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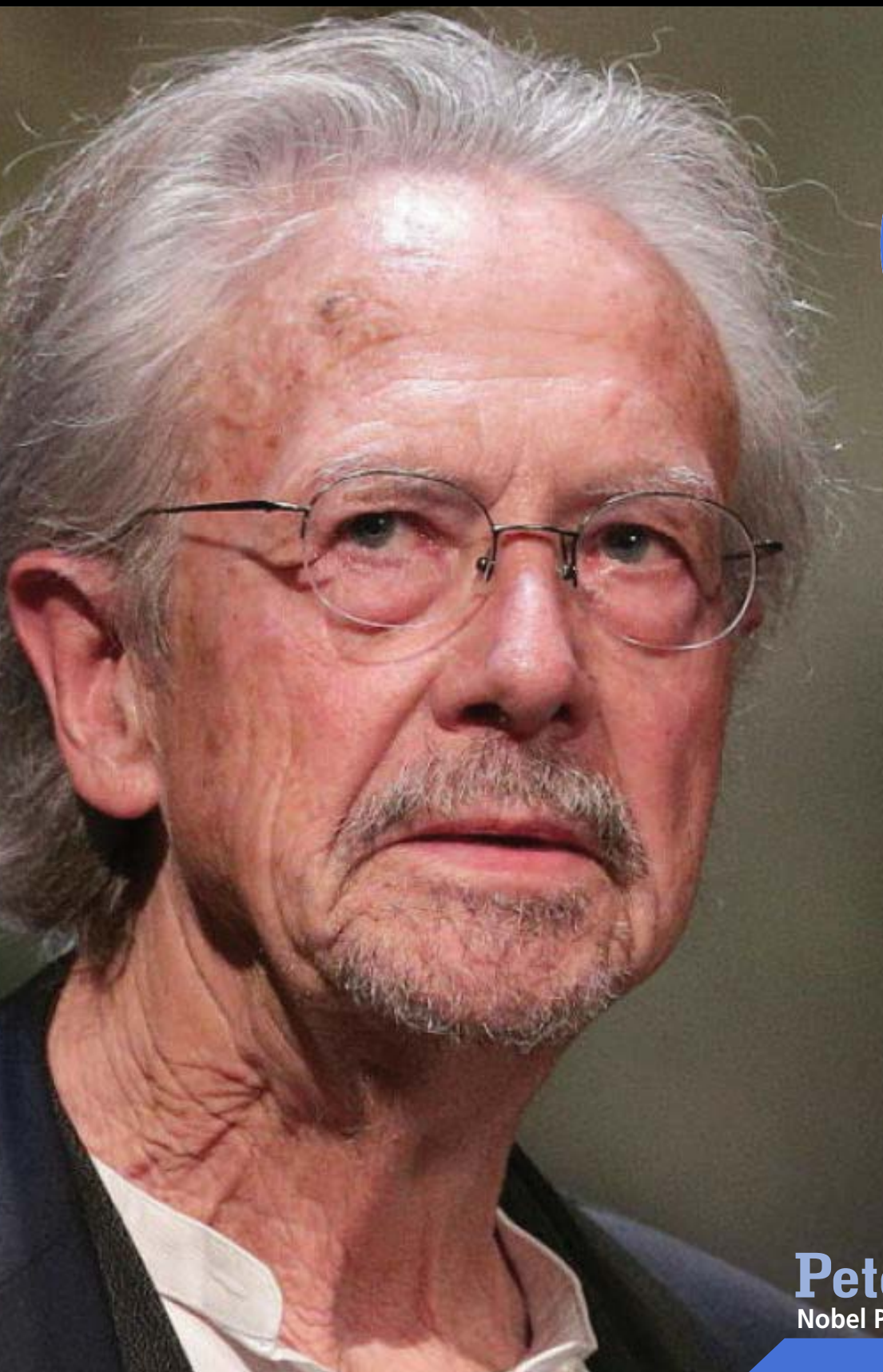

CLASS 10 CBSE

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Nobel Prize Winner 2019 (Literature)

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EDITORIAL

Dear learners,

Learning is a continuous process, which involves thinking, articulating, storing, remembering, using, parting and so on. Everyone learns, relearns and unlearns. It becomes an asset for the life. This can never be stolen and it cannot be bought too. It can only be gained. There are lots of ways by which one attains knowledge. What one attains, becomes ornament that shines and is part of one's own life. This is what makes one's life fruitful. To be fruitful one needs to be laborious. If one has gained something through easy means that will not sustain for a long period of time. Therefore, be a learner to be productive member of the society to think, to articulate, to store, to remember, to use, to impart by equipping oneself with the required skills. Proper learning creates lot of opportunities and these would lead to dispel the ignorance and would light up knowledge.

To be a help by being by your side to make your labour easy, we are presenting our humble effort in the form of a magazine named 'EDUMATE'. This is a collective endeavour to reach to the aspirants to make the study easier and also to let you know the day to day affairs. We have tried our level best to incorporate everything required to make a student's study process easy and effective. If our efforts stand helpful for your studies then the herculean task that we started will be fruitful.

No doubt this creative endeavour will bring about an array of knowledge bearing sweetest fruit ever. Let the knowledge sown today bring forth its best fruit with the help of 'EDUMATE'.

To you from us with love…

Geo John
Chief Editor

Life ... Love... Learn... to be a Change

FR. SIJU JOHN, M.A., M.Ed.

'You must be the change you wish to see in the world', one of the perfect words of Gandhiji in this new modern fast moving world when everyone wants to perceive changes and fetch changes in the life of others but not in oneself. We call for changes in life and no one would like to be idle in his/her life. We do apply certain words often in our conversation and they are life, love and learn.

LIFE.....

"Twenty years from now you will be more disappointed by the things you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore, Dream, Discover." **– Mark Twain.**

The American writer's words about life have a lot of relevance for today's young buds. Life is to be explored in all meaning. It's not a free gift but heavily compensated by our dear parents, our visible gods on earth. Every player has a coach but the coach is not always a better player. We have to explore ourselves and to explore we need to dream and discover. Every unearthing initiate with a dream and a better dreamer discovers better. Discovery begins from within and why don't we take a step forward; a step which is rare, bold and distinctive.

LOVE .....

"Love is an untamed force. When we try to control it, it destroys us. When we try to imprison it, it enslaves us. When we try to understand it, it leaves us feeling lost and confused." **Paulo Coelho**

The Brazilian novelist says that the love is a force. The force, which comes from the heart, penetrates the hearts of others and is the germ of life. It cultivates the worth of life and our young buds have to get the imprint of this precious germ. Today the world is more educated but has less common sense, more degrees but has less capacity of judgment, bigger houses but has small families, big personalities but has less character, spends a lot but has less happiness and conquered the whole world but has lost the germ of life i.e. love. We, the human beings, try to dominate but love cultivates peace which frees us from the burden and pains of life. Let our educators, parents, peer groups, friends and so on nurture the germ of life to our young buds. We can cultivate it by giving a feather touch of love.

LEARN .....

'By three methods we may learn wisdom: First, by reflection, which is noblest; Second, by imitation, which is easiest; and third by experience, which is the bitterest.' **– Confucius**

The Chinese philosopher says that the toughest way of learning is by experience. A blind person makes a decision after experiencing. He sees the things through his heart because only his eyes are closed not his heart/mind. We have to keep our hearts open to learn by experience and learning through heart is love. The more I read, the more I acquire but the more I love, the more I learn to live. The most precious learning is learning of the meaning of love since all learning has an emotional base. We must learn to live together than leaning various languages and sciences. The standard of living is what we have but the standard of life is what we give from our heart.

BE A CHANGE .....

*"The secret of change is to focus all of your energy not on fighting the old, but on building the new."***-Socrates**

To be a change, we need to have clarity of mind and heart and this clarity is acquired through life, love and learning. In order to be a change or revolutionary one must have the vision and heart of a giraffe. Giraffe has a small, powerful, supercharged heart that is different to that possessed by other similar animals and has a holistic vision from above. We obtain speed in life by technology but the directon has to be from a heart which has knowledge by experience. Let us direct our young buds from our experienced hearts to bring changes in their life and lives to come. Therefore we shall lead a simple life but a rich burial by the triumph of our life.

