

Section-B

General Instructions

Q.6 (a)

34-5

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.

Given Data:

4. Draw figures/diagram/flowchart where needed.

5. Start new question from fresh page.

6. Write unit of the answer in ability section.

7. Explain mathematical steps and the reasoning for better score.

8. Change colour scheme for references to give them more visibility.

9. Manage time well.

10. Wide page borders are discouraged. Should be reasonable.

11. Avoid writing wrong references.

12. Give more weightage to expressly asked parts of the question.

To Find:

Each part = ?

Solution:

Assume first and third part to be equal to

given ratio, thus

$$\therefore \text{First part} = 3x$$

$$\therefore \text{3rd part} = 5x$$

$$\therefore \text{Second part} = \frac{1}{4} \text{ of } 5x$$

or $\frac{5x}{4}$

Total Amount = \$370

Then,

$$3x + 5x + \frac{5x}{4} = 370$$

By simplifying we get,

$$= \frac{12x + 20x + 5x}{4} = 370$$

$$= \frac{37x}{4} = 370$$

$$= 37x = 370 \times 4$$

$$= x = \frac{370 \times 4}{37}$$

$$= x = 40$$

Putting the value of 'x' in each

$$\therefore \text{First part} = 3x = 3 \times 40 = \$120$$

$$\therefore \text{Second part} = 5x = 5 \times 40 = \$200$$

$$\therefore \text{Third part} = \frac{5x}{4} = \frac{5 \times 40}{4} = \$50$$

Answer

1st Part	=	\$ 120
2nd Part	=	\$ 200
3rd Part	=	\$ 50

Q 6. (b)

Given:

Amount required by Kashif
= Rs. 800

Borrowing from brother = 20%

Borrowing from mother = 30%

Amount in bank = Rs. 200

To find,

Remaining required
amount for fees = ?

Solution:

For calculating the
amount of borrowings,

$$= 20\% \text{ of } 800$$

$$= \frac{20}{100} \times 800$$

$$= 160$$

(x) borrowing from brother

Of remaining
 $30\% \text{ of } 800$

$$= \frac{30}{100} \times 800$$

$$= 240$$

(y) borrowing from mother.

$$\text{Amount in Bank} = \text{Rs. } 200 \text{ ---- (z)}$$

Thus, total money which Kashif had =

$$= x + y + z$$

$$= 160 + 240 + 200$$

$$= \text{Rs. } 600$$

Now calculating remaining
required amount,

$$= \text{Amount required} - \text{Amount Kashif already had.}$$

$$= 800 - 600$$

$$= \underline{\underline{\text{Rs. } 200}}$$

Kashif need Rs. 200 more
for paying his fees.

Q.6.c

Given:

Bag 1 = Red bells = 3

Black bells = 7

Bag 2 = Red bells = 8

Black bells = 2

Bag 3 = Red bells = 4

Black bells = 6

To find =

Find the probability of getting red ball from the third bag.

Solution.

$$\begin{aligned} \text{Total Red balls} &= 3 + 8 + 4 \\ &= 15 \end{aligned}$$

$$\therefore \text{Bag 3} = 4 \text{ Red balls}$$

Thus,

$$\text{Probability} = \frac{\text{Favorable cases}}{\text{Possible cases}}$$

$$\text{Probability} = \frac{4}{15}$$

Reasoning?

Q.6-d

Given:

Time intervals = 24s, 36s, 72s

Time at lights changed = 8:20:00hrs

To find:

Time at these lights will again change simultaneously = ?

Solution:

By taking Least Common Multiple (LCM) of all time intervals,

24, 36, 72

$$\therefore \text{LCM} = 72\text{s}$$

Thus, the traffic lights will change simultaneously after every 72 seconds.

So, these lights will again change simultaneously at;

$$\begin{array}{r} 8:20:00 \\ + 8:20:12 \\ \hline 8:21:12 \end{array}$$

Time = 8:21:12 hrs

Q.8.(a)

Given:

Speed of car = 40 km/h
(1st part)

Speed of car = 60 km/h
(2nd part)

To Find:

Average speed of car = ?

