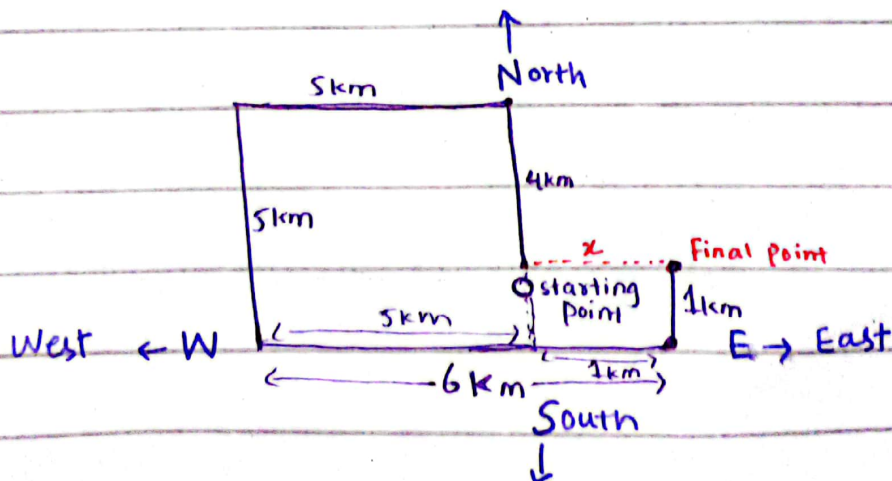
Given data:

- You start running from a point to North cover 4km
- Turn to left run 5km
- again Turn left run 5km
- Turn to left again run 6km
- Another left turn then final running of 1km

To find:

- Total kms from starting point to end
- finishing run in which direction.
- After 2nd turn direction of running.
- from finishing to starting point which direction run needed.

Solution:

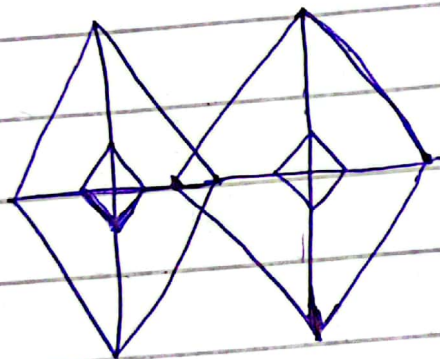


Answers:

- 1- I am 1 km away from starting point.
2. while finishing I will be running in North direction
3. After taking 2nd turn my direction is towards South.
4. from finishing point to starting point I have to run in West direction.

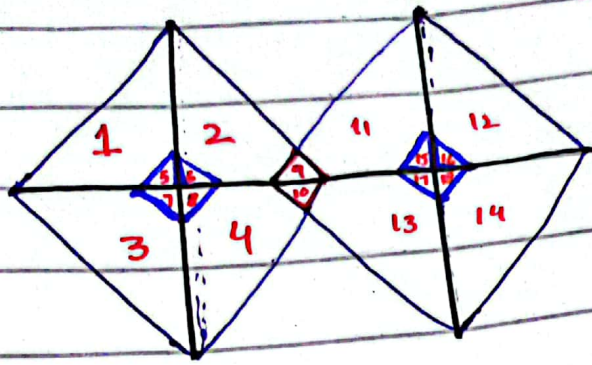
Q8 (b)

Given Data:



To Find:

Number of triangles
in given triangle.



18 triangles

Answers:

In the given figure
there are total 18 triangles.