GET UP FROM THE FALL TO WIN

GEO JOHN, M.A., B.Ed.

INTRODUCTION

The moment one thinks about one's own capabilities and is confident about the caliber, he/she will emerge as victorious. Success is the result of positivity. When a person is positive and is with wonderful courage to take up risks can taste triumph and when one is passive and do nothing productive will have a great fall and that would be irreversible. Being positive will make great things possible to those who don't stop believing in oneself, trying something new or better and learning to be different. Be inquisitive to be different, and if you want to be different you need to be different. Being inquisitive will open up to new ideas and these ideas will sprout, grow and yield fruits.

Be curious to win

It is necessary to be curious and curiosity according to Ian Leslie is a combination of intelligence, persistence and hunger for novelty, all wrapped up in one. In order to improve curiosity and wonder one needs to read widely and should follow one's interests. It is said that when you are running into something interesting, drop everything and study it. The feeling of being interested can act as a kind of neurological signal, directing us to fruitful areas of inquiry.

Be thirsty to accomplish your target

The thirst to have fruitful enquiry will lead to fill up and accomplish the target. It will also help one to polish mind with the minds or thoughts of others. One can always be benefitted with the progressive ideas of others. It simply means to consult with the experts to be experts. These ideas will either support or would leave the spark to think what is next. If your ideas can get wings using others' thoughts there is no wrong in it but one should make sure that it is productive and never be destructive.

Do not take up shortcuts

We have crippled ourselves in finding out shortcuts in every way possible. Though we have the potential source, we do not want to rely on anything that would demand time. Even any kind of information we require is to be available at our finger tips, if not, it is very difficult to pass moments. Today's generation is born to Google. In the era of Google searches, we have no problem finding the exact answer to our questions, but by chance likely to encounter information that is not specific or relevant to our question or queries. It is said that a serendipity deficit makes innovation harder, because innovation relies on unexpected collision of knowledge and ideas. So, it is the fact that we don't exactly get the answers perfect for our questions.

Give wings to your passions

All what you do might be meaningless or absurd for the people watch you from far, but you should never allow your passion and interests to die. Once they are no more with you, then the life will be pathetic and difficult to pursue. On the go there are chances, where you might fall down many times but your passion and interests would be your help in standing on your own foot. You must keep your passion alive and no outer forces can have access on you. This must be your strength to get up from the fall. Falling down would give us experiences and these experiences are the driving forces to stand up. An ant while carrying the grain might fall down many times but it will not stop carrying grains because of the fear of falling down. Life is similar to this. If one wants to sustain life, then it is necessary to have lots of experiences of falling down and getting up. Learn lessons from every instance of your life and this would be a force to live on.

Conclusion

I am the master of my life and everything that is required to stand on my own foot it's within me. If I am able to stand to be different by being curious to win starts my auspicious time and this so called auspicious time is within and will be out of your reach if you are to search elsewhere. Do not be satisfied with the knowledge you have but equip and update yourself at every moment by not taking the shortcuts to win rather shed your perspiration for your cause. If you are determined you will never at the place where you fell but you would fly to the heights by the wings that are created by you to win always.

MY CAREER: THE PATH FINDER

SHAJU JOSEPH, M.A,. M. Phil., B. Ed., MBA

Choosing a career after schooling is considered to be the most important activity in a student's life. But the question that baffles everybody is, **'What to choose?'** and **'How to choose?'** Unfortunately these questions remain unanswered in most of the children's lives. The reason…?

In a world where the children get everything 'readymade', this problem is bound to happen. In a world where the children are just taught about the price of things and not the value, this is bound to happen and in a world where the children are not taught to take up the responsibilities or face the challenges and stand on their own legs, this is bound to happen. The parents- especially our (Indian) parents are so concerned about their children's future that they want to have everything ready for them as they grow up and finally a high profile blue collar job with a fat six/ seven digit pay cheque. Once they achieve this – the parents are happy and content that their son/ daughter is well settled.

It looks good and everybody is fine with it. Moreover this is what 90% of the present generation wants. Gradually what happens is – they get fed up with the unending stress related to work, meeting the targets, satisfying the boss etc. In the struggle to keep up with the expectations of the employers and the society, they forget their family life, their children's social and emotional growth, the spouse, the parents and relations. Not only that the extreme stress makes the person mentally and physically tired. The rest of the life is spent going to the hospitals, eating loads of medicines as food etc. or to make things worse, he/ she may get into depression or even commit suicide.

How do these things happen? Was this what was envisioned? Was it the destiny / the life parents wanted the children to have?

No- Obviously No is the answer. Then Why …? why should this happen ? Let us look back to the two questions that we left behind – **What to choose? and How to choose?**

These two questions are quintessentially important because a choice that one makes at a critical point of time makes all the difference. Every apprentice searching for a happy life, should earnestly work on What to Choose- not choose what they have been told to by the parents , relatives or the so called well- wishers or not a career to satisfy your parents or your own social status. The choice should ultimately based on your own interests , your own passion and your own heart's desire - failing in which whatever you do will become just a job , a burden and it will never make you happy.

As we discussed, what to Choose entirely depends on your passion, love, affinity and attachment. Your parents / teachers can surely guide you or support you but make sure you be the decision maker. When you go after what you are passionate about, you are bound to enjoy what you do. It will never be a burden for you or even a 'work' for you but it will be the most interesting activity, or 'time pass' for you as you get completely involved in it. As the maxim goes 'Do what you love and Love what you do'.

In the words of Dr. A P J Abdul Kalam, 'If you do what you love, you don't need to work even a single day in your life. So it becomes imperative to make a correct choice before selecting a particular profession.'

Now let's discuss how to identify your passion, your interest or what to do with your life. I hope the following questions will help you to make the choice. Ask yourself the same/ similar questions.

- What do I enjoy doing?
- What kind of activities are fun and fulfilling for me?
- What am I good at?
- What Skills do I have to excel in what I do?
- What are my capabilities?
- What are my drawbacks and what do I do to improve upon them?
- How much time do / can I spend to sharpen my skills?
- How confident am I?
- How strong is my Intrapersonal as well as my Interpersonal skills?
- Am I willing to / able to face the challenges that emerge in this field?

If you are able to find satisfying answers to these questions, be sure that you are on the right track. Develop a strong proactive mindset and 'Never say Die' attitude and an unrelenting thirst to achieve what you value the most and it will surely make your life and you will be happy and your life will be meaningful. As Swami Vivekananda reminds us " Arise, awake and stop not until the goal is reached".

CHAPTER 6

LIFE PROCESSES

TOPICS

- **What are life processes**
- **Modes of Nutrition**
- **Autotrophic Nutrition**
  - → Raw materials for photosynthesis
  - → Site of Photosynthesis
  - → Main Events of Photosynthesis
- **Stomata**
  - → Functions of stomata
- **Heterotrophic Nutrition**
  - → How organisms obtain their food
- **Nutrition in Amoeba**
- **Nutrition in Human Beings**
  - → Human Digestive System

INTRODUCTION

We already have known about living and non living things. All living things perform certain life processes like growth, excretion, respiration, circulation etc. Animals, birds and human beings are living beings. These fall asleep in the night or day. We see them breathing so we know that they are alive. Some animals can breathe without visible movement. So using visible movement as the defining characteristics of life is not enough.

The plants, they grow over time we tend to think of some sort of movement either growth related or not. But a plant that is not visibly growing is still alive. The invisible molecular movement is necessary for life because all the structures are made up of molecules they must move molecules around all the time.

Therefore, let's define what life process here is, "all the processes like respiration, digestion, which together keep the living organisms live and perform the job of body maintenance are called life processes.

MODES OF NUTRITION

- **Nutrition in Plants**
  - (i) Plants are autotrophs.
  - (ii) Make their own food.
- **Nutrition in Animals**
  - (i) Animals are heterotrophs.
  - (ii) Depends on plants or others for food.