Solution:

$$\text{Average speed} = \frac{\text{Total speed}}{\text{No. of parts}}$$

$$\therefore \text{Total speed} = 40 + 60 = 100 \text{ km/h}$$

$$\therefore \text{No. of parts} = 2$$

So, Putting these values we get

$$= \frac{100}{2}$$

$$=$$

$$= \underline{50 \text{ km/h}}$$

The average speed of the car is 50 km/h

Q 8 (b)

Given:

ROSE = 6821

CHAIR = 73456

PREACH = 861473

To find:

SEARCH = ?

Solution:

From the given data it implies that each alphabet is assigned a digit as below:

A = 4

C = 7

E = 1

H = 3

I = 5
O = 8
P = 9
R = 6
S = 2

So getting digits from this pattern the code SEARCH can be written as

S	E	A	R	C	H
2	1	4	6	7	1

The code SEARCH equals to 214671

Q. 8. c

A is brother of B

∴ A = male

B is the sister of C

∴ B = female

∴ A, B and C are siblings

C is ~~the~~ father of D

∴ C is male

∴ D is also a male

As A is brother of C thus

D is nephew of A

Q.8.(d)

Given Data:

Distance towards west = 35 km

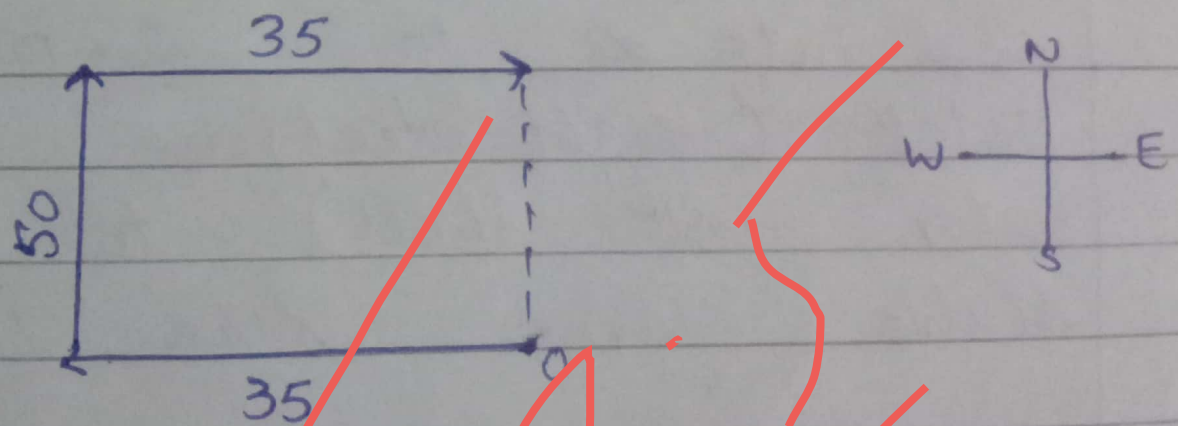
Distance after right = 50 km

Another right = 35 km

To find:

Distance from original position = ?

Solution:



The opposite sides of rectangle are equal so,

$$35 = 35$$

$$50 = 50$$

Thus, Kashmeela is 50km away from her original position.

SECTION - A

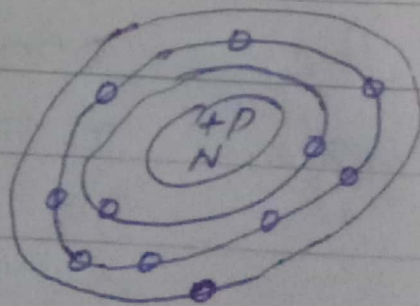
Q: 2 (a)

OCTET RULE

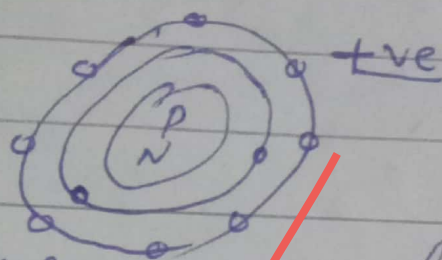
A rule which implies that an unstable atom ~~and~~ intends to complete its octet (eight electrons in its outer most shell) to attain stable form like Inert Gases.

