

Mock Exams - 2026

General Knowledge - I

General Science and ability

Part - II

Section - I

Qno: 03

- (a) Describe the structure and function of "Mitochondria" and "Ribosomes" within an animal cell. Why is the mitochondria often called the "power house" of the cell?

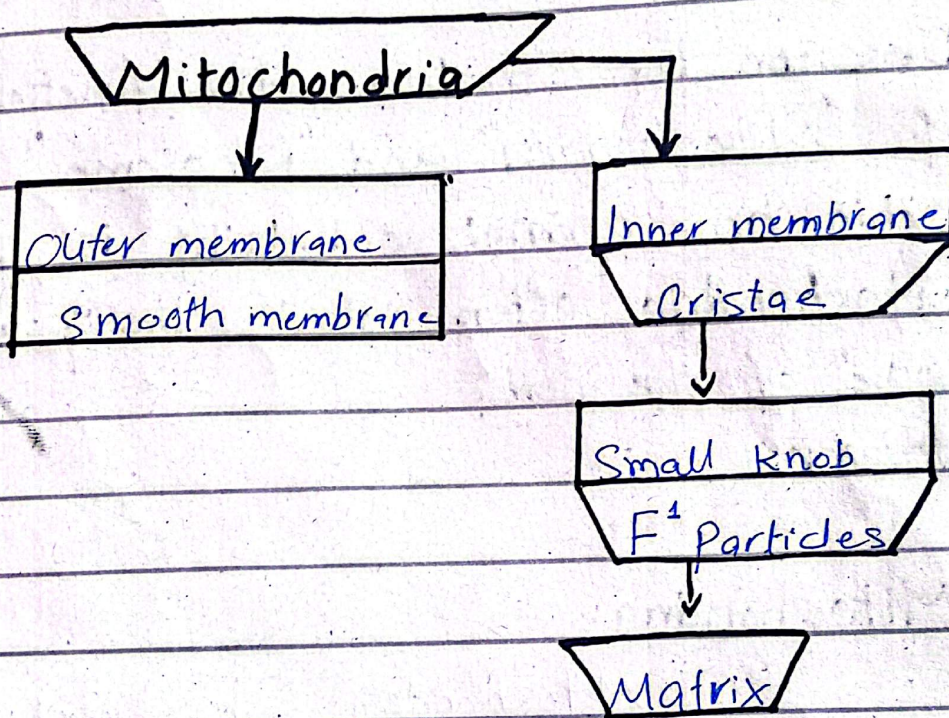
Answer:

Mitochondria:

Mitochondria are very essential organelles. They are present in Eukaryotic cells. Mitochondria are also called the **Power house of the cell**, because of their involvement in the supply of energy to the cell.

Mitochondria are filament in shape and bounded by two membranes. The outer membrane is smooth. The

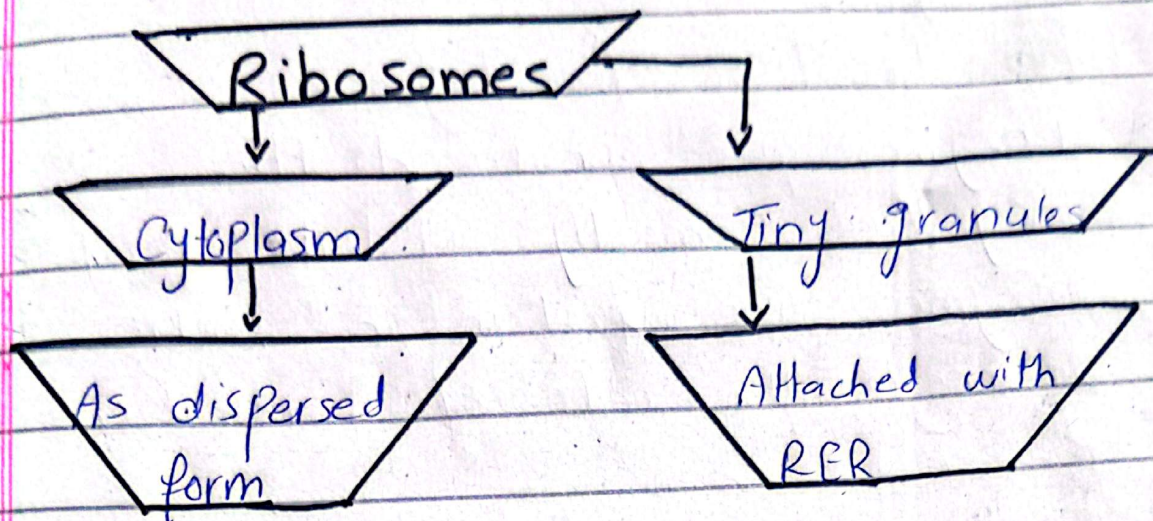
inner membrane forms many infoldings. Many metabolic processes take place in Mitochondria. Energy is released from organic food during these metabolic processes. This energy transfer to the rich compounds and then the energy transmission process carried out by ATP and ADP.