AUTOTROPHIC NUTRITION

It is a kind of nutrition in which inorganic materials like CO_2, water etc. are utilized to prepare organic food by the process of photosynthesis.
E.g: Green plants.

- Autotrophs use simple inorganic material and convert it into complex high energy molecule (Carbohydrates)
- What is photosynthesis?
- Autotrophic nutrition is fulfilled by the process by which autotrophs take in CO_2 and H_2O and convert these into carbohydrates in the presence of chlorophyll, sunlight is called Photosynthesis
- Raw materials for photosynthesis are Sunlight, Chlorophyll, CO_2 and Water
- Main Events of Photosynthesis:

a) Absorption of light energy by chlorophyll.

b) Conversion of light energy into chemical energy.

c) Reduction of CO_2 to carbohydrates.

STOMATA

Stomata are the tiny pores present on the surface of the leaves for exchange of gases O_2/CO_2.

FUNCTIONS OF STOMATA

The two main functions of stomata are to allow for the uptake of carbon dioxide and to limit the loss water due to transpiration.

HETEROTROPHIC NUTRITION

Kind of nutrition in which organisms does not possess the ability to synthesize their own food. It depends on autotrophs for their food supply directly or indirectly.
Example: Animals, fungi.

HOLOZOIC NUTRITION: AMOEBA, ANIMALS

Saprophytic Nutrition: Fungi.

Parasitic Nutrition: Cuscuta (plant parasite), Ticks etc.

- **How organisms obtain their food**

Unicellular/Single celled organisms: Food is taken up through body surface.
Example: Amoeba, Paramecium.

NUTRITION IN HUMAN BEINGS

The alimentary canal is basically a long tube extending from the mouth to the anus. Various
regions are specialised to perform different functions.

(i) Mouth.
(ii) Bursal Cavity
(iii) Pharynx
(iv) Oesophagus
(v) Stomach
(vi) Small Intestine
(vii) Large Intestine

(a) Walls of small intestine secrete intestinal enzyme which convert Carbohydrates into glucose fats into fatty acid + glycerol and Proteins into amino acids.
(b) It has Villi (finger like projection) which help in the absorption of food into blood.
(c) It receives the secretions of the liver and pancreas. The food is acidic which is made alkaline for the pancreatic enzymes to act. The pancreas secretes

pancreatic juice which contains enzymes like trypsin for digesting proteins and lipase breaking down emulsified fats.

Fats are present in the intestine in the form of large globules which makes it difficult for enzyme to act on them. Bile salts break them down into smaller globules which increases the efficiency enzyme action.

(viii) Large Intestine:

(a) Absorb excess of water.
(b) The rest of the material is removed from the body via the anus.

• Respiration in Human Beings

It is the process of gas exchange between the air and an organism's cells. Breakdown of Glucose by Various Pathways

Types of Respiration

There are three types of respiration

1. Internal: respiration involves gas exchange between the blood and body cells.
2. External: is the breathing process, which involves inhalation and exhalation of gases.
3. Cellular: involves the conversion of food to energy.

Respiration in Human Beings

Respiration involves:

(i) Gaseous exchange (Breathing) : Intake of oxygen from the atmosphere and release of CO_2.
(ii) Cellular respiration: Breakdown of simple food in order to release energy inside the cell.

• Breakdown of Glucose by Various Pathways

The first step is the break-down of glucose (a six-carbon molecule) into a three-carbon molecule called pyruvate which takes place in the cytoplasm.

The pyruvate may be converted into ethanol and carbon dioxide which takes place in yeast during fermentation. Since this process takes place in the absence of air (oxygen), it is called anaerobic respiration.

The pyruvate is broken down into three-carbon pyruvate molecule in the presence of oxygen to give three molecules of carbon dioxide and water. This process takes place in mitochondria. Since this process takes place in the presence of air (oxygen), it is called aerobic respiration.

The pyruvate is converted into lactic acid when there is a lack of oxygen in our muscle cells is also a three-carbon molecule. This build-up of lactic acid in our muscles during sudden activity causes cramps in museles.

The energy released during cellular respiration is immediately used to synthesise a molecule called ATP which is used to fuel all other activities in the cell. In these processes, ATP is broken down giving rise to a fixed amount of energy which can drive the endothermic reactions taking place in the cell.

The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms because the amount of dissolved oxygen is fairly low compared to the amount of oxygen in the air.

• Human Respiratory System

Different parts of respiratory system are:

Nostril: Air is taken into the body.

Nasal Passage: It is a channel for airflow through the nose.

Nasal Cavity: It is lined with hairs and mucus membrane. It warms, moisturize, and filter air before it reaches the lungs.

Pharynx: It contains rings of cartilage which ensure that the air-passage does not collapse.

Larynx: It houses the vocal cords and manipulates pitch and volume, which is essential for phonation. It is also known as voice box.

Trachea: Pharynx splits into trachea and esophagus. It connects the larynx (or voice box) to the bronchi of the lungs. It provides air flow to and from the lungs for respiration.

Bronchi: They are the main passage way into the lungs. They are the extensions of the windpipe that shuttle air to and from the lungs. The oxygen goes to the lungs and carbon dioxide leave the lungs through them.

Bronchioles: Bronchi get smaller when they reaches closer to lungs tissues and are called Bronchioles. They are the passageways by which air passes through the nose or mouth to the alveoli of the lungs.

Alveoli: They are smaller tubes which finally terminate in balloon – like structure which are called alveoli. They allow oxygen and carbon dioxide to move between the lungs and bloodstream.

Blood capillaries: They are the sites of the transfer of oxygen and other nutrients from the bloodstream to other tissues in the body. They also collect carbon dioxide and waste material and return it to the veins.

Respiration in plants

Respiration in plants is simpler than the respiration in animals. Gaseous exchange occur through.

(a) Stomata in leaves
(b) Lenticels in stems
(c) General surface of the root

Transportation in Human Beings

Human beings like other multicellular organism need regular supply of food, oxygen etc. This function is performed by circulatory system.

The circulatory system in human beings consists of:

(i) Heart (pumping organ)
(ii) Arteries, Veins, Blood Capillaries and Blood vessels
(iii) Blood and lymph (Circulatory medium)

Blood circulation in human body

Double circulation: Blood travels twice through the heart in one complete cycle of the body

Direction of blood flow through human heart

Pulmonary Circulation: Blood moves from the heart to the lungs and back to the heart.

Systemic Circulation: Blood moves from the heart to rest of the body and back to the heart.

• Blood

Blood is connective tissue which is fluid in nature.

Solid components of blood (Blood corpuscles):

(i) RBC (Red blood cells): It carries O_2 and CO_2 and also contain Haemoglobin which impart red colour to the blood.
(ii) WBC (White blood cells): It provides body defence by engulfing the germs and produces antibodies.
(iii) Blood Platelets: It helps in blood clotting during injury.

• Lymph

It is a yellowish fluid which escapes from the blood capillaries into the intercellular spaces. It contains less proteins than blood. It flows from the tissues to the heart which helps in transportation and destroying germs. It carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.

• Types of Blood Vessels

There are two types of blood vessels
(i) Arteries
(ii) Veins
(iii) Capillaries

Transportation in Plants

There are two main conducting pathways in a plant.
(i) Xylem
(ii) Phloem

Transpiration and its Functions

It is the process of loss of water as vapour from aerial parts of the plant.

Function :

(a) Absorption and upward movement of water and minerals by creating PULL.
(b) Helps in temperature regulation in plant.
Transport of food from leaves (food factory) to different part of the plant is called Translocation

Excretory System in Human Beings

Excretory/urinary system consists of :

(1) **The kidneys :** The excretory organ
(2) **The ureters :** The ducts which drain out urine from the kidneys
(3) **The urinary bladder :** The urinary reservoir
(4) **The urethra :** The channel to the exterior

Formation of urine in Humans.

(i) **Glomerular filtration:** Nitrogenous wastes, glucose water, amino acid filter from the blood into Bowman Capsule of the nephron.

(ii) **Tubular reabsorption:** Now, useful substances from the filtrate are reabsorbed back by capillaries surrounding the nephron.