Example:

An unstable ←
Sodium Atom



The Sodium atom intends to complete its octet through chemical bonding. In result it loses an electron and gets a positive charge.

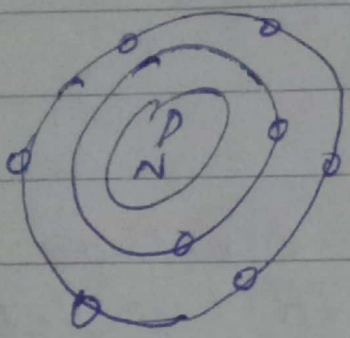


After losing one electron, Sodium complete its octet by having eight electrons in its outer most shell.

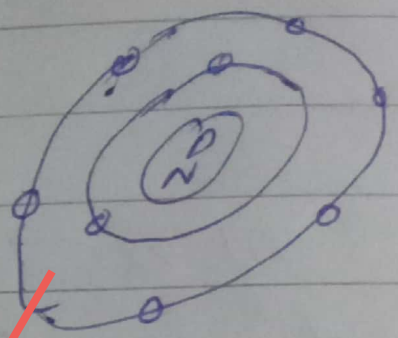
Covalent Bond

A bond which is formed by mutual sharing of electrons, is known as covalent bond.

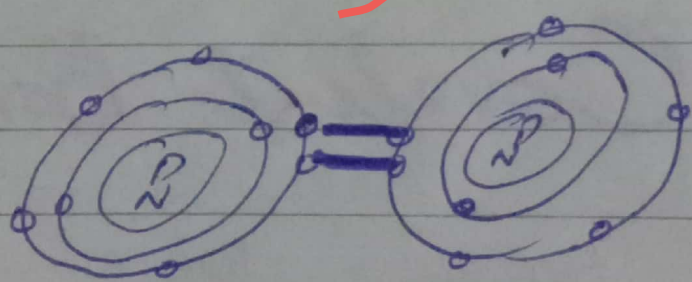
Example: Oxygen molecule possess a covalent bond in which two oxygen atoms mutually share electrons of 9/10.



Oxygen
Atomic Number = 8



Oxygen



Structure of covalent bond between two

atoms of oxygen. There is sharing of two pairs of outermost electrons, thus

Covalent bond is denoted here as (=)

∴ Sharing of one pair of electrons is denoted as (-)

∴ Sharing of three pairs is denoted as (≡)

Features:

Property	Covalent Compounds
1. Existence	Gases or liquids
2. Melting and Boiling points	low
3. Solubility	Insoluble in water, Soluble in organic solvents
4. Electricity conductance	Do not conduct electricity
5. Heat conductance	NO

