



# SHIKSHA CLASSES

Subject : Science-II  
Class : X

**ANSWERS PAPER**  
2. Life processes in living organisms part – 1

Total Marks : 20

**Q. 1 A) Choose the correct alternative.**

2

1) Which one of the following vitamins is necessary any for the synthesis of  $\text{NADH}_2$ ?

Ans : b) Vitamin  $\text{B}_5$

2) Somatic and stem cells undergo ----- type of division.

Ans : b) mitosis

**Q. 1 B) Solve the following question (Any One)**

1

1) Write name of the following

i)  $\text{NADH}_2$       ii)  $\text{FADH}_2$

Ans : i)  $\text{NADH}_2$  - Nictotinamide Adenine dinucleotide

ii)  $\text{FADH}_2$  - Flavin adenine dinucleotide

2) Find the odd man out

TCA cycle, citric acid cycle, kreb cycle, EMP pathway.

Ans : EMP pathway

3) Write about vitamins.

Ans : 1) Vitamins are a group of heterogeneous compounds of which each is essential for proper operations of various processes in the body.

2) There are main six types of vitamins, eg. A, B, C, D, E and K.

3) Out of these A, D, E and K are fat soluble whereas B and C are water soluble.

**Q. 2 A) Give scientific reason. (Any One)**

2

1) Fibers are one of the important nutrients.

Ans : Fibers are one of the important nutrient because fiber help in the digestion of other substances and egestion of undigested substances. Fibre obtain from leafy vegetables, fruits, cereals etc.

2) **Kreb's cycle is also known as citric acid cycle.**

Ans : 1) Kerb cycle is a cyclic series of reaction operated in mitochondtia in order for completion of oxidation of glucoses. 2) Acetyl CoA obtained from pyruvic acid is first converted to citric acid as it enters the kreb's cycle 3) Since kreb's cycle is cyclic chain of reactions the initial citric acid keeps on getting generated after completetion of every round of the cycle. 4) Since cycle starts and ends in generation of kreb's cycle is also known as citric acid cyle.

**Q. 2 B) Solve the following question. (Any Two)**

4

**1) Define - Anaerobic respiration. Give two examples of anaerobic respiration.****Ans :** **Anaerobic respiration :** The respiration which occurs in absence of oxygen is called as anaerobic respiration.**Example :** 1) Seeds perform anaerobic respiration if the soil is submerged under water during germination. 2) Our muscle cells also perform anaerobic respiration while performing the exercise.**2) Distinguish between Glycolysis and TCA cycle.****Ans :**

Glycolysis	TCA cycle
1) Process of glycolysis occurs in cytoplasm.	1) Cyclic chain of reactions called as tricarboxylic acid is operated on it in the mitochondria.
2) A molecule of glucose Step in this process and two molecules of each i.e. pyruvic acid ATP, NADH <sub>2</sub> and water are formed.	2) Both molecules of acetyl-co A enter the mitochondria.
3) Molecules of pyruvic acid formed in this process are converted into molecules of Acetyl coenzyme - A.	3) Acetyl's part of acetyl co-A is completely oxidized through this cyclical.
4) Two molecules of NADH <sub>2</sub> and two molecules of CO <sub>2</sub> are released during this process.	4) Process and molecules CO <sub>2</sub> , H <sub>2</sub> O NADH <sub>2</sub> FADH <sub>2</sub> are derived.

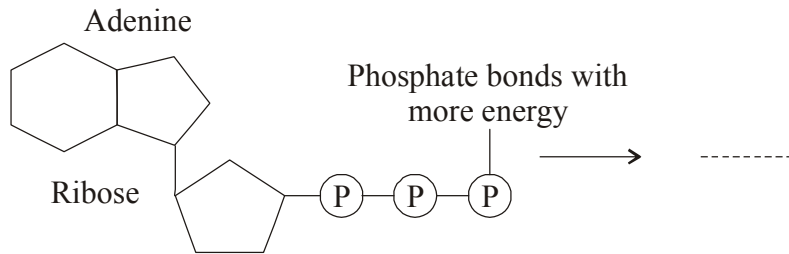
**3) Explain water is an essential nutrient.****Ans :** 1) There is about 65-70% water in our body.  
2) Each cell contains 70% water by weight.  
3) Blood plasma also contains 90% of water.  
4) Functioning of cells and thereby whole body disturbs even if there is a little loss of water from the body.  
5) Hence, water is an essential nutrient.**4) Explain the glycolysis in detail.****Ans :** **Glycolysis :** Process of glycolysis occurs in cytoplasm. A molecule of glucose is oxidised step by step in this process and two molecules of each i.e. pyruvic acid, ATP, NADH<sub>2</sub> and water are formed.Molecules of pyruvic acid formed in this process are converted into molecules of NADH<sub>2</sub> and two molecules of CO<sub>2</sub> are released during this process.**Q.3 Solve the following question. (Any Two)**