(iii) **Secretion:** Urea, extra water and salts are secreted into the tubule which open up into the collecting duct & then into the ureter.

Excretion in Plants

Plants use different strategies for excretion of different products :

1) Oxygen and carbon dioxide is diffused through stomata.
2) Excess water is removed by transpiration.
3) Plants can even loose some of their old parts like old leaves and bark of tree.
4) Other waste products like raisins and gums especially in old xylem cells which can also be lost by plants.
5) Plants also secrete some waste substances into the soil around them.

MULTIPLE CHOICE QUESTIONS (MCQ)

1. It is used in the process of breakdown of food sources for cellular needs
a. Nitrogen b. Oxygen
c. Carbon dioxide c. None of these
Answer : b. Oxygen

2. Which life process converts chemical energy into heat energy?
a. Nutrition b. Respiration
c. Excretion d. Transpiration
Answer : b. Respiration

3. Which of the following are energy giving foods?
a. Carbohydrates and fat
b. Proteins and mineral salts
c. Vitamin and minerals
d. Water and roughage
Answer : a. Carbohydrates and fats.

4. In which mode of nutrition an organism derives its food from the body of another living organism?
a. Saprotrophic nutrition
b. Parasitic nutrition
c. Holozoic nutrition
d. Autotrophic nutrition
Answer : b. Parasitic nutrition

5. The mode of nutrition found in fungi is
a. Parasitic nutrition
b. Holozoic nutrition
c. Autotrophic nutrition
d. Saprotrophic nutrition
Answer : d. Saprotrophic nutrition

6. The energy derived from the food we eat is stored in our body in the form of
a. Glucose b. Glycogen
c. Sucrose d. None of these
Answer : b. Glycogen

7. In leaf absorption of light energy by
a. Chlorophyll b. Mitochondria
c. Phloem d. Xylem
Answer : a. Chlorophyll

8. The site of photosynthesis in the cells of a leaf is
a. Cytoplasm b. Protoplasm
c. Mitochondria d. Chloroplast
Answer : d. Chloroplast

9. Gaseous exchange takes places in the leaves through
a. Xylem b. Stomata
c. Cytoplasm d. Mitochondria
Answer : b. Stomata

10. Roots of the plant absorb water from the soil through the process of
a. Diffusion b. transpiration
c. Osmosis d. None of these
Answer : c. Osmosis

11. The elements used in the synthesis of proteins and other compounds
a. Nitrogen b. Phosphorus
c. Iron d. Magnesium
Answer : a. Nitrogen

12. The organism which break down the food material outside the body and then absorb it
a. Fungi b. Yeast
c. Mushroom d. All of these
Answer : d. All of these

13. Which of the following is parasitic nutritive animal?
a. Deer b. Leeches
c. Yeast d. Fungi
Answer : b. Leeches

14. In Amoeba food is digested in the
a. Food vacuole b. Mitochondria
c. Pseudopodia d. Chloroplast
Answer : a. Food Vacuole

15. In which animal, food is moved to the specific spot by the movement of Cilia
a. Amoeba b. Paramecium
c. Hydra d. None of these
Answer : b. Paramecium

16. Which of the following events in the mouth cavity will be affected if Salivary Amylase is lacking in the Saliva.
a. Starch breaking down into sugar
b. Protein breaking down into Amino acid
c. Absorption of Vitamins
d. Fats breaking down into fully acids and glycerol.
Answer : a. Starch breaking down into sugar

17. The enzyme which digest the protein.
a. Salivary Amylase b. Hydrochloric acid c . Pepsin d. Insulin
Answer : c. Pepsin

18. It protects the inner lining of the stomach from the action of the acid under normal condition
a. Pepsin b. Hydrochloric acid
c. Mucus d. Trypsin
Answer : c. Mucus

19. Which region of alimentary canal absorbs the digested food?
a. Stomach b. Small intestine
c. Large Intestine d. Liver
Answer : b. Small Intestine

20. The contraction and expansion movement of the wall of food pipe is called
a. Translocation b. Transpiration c . Peristaltic Movement d. Digestion
Answer : c. Peristaltic Movement

21. When a few drops of iodine solution are added to rice water, the solution turns blue – black in colour. This indicates that rice water contains.
a. Fats b. Complex Proteins
c. Starch d. Simple Proteins
Answer : c. Starch

22. The exit of unabsorbed food material is regulated by
a. Liver b. Anus
c. Small intestine d. Anal Sphincter
Answer : d. Anal Sphincter

23. What are the products obtained by anaerobic respiration in microorganisms?
a. Lactic acid and Energy
b. Carbon dioxide, water and energy
c. Ethanol, Carbon dioxide and energy
d. Pyruvate
Answer : c. Ethanol, Carbon dioxide and energy

24. The breakdown of pyruvate to give carbon dioxide water and energy take place in
a. Cytoplasm b. Mitochondria
c. Chloroplast d. Nucleus
Answer : b. Mitochondria

25. What are the products obtained by anaerobic respiration in our muscles?
a. Lactic acid and energy
b. Carbon dioxide , water and energy
c. Ethanol, Carbon dioxide and energy
d. Pyruvate
Answer : a. Lactic acid and energy

26. Glycolysis process occurs in which part of the cell.
a. Cytoplasm b. nucleus
c. Mitochondria d. Chloroplast
Answer : a. Cytoplasm

27. The respiratory pigment in human beings is
a. Carotene b. Chlorophyll
c. Haemoglobin d. Mitochondria
Answer : c. Haemoglobin

28. It ensures that the air passage does not collapse when the air passes through throat and in to the lungs.
a. Oesophagus b. Nostrils
c. Cartilage d. None of these
Answer : c. Cartilage

29. The haemoglobin present in
a. red blood corpuscles b. white blood corpuscles
c. Platelets d. Plasma
Answer : a. red blood corpuscles

30. A blood vessel which pumps the blood from the heart to the entire body.
a. Artery b. Capillary
c. Vein d. Haemoglobin
Answer : a. Artery

31. Name the circulatory fluid in the human body other than blood.
a. Platelets b. RBC
c. Lymph d. Plasma
Answer : c. Lymph

32. Oxygen is carried by
a. RBC b. WBC
c. Platelets d. Lymph
Answer : a. RBCs

33. Single circulation i.e., blood flows through the heart only once during one cycle of passage through the body is exhibited by which of the following.
a. hyla, rana, draco
b. Whale, dolphin, turtle
c. labeo, chameleon, salamander
d. hippocampus, exocoetus, anabas
Answer : d. Hippocampus, exocoetus and Anabas

34. The cell which help to clot the blood at the point of injury.

a. RBC b. WBC
c. Platelets d. Lymph
Answer : c. Platelets

35. It carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.
a. RBC b. WBC
c. Plasma d. Lymph
Answer : a. Lymph

36. Which plant tissue transports water and minerals from the roots to the leaf?
a. Xylem b. Phloem
c. Parenchyma d. Collenchyma
Answer : a. Xylem

37. The movement of food in phloem is called
a. transpiration b. translocation
c. respiration d. evaporation
Answer : b. translocation

38. Name the tube which connect the kidney to the urinary bladder
a. Urethra b. Nephron
c. Tubule d. Ureters
Answer : d. Ureters

39. It helps in the absorption and upward movement of water and minerals dissolved in it from roots to leaves.
a. transpiration b. translocation
c. respiration d. evaporation
Answer : a. transpiration

40. Which part of Nephron allows the selective reabsorption of useful substance like glucose amino acids, salts and water into the blood capillaries?
a. Tubule b. Glomerulus
c. Bowman's capsule d. Ureter
Answer : a. Tubule

41. Where is the dirty blood in our body filtered?
a. Heart b. Lungs
c. Ureter d. Kidneys
Answer : d. kidneys

42. The procedure used for cleaning the blood of a person by separating urea from it is called.
a. Osmosis b. filtration
c. dialysis d. double circulate
Answer : c. dialysis

43. A gland not associated with the alimentary canal is
a. liver b. salivary glands c . pancreas d. adrenal
Answer : d. adrenal