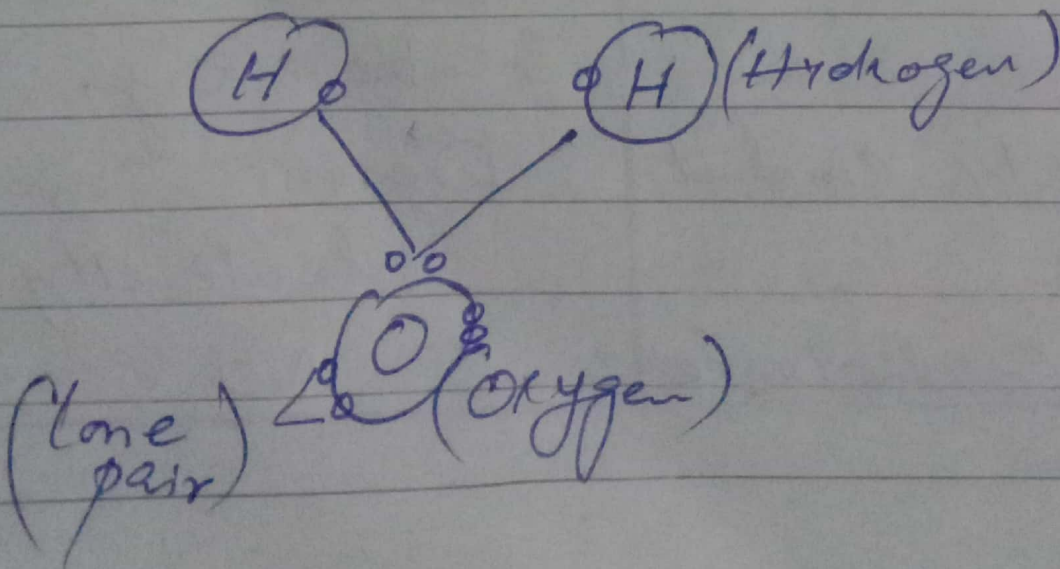
Q.2 - b

Angular Structure of Water

Molecule *

Description:

The structure of water molecule contain Hydrogen atoms and two oxygen molecules having covalent bonding.



Reason for Angular Structure.

The main reason behind the angular structure of water molecule is presence of lone pairs in oxygen.

These lone pairs of oxygen atom repel each other causing a 'V'-shaped or angular structure of water molecule.

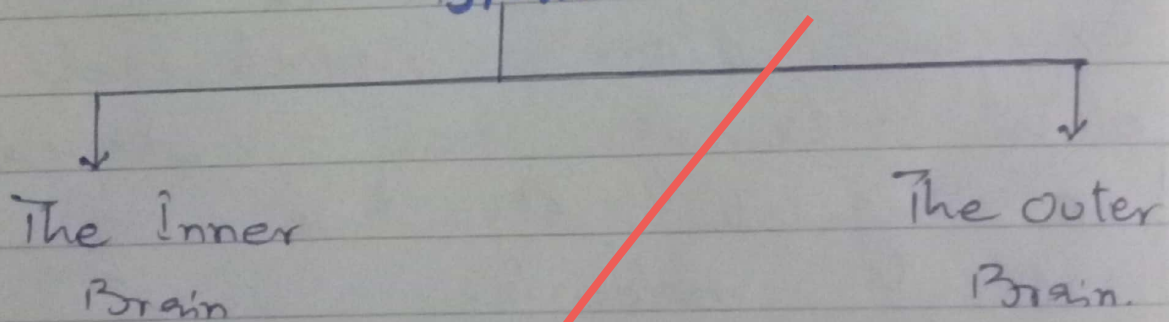
Thus, water molecule is angular in shape.

Q.2.c

Human Brain

Human brain is an important organ of human body as it carries out all vital functions of the body.