* RIBOSOMES:

Ribosomes of eukaryotes are composed of ribonucleoprotein. The ribonucleoprotein have equal Protein and RNA. A group of ribosomes attached to same mRNA which is also known as "Polysome". These ribosomes are the

factories of protein synthesis.



Both Mitochondria and Ribosomes are for the cell growth. Ribosomes produce all the protein needed by cell and Mitochondria supply the energy for cell activities.

←————→
b) What are Enzymes? "lock and key" model of enzyme action and list down two factors that affect enzyme activity.

Answer:

-: Enzymes:

Enzymes are proteins that act as biological catalysts by accelerating chemical reactions by its activation energy. The molecules upon which enzymes may act are called

"Substrates"

Characteristics of Enzymes:

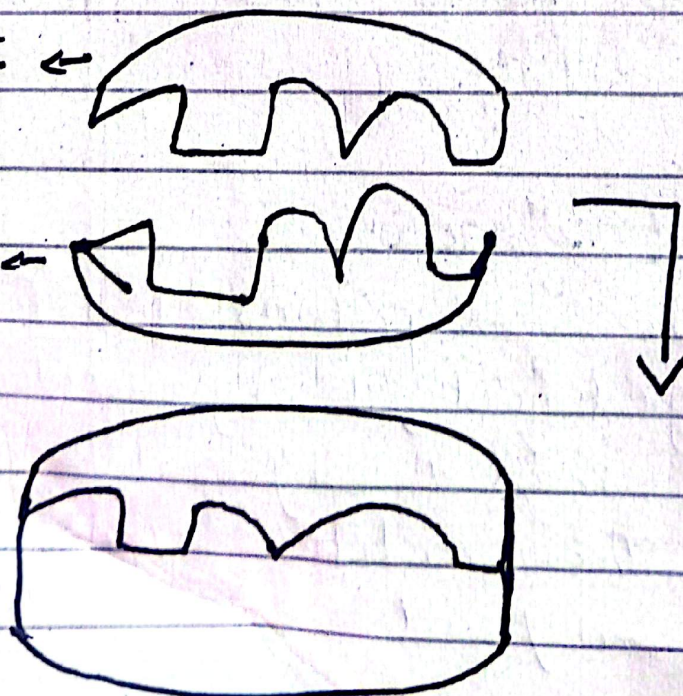
- 1- Enzymes are sensitive to pH.
- 2- They are mostly substrate specific.
- 3- Enzymes are protein in nature.
- 4- Increase the rate of a reaction.

Lock and key model

To observe the activity of enzymes, Emil proposed the idea that both enzymes and substrate possess same specific geometric shape which helps them to fit in one another. The idea was named as "Lock and key model".

Substrate ←

Enzyme ←



* Factors of Enzymes

- Most enzymes are proteins. But some enzymes also have non-protein cells which are called "Co-factor".
- The protein part of enzyme called "Apoenzymes".
- These both non-protein and protein together call "holoenzymes".