44. Which of the following are chiefly digested in the stomach?
a. carbohydrates b. proteins
c. lipids d. fats
Answer : b. Proteins

45. One cell thick vessels are called
a. Arteries b. veins
c. Capillaries d. Pulmonary artery
Answer : c. Capillaries

FILL IN THE BLANKS

1. ……. are utilised for providing energy to the organisms.
Answer : Carbohydrates

2. The ……. are essentials for photosynthesis.
Answer : Chlorophyll, Sunlight,CO_2 , H_2O

3. ……that breaks down starch which is a complex molecule to give simple sugar.
Answer : Salivary Amylase

4. The gastric glands release ……..
Answer : Hydrochloric acid, Gastric Juice

5. The inner lining of the small intestine has numerous finger like projections called ……
Answer : Villi

6. The glucose break down to pyruvate in ……
Answer : Cytoplasm

7. The lactic acid in our muscles during sudden activity causes ……..
Answer : Cramps

8. …….. is used to fuel all other activities in the cell
Answer : ATP

9. …….. is the energy currency for most cellular processes.
Answer : ATP

10. Carbon dioxide and oxygen are exchanged by ……
Answer : Diffusion

11. …….. transports food, carbon dioxide and nitrogenous wastes in dissolved form.
Answer : Plasma

12. …….. ensure that blood does not flow backward when the atria or ventricles contract.
Answer : Valves

13. …….. have three chambered hearts.
Answer : Amphibians

14. ……. is the force that blood exert against the wall of vessel.
Answer : Pressure

15. The pressure of blood inside the artery during ventricular contraction is ……..
Answer : Systolic Pressure

16. …… is the pressure in artery during ventricular relaxation
Answer : Diastolic pressure

17. The normal blood pressure of a human is ……..
Answer : 120/80 mm/Hg.

18. Blood pressure is measured with ……..
Answer : Sphygmomanometer

19. The smallest vessels have walls which are one cell thick are called ……..
Answer : Capillaries

20. The loss of water in the form of vapour from the aerial parts of plants is ……..
Answer : Transpiration

21. Urea or Uric acid are removed from blood in the ……
Answer : Kidneys

22. …….. is the filtration units in kidneys.
Answer : Nephrons

23. ……and …….. are the waste products of plants
Answer : resins and gums

QUESTIONS AND ANSWERS

1. What are nutrients?
Answer : Nutrients are various organic and inorganic substance required by the organism to carry out their function.

2. What is heterotrophic nutrition?
Answer : The process of nutrition where the organisms obtain their food from other organism.
Example : Most of the bacteria fungi and all animals.

3. What is photosynthesis?
Answer: Photosynthesis is a process which utilizes carbon dioxide and water in the presence of sunlight and chlorophyll to synthesize carbohydrates like glucose.

4. Name the different types of heterotrophic nutrition?
Answer : Heterotrophic nutrition is classified as holozoic, saprotrophic and symbiotic parasitic.

5. What are enzymes? Name any one enzyme of our digestive system and write functions.
Answer : Enzymes are biological catalysts. Catalysts are proteins that increase the rate of chemical reactions without being used up.
Example : Amylase catalyses the breakdown of starch into sugars in the mouth and small intestine.

6. Write the balanced chemical equation for the process of photosynthesis.
Answer : Photosynthesis can be represented using a chemical equation. The overall balanced equation is

$$6CO_2 + 12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

7. When do the deserts plants take up carbon dioxide and perform photosynthesis?
Answer : Desert plants open up their stomata during night and take in CO_2. Stomata remain close during the day time to prevent the loss of water by transpiration. They store the CO_2 in their cells until the sun rises out and they can carry on with photosynthesis during the day time.

8. What is the process take place during photosynthesis?
Answer : The following events occur during this process.
i. Absorption of light energy by chlorophyll.
ii. Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.
iii. Reduction of carbon dioxide to carbohydrates.

9. Explain. How does the exchange of gases occur in plants across the surface of stem roots and leaves?
Answer : In plants there are tiny pores called stomata. On leaves and lenticels in stem which facilitate the exchange of gases. Carbon dioxide is taken in and oxygen give out (photo synthesis) and vice versa (respiration).

10. In single celled organisms diffusion is sufficient to meet all their requirements, food exchange of gaseous or removal of wastes but it is not in case of multicellular organisms. Explain the reason for this difference.
Answer : Unicellular organisms can absorb sufficient oxygen because of its complete contact with the atmosphere but in multicellular organisms the rate of absorption and diffusion becomes very less because all cells are not in direct contact with the atmosphere. Multicellular organisms require greater amount of oxygen to sustain life processes which cannot be full filled by the process of diffusion.

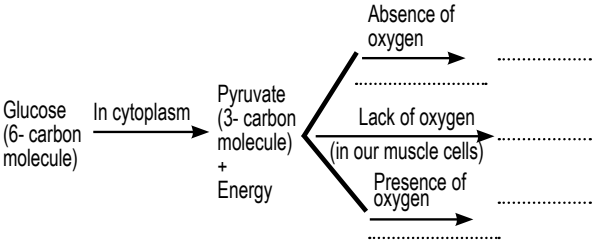
11. Explain the nutrition in Amoeba.
Answer : Amoeba intakes food using temporary finger like extensions of the cell surface which fuse over the food particle forming a food vacuole. Inside the food vacuole complex substance are broken down into simpler ones which then diffuse in cytoplasm. The remaining undigested material is moved to the surface of the cell and thrown out.

12. Write the nutrition in paramecium.
Answer : Paramecium is also a unicellular organism, the cell has a definite shape and food is taken in at a specific spot called gullet. Food is moved to this spot by the movement of cilia which cover the entire surface of the cell.

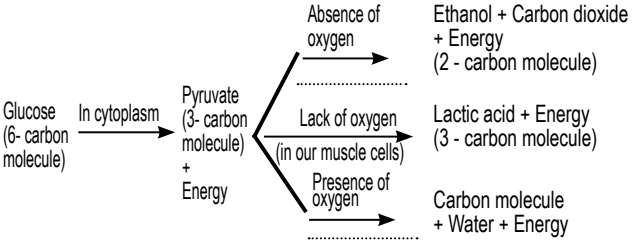
13. The length of the small intestine differs in herbivores and carnivores. Why?
Answer : The length of the small intestine differ in herbivores and carnivores because the herbivores eat grass, need a longer small intestine to allow the cellulose to be digested. Meat is easier to digest hence carnivores have a shorter small intestine.

14. What is Villi and write the uses?
Answer : The inner lining of the small intestine has numerous finger like projections called Villi. The Villi which increase the surface area for absorption. The villi are richly supplied with blood vessels which take the absorbed food to each and every cell of the body.

15. Complete the diagram.



Answer :



16. What is ATP?

Answer : ATP is the energy currency for most cellular processes. The energy released during the process of respiration is used to make an ATP molecule from ADP and inorganic phosphate.

ADP + P ⟶ ATP

17. Name the process by which autotrophs prepare their own food.

Answer : By the process of photosynthesis autotrophs prepare their own foods.

18. In human alimentary canal, Name the site of complete digestion of various components of food?

Answer : Complete digestion of various components of food take place in small intestine.

19. What is the primary requirement for pancreatic enzymes to act?

Answer : Pancreatic enzymes trypsin and lipase act only in alkaline medium.

20. What do you mean by emulsification of fat?

Answer : Large fat globules are broken down into small fat globules by the action of bile juice this is called emulsification of fat.

21. Which is the food constituent that bile help to digest and absorb?

Answer : Fats are the food constituent which are digested and absorbed by with the help of bile.

22. What are the final products after digestion of carbohydrates and proteins?

Answer : Glucose and amino acids are the final products after digestion of carbohydrates and proteins respectively.

23. State the role of the following in human respiratory system.

a. Nasal Hairs

b. Diaphragm c. Alveoli

Answer :

a. Nasal Hairs : These are fine hairs present in the lining of the nasal passage. Hair help in filtering the air passing through it so that germ free air could reach the lungs.

b. Diaphragm: It is a muscular partition between the thoracic and abdominal region in our body. Movement of diaphragm helps in the breathing process.

c. Alveoli : These are balloon like structures, which increase the surface area for the gaseous exchange to take place in the lungs.