6

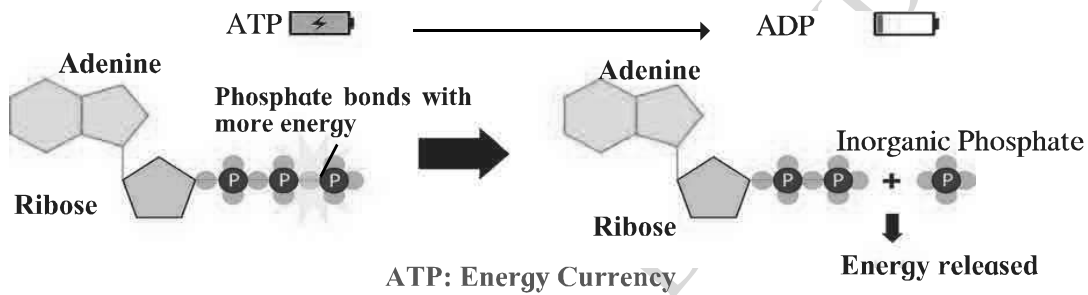
**1) Write a note on proteins and different amino acids obtained.****Ans :** 1) Proteins are the macromolecules formed by bonding together many amino acids.  
2) Proteins of animal origin are called as 'first class' proteins.  
3) We get 4 kcal of energy per gram of proteins.

- 4) Amino acids are obtained after digestion of proteins.
- 5) Those amino acids are absorbed in the body and transported up to each organ and cell via blood.
- 6) From these amino acids, organs & cells produce various proteins necessary for them themselves & the whole body.

**2) Complete the following figure.**



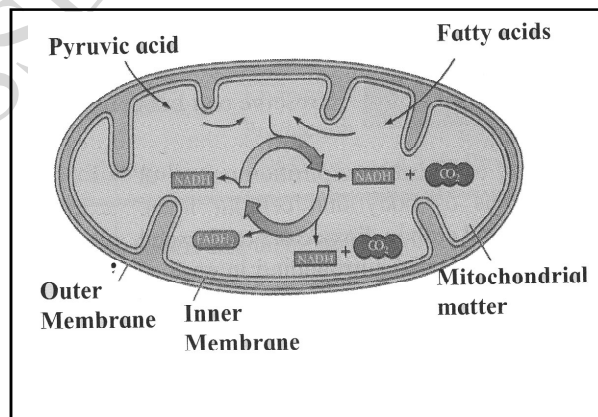
Ans :



**3) Draw the diagram.**

**Mitochondria and tricarboxylic acid cycle.**

Ans :



**4) How all the life processes contribute to the growth and development of the body?**

- Ans :
- 1) There are different processes that occur at the body and cellular level in any organism
  - 2) Body function are the physiological or psychological function of body system and the body's function are ultimately it's cell's function.
  - 3) Survival and growth is body's most important business and in that process all the physiological functioning occurring in the body work in coordination to maintain homeostasis of body.
  - 4) Body organization of any organism is such that there is division of labor and each component has its own job to perform while coordinating with other system.
  - 5) For example : Nutrients taken by organism processed by digestive system to give energy to all other system. This energy is produced by mitochondria, circulatory system make sure that these nutrient reach to all the cell of the body. The cell division process ensures that the cells are regenerated.

Thus all the example show how every cell functions in an attempt to maintain homeostasis and the end result of which is survival, growth and development.

**Q. 4 : Solve the following question. (Any One)**

5

**1) Explain the steps of mitosis in detail .**

**Ans :** 1) Mitosis

Somatic cells and stem cells

divide by mitosis

Mitosis is completed through

two main steps.

\* Karyokinesis

\* Cytokinesis

**Karyokinesis**

**A) Prophase :**

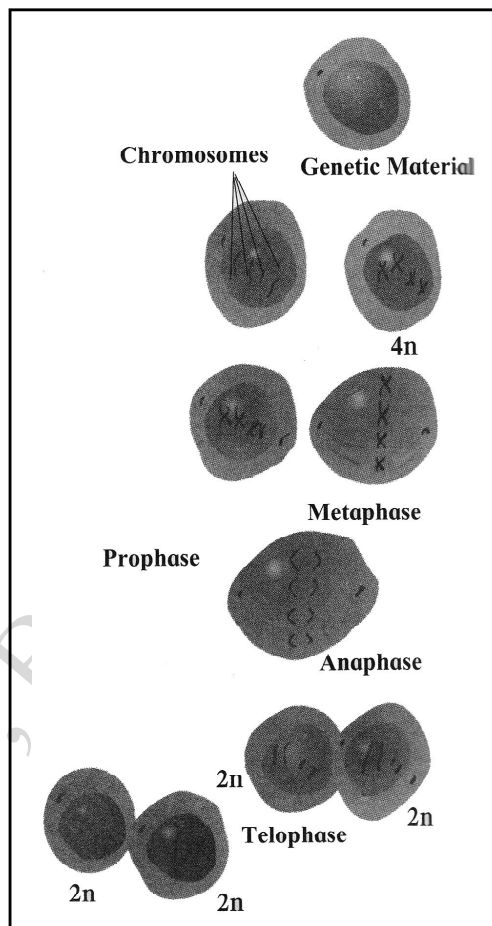
- 1) In prophase, condensation of basically thin thread like, chromosome starts.
- 2) Due to this, they become short & thick & they start to appear along with their pair of sister chromatids.
- 3) Centrioles duplicate & each centriole moves to opposite side of cells.
- 4) Nuclear membrane & nucleolus start to disappear.