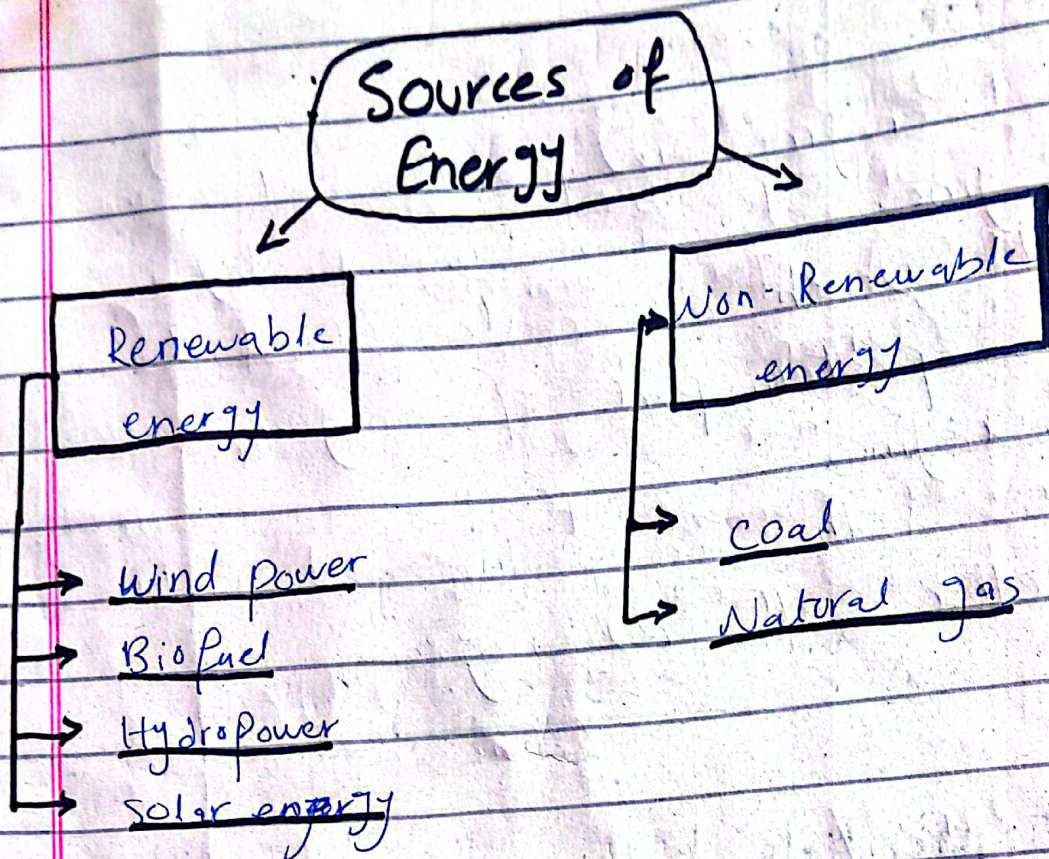


© Differentiate between "Renewable" and "Non-Renewable" energy resources. Discuss the potential of "Wind Energy" as a sustainable source for the future.

Answer:-

"Energy"

Energy is the capacity of a system to do work. Energy causes things to happen around us. During day, Sun gives out light and heat energy. The food, we eat daily also contains energy. For example, Chemical energy, Electrical energy, Mechanical energy and potential energy.

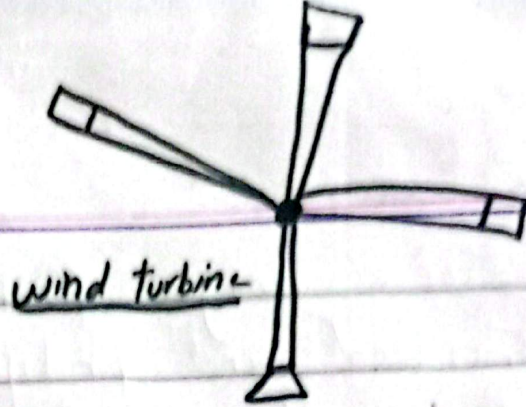


* Renewable Energy:

Renewable energy is the energy derived from the sources which are naturally replenished on a human time scale. This include wind power, Biofuel, Hydropower and solar energy.

* Non-Renewable Energy:

These resources are natural resources that cannot be regrown at a scale comparable to its consumption. It includes coal and natural gas.



* Wind Energy:-

Wind energy is produced by wind turbines. Wind turbines are used commonly for commercial uses. Wind turbines convert kinetic energy into mechanical ~~work~~ and then a generator converts it into electricity. So wind energy with the use of wind turbines is highly beneficial to meet the future needs of electricity.



- ④ What is Dengue Fever? Describe the vector responsible for its transmission, its common symptoms, and key preventive measures.

Answer:-

(Dengue fever)

Dengue is a disease caused by mosquito. Dengue virus is transmitted by the female mosquito. This female mosquito also transmits the yellow fever and Zika infection.

Severe dengue first recognized in Thailand and Philippines. But now it is also spread in Asian countries.