24. State reason for the following trachea does not collapse when it has insufficient air.

Answer : The wall of trachea are lined by cartilaginous rings that help in maintaining the rigidity of the trachea. Hence the trachea do not collapse during insufficient air.

25. Aquatic animals breaths rapidly. Why?

Answer : Aquatic animals utilise the oxygen dissolved in water for respiration. Since the amount of dissolved oxygen is fairly low compared to the amount of oxygen in air the rate of breathing is faster in aquatic organism.

26. Haemoglobin is present in RBC in humans. Why?

Answer : Haemoglobin is present in RBC in human beings. It is a respiratory pigment that helps in easy and faster transport of oxygen all through the body.

27. Draw a diagram of human respiratory system and label on it.

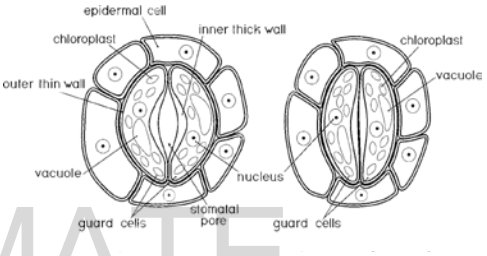
28. a. Draw the diagram to show open stomatal pore and label on it

i. guard cells ii. Chloroplast

b. State two functions of stomata

c. How do guard cells regulate the opening and closing of stomatal pore.

Answer : a.



b. Two functions of stomata are

i. Exchange of gases between the plants and the atmosphere take place through stomata.

ii. Transpiration in plants take places through stomata.

c. Opening and closing of stomatal pore : The opening and closing of the pore is a function of the guard cells. The guard cell swell when water flows into them causing the stomatal pore to open.

The pores closes if the guard cells shrink. A large amount of water is lost through these stomata, the plant closes these pores when it is does not require carbon dioxide for photo synthesis.

29. State the function of the following components of transport system: Blood

Answer : Blood

a. Oxygen is transported by the blood to the tissue of the body for the breakdown of digested food.

b. Carbon dioxide is transported to the lungs by the blood plasma

c. The digested and absorbed nutrients are transported by blood to the tissues Nitrogenous waste are transported to the kidneys.

d. It regulates the body temperature and maintain pH of the body tissues

e. It transports various hormones from one region to another and bring about the coordination.

f. It maintains water balance to constant levels.

g. The lymphocytes produces antibodies against the invading antigens and protect from diseases.

h. It help in rapid healing antigens and protect from diseases.

30. Write the function of lymph

Answer:

a. It cleans the cellular environment.

b. It returns protein and tissues fluids to the blood (drainage)
c. It provides a pathway for the absorption of fats and fat soluble vitamins into the blood stream.
d. It defends the body against disease.

31. List three difference in Arteries and veins in tabular form.

Arteries

1. Arteries carries oxygenated blood, away from the heart except pulmonary artery.
2. These are mostly situated deep in the body.
3. These are thick – walled highly muscular except arteries of cranium and vertebral column.

Veins

1. It carry deoxygenated blood towards the heart except pulmonary veins.
2. These are superficial and deep in location
3. These are thin walled.

32. In mammals and birds why is it necessary to separate oxygenated and deoxygenated blood. (NCERT page 110 Question no. 2)

Answer : Mammals and birds are warm blooded animals. This means they can control their body temperature and do not have to depend on environment for their body temperature regulations. Because of this birds and mammals require optimum oxidisation of glucose which would be possible with good supply of oxygen. So it is required to have separate oxygenated and deoxygenated blood is supply the require amount of oxygen.

33. What will happen to a plant if its xylem removed?

Answer : Xylem in plants transports water and dissolved mineral nutrients from the roots to all parts of the vascular plants. So if xylem is removed from the plants, the water and mineral supply to the plant will stop and therefore, the plant will die.

34. How are water and minerals transported in plants?

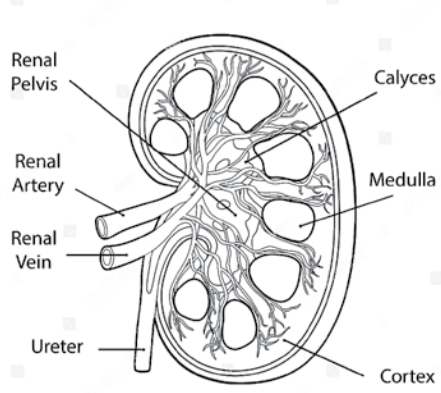
Answer : Water and minerals are transported with in the plant by the Xylem. Vessels mainly help in upward direction and these are part of the vascular system which also includes phloem vessels.

Phloem transports the products of photosynthesis with in the plant, to all parts like the stem, roots, fruits etc. in all direction.

35. What do you mean translocation?

Answer : The transport of soluble products of photosynthesis is called translocation and it occurs in the part of the vascular tissue known as phloem.

36. Draw a diagram of human excretory system and label renal artery and Urethra.



37. What is the function of renal artery?

Answer : The renal artery carries blood to the kidneys from the abdominal aorta. This blood comes directly from the heart and is sent to the kidneys to be filtered before it passes through the rest of the body. Up to one third of the total cardiac out put per heart beats is sent to the renal arteries to be filtered by the kidneys. Each kidney has one renal artery that supplies it with blood. The filtered blood then can exit the renal veins.

38. Write the function of kidneys?

Answer : The kidneys perform the essential function of removing waste products from the blood and regulating the water fluid levels. The kidney regulate the body's fluid volume, mineral composition and acidity by excreting and reabsorbing water and organic electrolyte.

39. Write the function of ureter and urinary bladder?

Answer : Ureter :- It is a tube that carries urine from the kidney to the urinary bladder. There are two ureters that attached to each kidney.

Urinary bladder :- The urinary bladder is an expandable muscular sac that stores urine before it is excreted out of the body through the urethra.

40. What happens to glucose that enters the nephron along with filtrate?

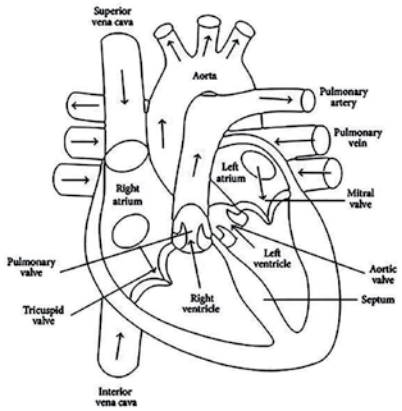
Answer : During excretion in human beings glucose which enters the Nephron along with filtrate gets reabsorbed by blood capillaries surrounding the Nephron.

41. Write the note about excretion in plants.

Answer : Oxygen itself can be thought of as a waste products generated during photosynthesis. They can get rid of excess water by transpiration through stomata. Some of the wastes stored in the leaves are removed by the detachment of the leaves itself from the tree. Waste are also stored in the cellular vacuoles which do not affect the functionary of cytoplasm. Other waste products are stored in resins and gums.

42. Draw the diagram of hearts and labelled it

Draw the figure



NCERT SOLUTION

1. Why is diffusion sufficient to meet the oxygen requirements of multicellular organisms like humans?

Answer : In multicellular organisms like humans, all the

body cells are not in direct contact with the surroundings environment. Therefore diffusion is insufficient to meet the oxygen requirements of multicellular organisms.

2. What criteria do we use to decide whether something is alive?

Answer : The main criteria used to decide whether something is alive are breathing and respiration. However living being also show growth and movement.

3. What are outside raw material used by an organism?

Answer : Any organism uses organic molecules as raw material. Heterotrophs use food and autotrophs use carbodioxide minerals, water and all organisms use oxygen as raw materials.