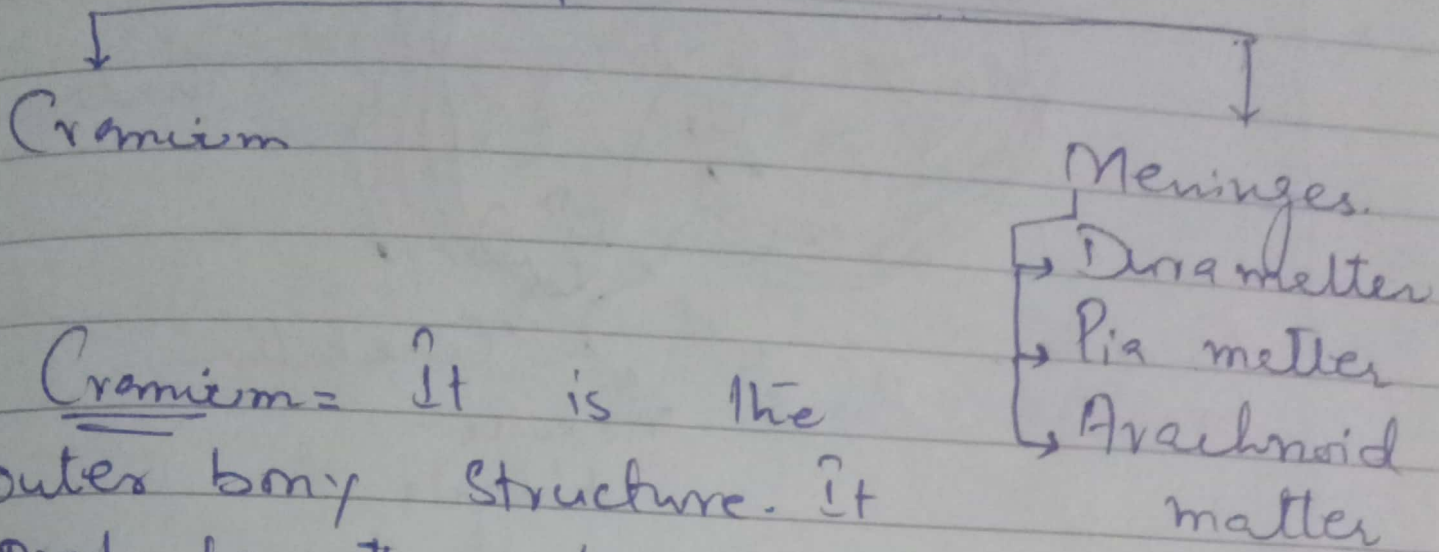
The Structure of human brain



The Outer Brain

It is the outer-most part of human brain.