Transmission:

Aedes aegypti mosquito
↓

→ vector of dengue

→ Virus transmitted to human
through the bite of
infected female mosquito

→ Virus incubation for
4-10 days

→ Infected mosquito
ready to transmit
the virus for the rest
of its life.

Symptoms:

Dengue fever cause flu like illness, when a high fever with the

Symptoms of headache, muscle and joint pain, nausea and vomiting occur. It is the severe level fever can also cause death.

Severe level dengue fever symptoms include: Abdominal pain, vomiting, rapid breathing and accumulation.

* Prevention:

1. Promote public awareness and community participation about vector control.
2. Despose solid waste effectively and properly.
3. Clean the water containers regularly and cover the water of domestic use.
4. Use spray for protection at the houses and working places.



Gno: 05

(a) Balanced Diet? Functions of carbohydrates and proteins in human body.

Answer:

Balanced Diet

"Let thy food be thy medicine"

Balanced diet is the food that contains the adequate amount of food from the group of food which contains all nutrients which fulfill all the requirements of body.

Five basic groups of food for a balanced Diet

1. Milk Group
2. Meat Group
3. Beans and Nuts
4. Green leafy vegetables
5. Cereal group.

These five groups are essential to add in a food plan for a balanced healthy diet.

Carbohydrates:

Carbohydrates are organic compounds comprises of carbon, hydrogen and oxygen. They provide energy to the body through glucose production.

*Functions:

Carbohydrates are instant source of energy by broken down the glucose.

They provide energy to nerve tissues and brain.

Proteins function:-

Proteins are made up of oxygen hydrogen and nitrogen.

Proteins regulate the enzymes related activities.

Important for hair, nails etc.
Build new tissue and replace damaged tissues in the body.



⑥ Define food preservation:

Preservation is the process through which food kept safe from spoilage after harvest.

The old methods of preservation include fermentation, refrigeration and drying. Modern methods of preservation includes: canning, pasteurisation, freezing and more others.

Canning:-

Canning is a modern process through which food can be safe for a long period of time. Specific tin stuff cans are used to keep the food safe at room temperature. In this method the food focused for preservation include: ~~meats~~ fish, meats, and some vegetables.

④ Differentiate between ROM and RAM. Also explain CPU

and its components:
Answer:-

ROM and RAM are the memories used in computer to store the data. But these are different in order of their characteristics and functions.

<u>RAM</u>	<u>ROM</u>
<u>(Random Access Memory)</u>	<u>(Read Only Memory)</u>
It stores data temporarily	It store data permanently
volatile	Non-volatile
Faster than ROM	Slow than RAM
It helps to perform tasks faster.	Helps to start the process in computer.

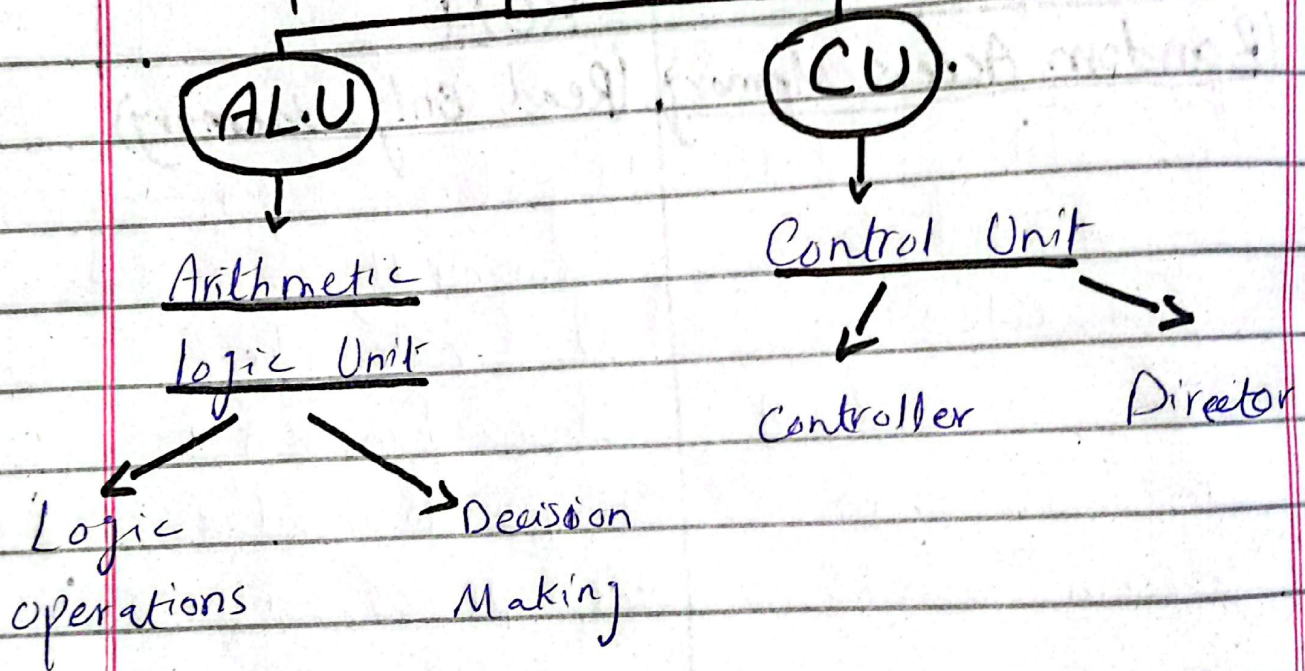
CPU:

CPU stands for Central processing unit. It is also called the brain of computer. It take data from input and then send output to the devices.

Functions of CPU:

1. It makes decisions.
2. It helps in processing.
3. Controls the software and hardware.
4. It follows the program instructions in sequence.

Components of CPU:



Section - II

Q: 08

(a)

Solution:

ROAD $\longrightarrow$ UQDL

(i) following the given pattern
(+3, +2, +3, +3)

(ii) LAKE $\longrightarrow$ QENH

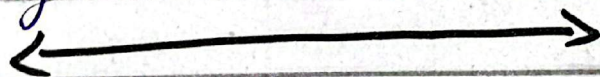
(iii) $L+3 = Q$

$A+2 = E$

$K+3 = N$

$E+3 = H$

So, the given pattern is followed literally.



(b) Solution:

Break down the relationship:-

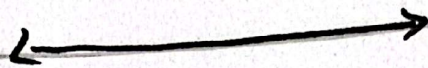
(i) Man's sister's son = Man's Nephew

(ii) Man's Nephew is the father of

woman's son.

(iii) So, The man's sister is the
the woman's mother-in-law.

(iv) Woman is the daughter-in-law
of man's sister. $\rightarrow$ Answer



(c)

(i) 4, 12, 6, 18, 9, 27 (—)

$$4 \times 3 = 12$$

$$12 \div 2 = 6$$

$$6 \times 3 = 18$$

$$18 \div 2 = 9$$

$$9 \times 3 = 27$$

$$27 \div 2 = 13.5$$

So, the answer is 13.5.

(ii) 1, 2, 6, 24, 120 (—)

$$1 \times 2 = 2$$

$$2 \times 3 = 6$$

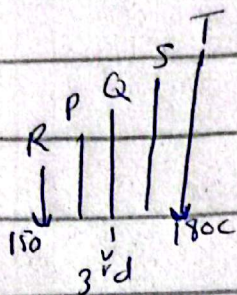
$$6 \times 4 = 24$$

$$24 \times 5 = 120$$

$$120 \times 6 = \underline{720} \rightarrow \text{Answer.}$$

(d)

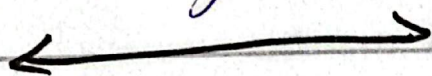
Solution:



(i) Q is the third tallest among friends.

(ii) $180 - 150 = 30 \text{ cm}$

The maximum possible range of their heights is 30 cm.



Qno :- 07

(d)

Solution:

$$F + S = 75 \rightarrow F = 75 - S$$

$$\text{Ten year ago} = F - 10 = 4(5 - 10)$$

$$(75 - S) - 10 = 4S - 40$$

$$65 + 40 = 4S + S$$

$$105 = 5S$$

$$S = \underline{21} \Rightarrow \text{Son's age.}$$

$$F = 75 - 21 = \underline{54} \text{ father's age.}$$

21 = Son's current age

54 = Father's current age

←————→
(a) = Q.07

Total surveyed = 100

Cricket = 65

Hockey = 40

Neither = 20

$$100 - 20 = 80$$

$$C \text{ and } H = 80$$

$$65 + 40 = 105$$

$$105 - 80$$

25 → Answer

25 people watch both cricket
and Hockey.

←————→