**B) Metaphase :**

- 1) Nuclear membrane completely disappears in metaphase.
- 2) Chromosome complete their condensation & become clearly visible along with their sister chromatids.
- 3) All chromosomes are arranged parallel to equatorial plane.

**C) Anaphase :**

- 1) In anaphase, centromeres split and thereby sister chromatid of each chromosome separate and they are pulled apart in opposite directions with the help of spindle fibers.
- 2) Separated sister chromatids are called daughter chromosomes.
- 3) Each set of chromosomes reach at two opposite poles of the cell.



**Mitosis**

## D] Telophase :

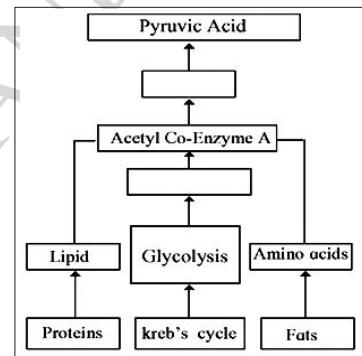
- 1] The chromosomes which have reached to opposite poles of the cell now start to decondense due to which they again becomes threadlike thin and invisible.
- 2) Nuclear membrane is formed around each set of chromosome reached at poles.
- 3) Two daughter nuclei formed in a cell.
- 4) Nucleolus also appears in each daughter nucleus.
- 5) Spindle fiber completely disappear.

## Cytokinesis :

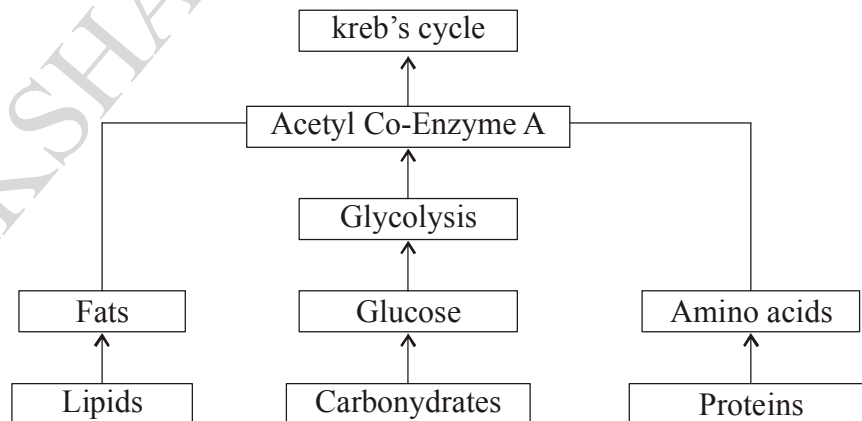
The cytoplasm divide by cytokine & two new cells are formed called daughter cells.

Mitosis is essential for growth of the body besides, it is necessary for restoration of emaciated body, wound healing, formation of blood cells.

- 2) **How energy is formed from oxidation of carbohydrates, fats and proteins? Correct the diagram given below.**



**Ans :** Molecule of glucose is completely oxidized in aerobic respiration and molecules of  $\text{CO}_2$  and  $\text{H}_2\text{O}$  are produced along with. If there is insufficient amount of carbohydrates in body due to exceptional conditions like fasting and hunger, then lipids and proteins are used for energy production. In case of lipids, they are converted into fatty acids whereas proteins into amino acids. Fatty acids and amino acids are converted into acetyl-CoA and energy is obtained through complete oxidation of acetyl-CoA by the process of Krebs cycle in mitochondria.



\*\*\*\*

# BECOME AN ACE IN JEE & NEET



**SHIKSHA CLASSES**  
Believe & Achieve

**JEE | NEET | Previsa (8-10)**

📞 8625055707 | 8623085707    🌐 [shikshaclasses.co.in](http://shikshaclasses.co.in)

M-19, MHADA Colony, Khat Road, Bhandara



Learn with Jaiswal sir