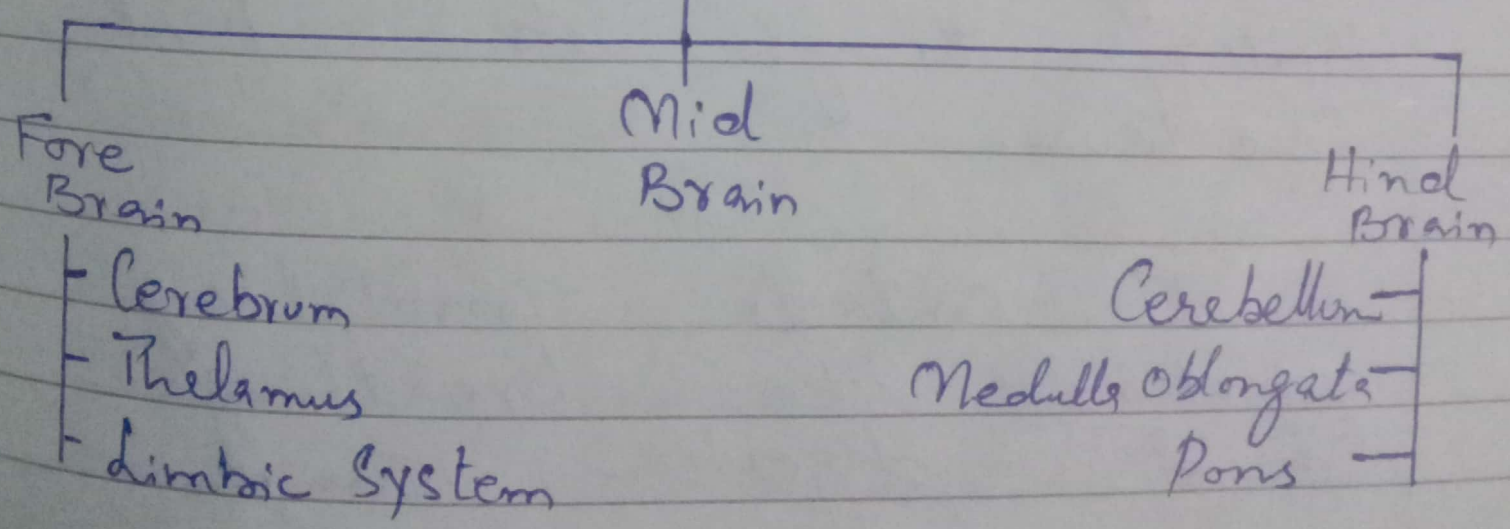
The Structures in outer brain

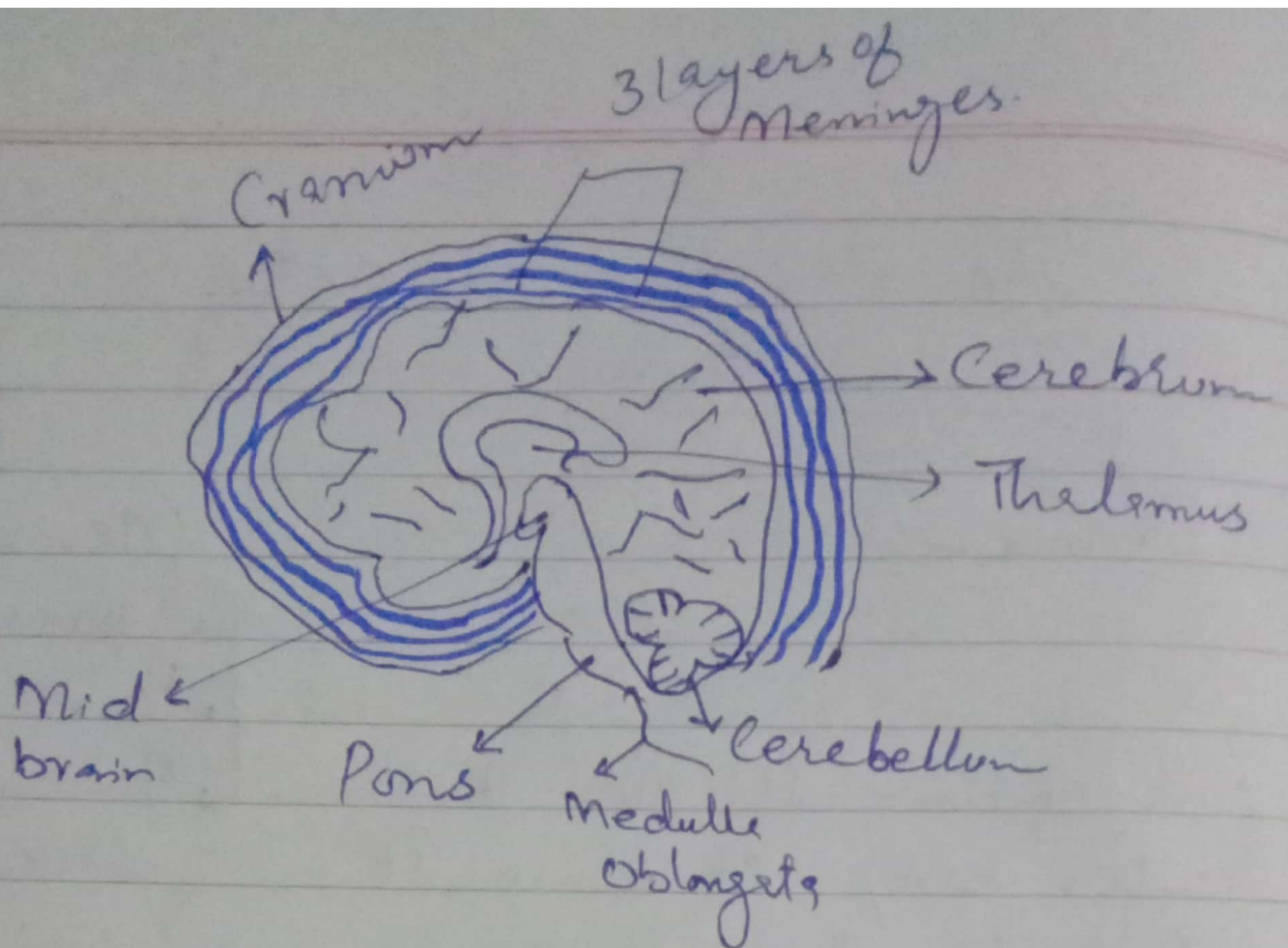


∴ Cranium = It is the outer bony structure. It protects the brain.