4. What process would you consider essential for maintaining life?

Answer : Processes essential for maintaining life are :-

1. Nutrition ii. Respiration
iii. Transportation iv. Excretion

PAGE NO 101

1. What are the difference between autotrophic nutrition and heterotrophic nutrition?

Answer :

Autotrophic Nutrition

a. Food is synthesised from simple inorganic raw material such as CO_2 and water.
b. Chlorophyll is required
c. Food is generally prepared during day time.
d. All green plants and some bacteria have this type of nutrition.

Heterotrophic Nutrition

a. Food is obtained by directly or indirectly from autotrophs. This food is broken down with the help of enzymes.
b. Chlorophyll is not required
c. Food can be obtained at all time
d. All animals and fungi have this type of nutrition.

2. Where do plants get each of the raw materials required for photosynthesis?

Answer : The following raw materials are required for photosynthesis.

a. Carbon dioxide: - plants get CO_2 from atmosphere through stomata.
b. Water : Plants absorb water from soil through roots and transport to leaves.
c. Sunlight : Sunlight which is absorbed by the chlorophyll and other green parts of plants.

3. What is the role of the acid in our stomach?

Answer : Roles of the acid in our stomach are

The hydrochloric acid present in our stomach dissolves bits of food and creates an acidic medium enzyme pepsinogen is converted to pepsin which is a protein – digesting enzyme. It also kills many bacteria and other microorganisms that enter along with the food.

4. What is the function of digestive enzyme?

Answer : Digestive enzyme such as amylase, lipase, pepsin, trypsin etc. help in the breaking down of complex food particles in to simple ones. These simple particles can be easily absorbed by the blood and thus transported to all the cells of the body.

5. How is the small intestine designed to absorb digested food?

Answer : The small intestine has millions of tiny finger like projections called villi. These villi increase the surface area for more efficient food absorption within these villi many blood vessels are present that absorb the digested food and carry it to the blood stream, the absorbed food is delivered to each and every cell of the body.

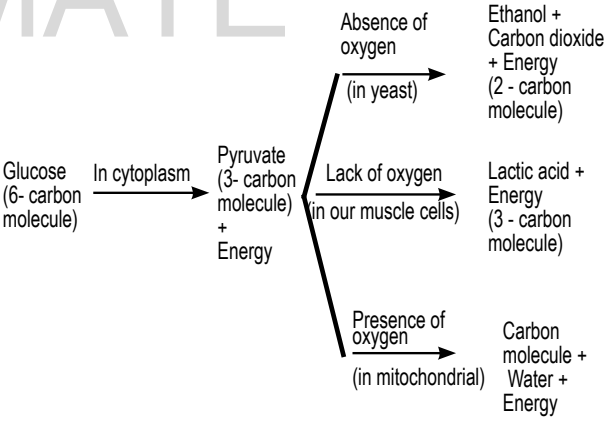
PAGE 105

1. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen?

Answer : Terrestrial organism take up oxygen from the atmosphere where as aquatic animals obtain oxygen from the water. Air contains more O_2 as compared to water. Since the content of O_2 in air is high, the terrestrial animals do not have to breathe faster to get more oxygen. Therefore, in like aquatic animals, terrestrial animals do not need adaptations for gaseous exchange.

2. What are the different ways in which glucose is oxidised to provide energy in various organisms?

Answer : At first glucose (6-carbon molecule) is broken in the cytoplasm of cells of all organisms. This process yield a 3-Carbon molecule compound called Pyruvate. Further break down of pyruvate take place in different manner is different organism.



Anaerobic respiration

This process takes place in absence of oxygen.

Example : Yeast during fermentations

In this case pyruvate is converted into ethanol and CO_2

Aerobic Respiration

In aerobic respiration the breakdown of pyruvate take place in presence of O_2 to give rise to 3 molecules of CO_2 and water. The release of energy in aerobic respiration is much more than anaerobic respiration.

Lack of Oxygen

Some times when there is lack of oxygen, especially during vigorous activity in our muscles Pyruvate is converted in to lactic acid formation of lactic acid in muscles causes cramps.

3. How is oxygen and carbon dioxide transported in human beings?

Answer : Transport of oxygen : The respiratory pigments

(haemoglobin) present in RBC take up the oxygen from the air to the lungs. They carry the O_2 to tissues which are deficient in O_2

Transport of CO_2

CO_2 is more soluble in water. Hence it is mostly transported from body tissues in the dissolved form in our blood plasma to lungs where it diffuses from blood to our in the lungs and then expelled out through nostrils.

4. How are the lungs designed in human beings maximising the area for exchange of gases?

Answer : Lungs contain millions of alveoli which provide a surface for the exchange of gases. An extensive network of blood vessels is present in the wall of alveoli. By lifting our ribs and flatten the diaphragm, the chest cavity becomes spacious. Air is sucked in to the lungs and alveoli. The O_2 from the breath diffuses into the blood and CO_2 from the blood brought from the body, diffuses out in to the air.

PAGE NO 110

1. What are the components of the transport system in human beings? What are the functions of these components?

Answer : The main components of the transported system in human beings are the heart, blood and blood vessels. It pumps oxygenated blood throughout the body. It receives de oxygenated blood from the various body parts and send this impure blood to the lungs for oxygenation blood. It helps in the transport of O_2 , nutrients, CO_2 and nitrogenous wastes.

The Blood Vessels (arteries, veins and capillaries) carry blood either away from the heart to various organs or from various organs back to the heart.

3. What are the components of the transport system in highly organised plants?

Answer : In highly organised plants, there are two different types of conducting tissues – Xylem and phloem :

Xylem conducts water and minerals obtained from the soil to the rest of the plant.

Phloem transport food materials from the leaves to different parts of the plant.

4. How are water and minerals transported in plants?

Answer : Water and minerals are transported through Xylem cells from soil to the leaves. The xylem cells of roots stem and leaves are interconnected to form a conducting channel that reaches all parts of a plant. The root cells takes ion from the soil. This creates a difference between the concentration of ions of roots and soil. Therefore there is a steady movement of water into Xylem. An osmotic pressure is formed and water and minerals are transported from one cell to the other cell due to osmosis. The continuous loss of water takes place due to transportation. Because of transpiration, a suction pressure is created as result of which water is forced in to the Xylem cells of roots. The effect of root pressure for transportation in plants is more important in night while during day time transpiration pull becomes the major driving force.

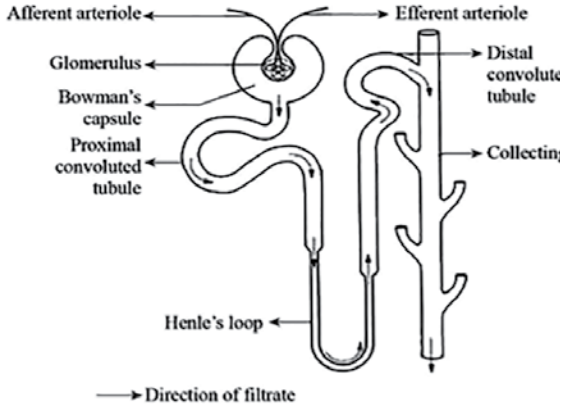
5. How is food transported in plants?

Answer : Phloem transports food materials from the leaves to different parts of the plants. The transportable of food in phloem is achieved by utilizing energy from ATP which helps in creating osmotic pressure that transport food from the area of high concentration to law concentration.

PAGE NO 112

1. Describe the structure and functioning of Nephrons.

Answer : Nephrons are the basic filtering units of kidneys. Each kidney possesses large number of Nephrons. The main components of Nephrons are glomerulus, Bowman's capsule and long renal cube.



Functions of Nephron

a. The blood enters the kidney through the renal artery, which branches into many capillaries associated with glomerulus.

b. The water and solute are transferred to the nephron at Bowman's capsule.

c. In the proximal tubule some substance such as amino acids glucose and salts are selectively reabsorbed and unwanted molecules are added in the urine.

d. In the filtrate then moves down in to the loop of Henle, where more water is absorbed.

e. From here, the filtrate move upwards into the distal tubule and finally to the collecting duct. It collects urine from many nephrons.

f. The urine formed in each kidney enters along tube called ureter. From ureter, it gets transported to ire urinary bladder and then into the urethra.