∴ Meninges = It is a fluid-filled part; provides cushion to the brain.

The Inner Brain





Structure of Human Brain

Functions:

1. It is responsible for intelligence, memory, perceptions and thinking through its part - Cerebrum.

2. It controls involuntary functions like breathing and digestion through

medulla oblongata.

3. Cerebellum plays role in body coordination.

4. Sensory information is collected through thalamus

5. Mid brain controls reflex movements of eyes.

Q.2.d

Cell Structure

Cell is the basic fundamental and structural unit of life.

The structure of cell contains following

parts-

1- Cell wall.

- It is the outer-most layer of plant and other living cells.
- It is absent in animal cell.
- It gives shape and mechanical support to cells.
- It gives protection to cells.
- It is made of cellulose and pectin.

2. Cell Membrane

- It is the out-most layer of animal cells.
- It is present beneath cell wall in plant, fungi and bacterial cells.

- It is made up of polysaccharides.
- It is semi-permeable; permits selective elements in and out of the cell.

3. Cytoplasm.

- It is a granular fluid present inside the cell.
- It contains water and nutrients for cell.
- All of cell organelles are suspended in cytoplasm.

Sub-Cellular Organelles.

A- Nucleus

- It is the brain of a cell.
- It controls all

Cellular activities.

- It contains hereditary material i.e. DNA and RNA.

- It plays role in protein synthesis.

Diagram?

B. Mitochondria

- It is 'Power House' of a cell.

- It is responsible for energy production for cell in the form of ATP.

C. Ribosomes

- These are granular bodies present inside a cell.

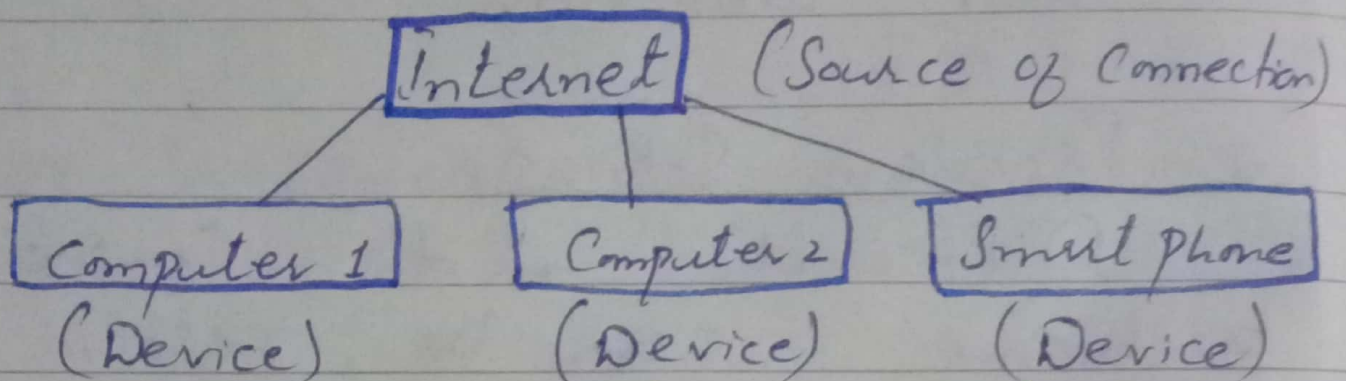
- These are responsible for protein synthesis.

Q.5-a

Networking

Definition:

Networking is a group of inter connected computing devices or computer devices.



Networking between devices through Internet.

Purpose of Networking:

To transmit data from one source to another

To share data between various devices

To exchange data between devices

Internet Standards

Definition:

Internet Standards are set of rules and guidelines for using internet.

Developer:

Internet Standards are mainly developed by the Internet Engineering Task Force (IETF).

Purpose:

- 1- Internet Standards facilitate transmission of data between various devices.
- 2- Ensures that hardware and softwares can work together.
- 3- It allows devices to be connected through networking.

Q.5-b

Artificial Intelligence

Artificial Intelligence is the simulation of human intelligence by machines - computers, for performing various functions.

For Instance: A Google voice typing tool searches whatever I want to search through his voice by speech recognition tool.

Pros of Artificial Intelligence

The pros of artificial intelligence include -

1- Decision-making:

Artificial Intelligence helps in accurate and timely decision making process.

For instance: It analyze the data and assists businesses in their decisions.

2. Problem Solving:

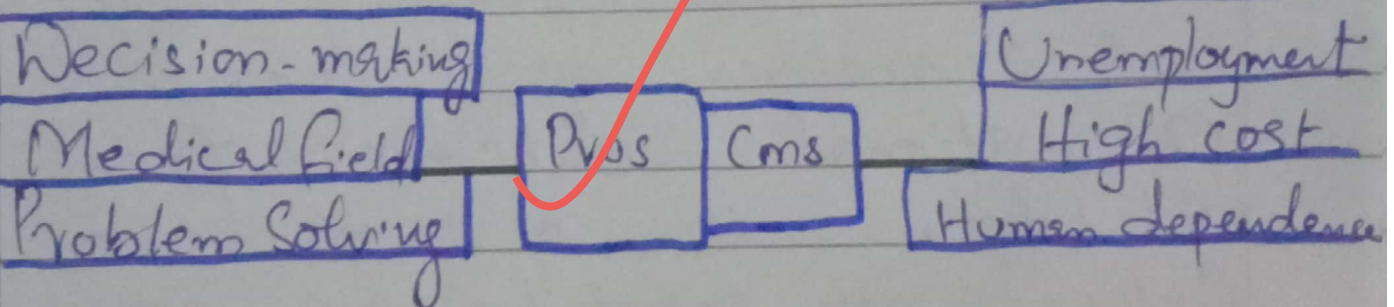
Difficult and complex problems can be resolved through Artificial Intelligence.

For instance:

Google map navigation system assists in resolving problem of finding routes for destination.

3- Useful in medical industry
Artificial Intelligence
plays an important role
in medicinal field.

For instance: AI applications
can analyze relationships
between clinical data
and patient outcomes.



Cons of Artificial Intelligence:

Artificial Intelligence could
have certain disadvantages.

1. Results in Unemployment.

Artificial intelligence threatens employment opportunities of humans.

For Instance: A report by the World Economic Forum predicts that AI could eliminate 75 million jobs.

2. High Cost of AI Systems.

Artificial Intelligence are costly in various sense.

For Instance, It could take \$320 thousand per year for a business to develop its AI team.

3. Human dependence of AI.
Artificial Intelligence
is potential to produce
human dependence over it.

For Instance: There is an
increasing dependence over
Smart phones, electronic
appliances and so on.

Thus, Artificial Intelligence
is a Computer-based
technology having both
positive and negative impacts.

Q.5-d

Bio availability of Nutrients.

Bio availability of nutrients means presence of nutrients in human body.

Nutrients: These include carbohydrates, Proteins, water, Lipids, Vitamins, Minerals and so on.

Purpose:

1- Determination of nutrients:
The amount and quantity of nutrients is determined by taking record of bio availability of nutrients.

2. Helps in diagnosis,

Low bioavailability of nutrients helps to identify diseases related to nutrient-deficiency.

For instance: low vitamin C intake or absorption leads to Scurvy.

3. Assist in treatment of diseases:

It is helpful in treating certain diseases caused by low nutritional intake.

For instance: Anemia can be treated by taking Vitamin B.