2. What are the methods used by plants to get rid of excretory products?

Answer : Plants can get rid of excess of water by transpiration. Waste materials may be stored in the cell vacuoles or as gum and resin, especially in old Xylem.

3. How is the amount of urine produced regulated?

Answer : The amount of urine produced depends on the amount of excess water and dissolved wastes present in the body. Some other factor such as anti diuretic hormones (ADH) also regulates the current of urine produced.

PAGE NO. 113

1. The Kidneys in human beings are a part of the system for

a. nutrition b. respiration
c. excretion d. transportation

Answer : c. excretion

2. The xylem in plants is responsible for

a. transport of water b. transport of food
c. transport of amino acids
d. transport of oxygen

Answer : a. transport of water

3. The autotrophic mode of nutrition requires

a. CO_2 and water
b. chlorophyll
c. sunlight
d. all of the above

Answer : d. all of the above

4. The breakdown of pyruvate to give CO_2, water and energy take place in

a. Cytoplasm b. Mitochondria
c. Chloroplast d. Nucleus

Answer : b. Mitochondria

5. How are fats emulsified in our bodies? Where does this process take place?

Answer : Fats are present in the form of large globules in the small intestine. The small intestine receives the secretions from the liver and the pancreas. The bile salts break down the large fat globules in to smaller globules. So that the pancreatic enzyme lipase can easily act on them. This is referred to as emulsification of fats. This process takes places in the small intestine.

6. What is the role of saliva in the digestion of food?

Answer : The role of saliva in the digestion of food are,

i. It moistens the food for easy swallowing.
ii. It containing digestive enzyme called salivary amylase, which breaks down starch into sugar.

7. What are the necessary conditions for autotrophic nutrition and what are its by-products?

Answer : Autotrophic nutrition takes place through the process photosynthesis CO_2, water and chlorophyll and sunlight are the necessary conditions required for autotrophic nutrition. Carbohydrates and O_2 are the by products of photosynthesis.

8. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration.

Answer :

Aerobic respiration

1. It occur in presence of O_2
2. It involves the exchange of gases between the organism and the outside environment.
3. It occurs in mitochondria.
4. It always releases CO_2 and water.

Anaerobic respiration

1. It occurs in the absence of O_2
2. Exchange of gases absent
3. It occurs only in cytoplasm
4. End products vary

9. How are the alveoli designed to maximum the exchange of gases?

Answer : Alveoli provide a surface for the exchange of gases. An extensive network of blood vessels is present in the wall of the alveoli. By lifting our ribs and flatten the diaphragm, the chest cavity becomes spacious. Air is sucked in to the lungs and alveoli. The O_2 from the breathe diffuses in to the blood and CO_2 from the blood brought from the body diffuses out in to the air.

10. What would be the consequences of a deficiency of haemoglobin in our bodies?

Answer : Haemoglobin is the respiratory pigment that transports oxygen to the body cells for cellular respiration. Therefore deficiency of haemoglobin in blood can affects the oxygen supplying capacity of blood. This can lead to deficiency of oxygen in the body cells. It can also leads to a disease called anaemia.

11. Describe double circulation in human being. Why is it necessary?

Answer : During single cycle blood goes twice in the heart which is known as double circulation. It is necessary in human being to separate oxygenated and de oxygenated blood because this makes their circulatory system is more efficient and helps in maintaining constant body temperature.

12. What are the difference between the transport of materials in Xylem and phloem?

Answer :

Xylem

1. It helps in the transport of water and minerals.
2. Water is transported upward from the roots to all other plant parts.
3. Transport in Xylem occurs with the help of simple physical forces such as transpiration.

Phloem

1. It helps in transpiration of food.
2. Food is transported in both upward and downward directions.
3. Transport of food in phloem requires energy in the form of ATP.

13. Compare the function of Alveoli in the lungs and Nephrons in the kidney with respect to their structure and function.

Answer: **Alveoli**

1. These are tiny balloon like structure present inside the lungs.
2. The walls of alveoli are one cell thick and it contains an extensive network of blood capillaries.

Function

1. The exchange of O_2 and CO_2 takes place between the blood of the capillaries that surround the alveoli and the gases present in the alveoli.
2. Alveoli are the site of gaseous exchange.

Nephron

1. They are tubular structures present inside the kidney.
2. Nephrons are made of glomerulus, Bowman's capsule and long renal tubes.

Function

1. The blood enters the kidneys through the renal artery. The blood is entered here and the nitrogenous waste in the form of urine is collected by collecting duct.
2. Nephrons are the basic filtration units.

INFO JUNCTION

February 01, 2020

MOHAMMED ALLAWI

One of the former communication ministers of Iraq, Mr. Mohammed Allawi was appointed as the Prime Minister of the country. Allawi has been appointed the Prime Minister of the Country amidst long protests that has so far killed 600 in the country.

February 25, 2020

MOHAMMED HOSNI MUBARAK

The Egypt ruler Mohammed Hosni Mubarak died at the age of 91. He served as the President of Egypt between 1981 to 2011.

March 21, 2020

SATYARUP SIDDHANTA

The Indian Mountaineer Satyarup Siddhanta has entered 'Limca Book of Records'. He has set the record of becoming the first Indian to climb the highest volcano in the world. He already holds Guinness Book of World Records, India Book of Records, Asia Book of Records, British Book of records and Champion Book of Records.

March 28, 2020

EARTH HOUR

Since 2007, every year millions of people participate in the campaign called "Earth Hour" in March. This year, it was celebrated on 28 March 2020. It is a symbolic movement of "Lights OFF" to save the environment. The event is organized by the World wide Fund. The event was first started in Sydney, Australia. The aim of marking Earth Hour is to give attention towards global warming, climate change and loss of biodiversity. During the one-hour campaign, all over the world switch off lights and electronic items between 8:30 PM to 9:30 PM. The Earth Hour is held every year on the last Saturday of March.

March 29, 2020

AIR VICE MARSHALL CHANDAN SINGH RATHORE

The Mahavir Chakra recipient Air Vice Marshall Chandan Singh Rathore died at his Jodhpur residence. His services during 1962 war and 1971 war were impeccable. He was honored with Mahavir Chakra for the same.

March 30, 2020

NASA ANNOUNCES SUNRISE MISSION

NASA announced Sun Radio Interferometer Space Experiment (SunRISE) mission. The mission is to study about how sun creates Giant Solar Particle Storms. The SunRISE mission will provide information on how the Sun's radiation affects the space environment and to understand the working of the solar system. The study will also aid future astronauts mission.

March 30, 2020

RAJASTHAN STATEHOOD DAY

Rajasthan celebrates its Statehood Day on March 30 every year.
Popularly known as "Land of the Kings", the day is also called "Rajasthan Day". This year, the state was silent due to the lock down in the country. Usually there were radiant and invigorating events held all across

April 7, 2020

WORLD HEALTH DAY

April 7 is marked as the World Health Day every year. The day is marked to celebrate the work of midwives and nurses for their role in keeping the world safety and healthy. This year, 2020, has celebrated as International Year of Nurses andMidwives. The World Health Day is marked by World Health Organization along with several other organizations. The theme of the World Health Day is selected by WHO. Theme of 2020: Support Nurses and Midwives.

APRIL 9, 2020

INDIAN RAILWAY AGAINST COVID 19

Apart from converting its coaches into hospital beds, the Indian Railways has also launched isolation wards. Around 3,250 coaches have been converted into isolation wards. It has recruited 2,500 temporary doctors and 35,000 paramedic staffs. Around 5,000 beds have been identified for treatment in railway hospitals.

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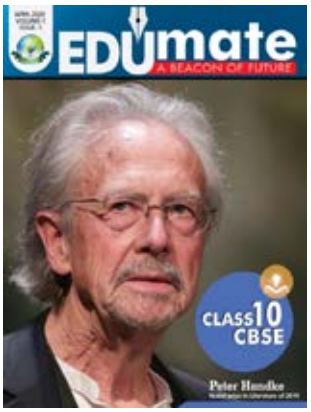

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