Std10th
2. Life processes in living organisms Part-I
Extra

- Answer the following questions in one sentence (1 m)

Q. 1) How are the foodstuffs and the nutrient contents useful for body?

Ans :– Foodstuffs and the nutrient content provide energy to the body

Q. 2) Which system is in action for removal of waste materials produced in human body?

Ans :– The excretory system

Q. 3) What is the role of circulatory system in energy production?

Ans :– The circulatory system helps in the transport of foodstuffs (nutrients) and oxygen essential for energy production in the body.

Q. 4) Mention the names of the cereals from which carbohydrates are obtained.

Ans :- carbohydrates are obtained from cereals like rice, wheat, ragi, maize, jowar, millet etc.

Q. 5) In terms of chemistry, what happens actually when a molecule is oxidized?

Ans :– When a molecule is oxidized, the bond present between the atoms of molecules break.

Q. 6) What doe an ATP molecule contain?

Ans :– An ATP molecule contains adenine (a nitrogenous compound), ribose (pentose sugar) and three phosphate groups.

Q. 7) What is fermentation?

Ans :– Fermentation is the conversion of pyruvic acid produced through glycolysis into other organic acids or alcohol with the help of some enzymes.

Q. 8) Which type of cellular respiration performs complete oxidation of glucose?

Ans :– Aerobic respiration performs complete oxidation of glucose

Q. 9) What is gluconeogenesis?

Ans :– Gluconeogenesis is the process of conversion of excess proteins into other useful substances like glucose.

Q. 10) Which cell organelle is necessary for complete oxidation of glucose?

Ans :– Mitochondria is necessary for complete oxidation of glucose.

Q. 11) What do you mean by coenzymes?

Ans :–coenzymes are non-protein compounds that are essential for proper functioning or the enzymes.

Q. 12) What happens to the cells of injured tissue?

Ans :– The cells of injured tissue are capable of repairing themselves through mitosis (cell division)

Q. 13) Whether new cells are formed during healing of wound?

Ans :– Yes, new cells are forms during healing of wound.

Q. 14) What do you mean by diploid (2n) cell?

Ans :– A cell that contain two sets of chromosomes is called a diploid (2n) cell.

Q. 15) What do you mean by haploid (n) cell?

Ans :– A cell that contains only one set of chromosomes is called a haploid (n) cell.

Q. 16) What do you mean by homologous chromosomes?

Ans :– Homologous chromosomes are pair of chromosomes cone from each parent which are identical in length, gene position and centromere location.

- Write definition (1M)

Q. 17) Nutrition :-

Ans :– The process of intake of nutrients and its utilization by an organism is called nutrition.

Q. 18) Nutrients :-

Ans :– The constituents of food necessary for growth and development of the body are called nutrients.

Q. 19) Proteins :-

Ans :– Proteins are macromolecules formed by bonding together many amino acids

Q. 20) Cellular respiration :-

Ans :– The process of step by step oxidation of glucose in the cells to release energy in the form of ATP is called cellular respiration.

Q. 21) Aerobic Respiration :-

Ans :– The process of cellular respiration that involves breakdown of glucose to release energy in presence of oxygen is called aerobic respiration.

Q. 22) Glycoysis :-

Ans :– The process of occurring in the cell where a molecule of glucose is oxidized in step by step process forming two molecules of each pyruvic acid, ATP, $NADH_2$ and water is called glycolysis

- Find the odd one out with suitable reason (1M each)

Q. 23) Progesterone, Estrogen, Testosterone, Insulin

Ans :– Insulin – (All the others are harmones produced with the help of fatty acids)

Q. 24) Actin, Ossein, Myosin, Melanin

Ans :– Melanin – (All the others are proteins concerned with locomotion of the body)

Q. 25) lipids carbohydrates, fatty acids, proteins

Ans :– fatty acids (All the others are food constituents fatty acid is soluble nutrient)

Q. 26) Alcohol, Vinegar, pyruvic acid, lactic acid

Ans :– pyruvic acid (All the others are chemical substances formed by the process of fermentation)

Q. 27) considering the relationship in the first pair complete the second pair by using a word or group of words:- (1 M)

Ans :– Process that occurs in the cytoplasm : Glycolysis :: Process that occurs in the mitochondria …….

Q. 28) Condensation of chromosomes : Prophase :: formation of spindle fibers :-

Ans :– Metaphase

Q. 29) Skin : Keratin : : Blood : ……..

Ans :– Hemoglobin

Q. 30) Energy obtained from protein : 4 Kcal : : Energy obtained from fats/ lipids :-

Ans :– 9 kcal

- Answer the following questions (2Marks)

Q. 31) What is the importance of balanced diet for body?

Ans :– Importance of Balance Diet for body are us follows :

i) Good physical and mental health can be achieved by using balance diet.

ii) By using Balance Diet we can increased capacity to do work.

iii) Balance diet is important for proper growth and maintenance of body

iv) Balance diet is important for higher resistance to infections and diseases.

Q. 32) What is respiration? How does it occur ?

Ans :– i) Respiration :- Respiration is a biochemical Process in which complex organic compounds are broken down into simple inorganic compounds.

Q. 33) Find the full form of FAD, FMN, NAD, NADP

Ans :–

Abbreviation	Full form
FAD	Flavin Adenine Dinucleotide
FMN	Flavin Mononucleotide
NAD	Nicotinamide Adenine Dinucleotide
NADP	Nicotinamide Adenine Dinucleotide Phosphate

- Distinguish between (2 m)

Q. 34) Glycolysis and TCA cycle

Ans :–

Glycolysis	TCA cycle
i) It occurs in cytoplasm	It takes place in mitochondria
ii) It does not required oxygen	It needs oxygen
iii) It is a linear reaction	It involves cyclic chain of reactions
iv) Oxidation of glucose takes place	Oxidation of acetyl part of Acetyl CoA takes place.

Q. 35) Mitosis and Meiosis

Ans :–

Mitosis	Meiosis
i) It occurs in somatic cells and stem cells of the body.	It occurs in germ cells
ii) Two diploid (2n)	Four haploid (n) daughter cells are formed.
iii) The chromosome number in daughter cells in same as that of	The chromosome number in daughter cells is half than that of

the parent cell.	the parent cell.
iv) Genetic recombination	Genetic recombination occurs.

Q. 36) Aerobic and Anaerobic respiration

Ans :–

Aerobic respiration	**Anaerobic respiration**
i) It occurs in the presence of oxygen.	It occurs in the absence of oxygen
ii) It occurs via, three steps namely glycolysis, TCA cycle and electron transfer chain	It occurs via, two steps namely, glycolysis and fermentation.
iii) The end products are CO2, H2O and energy.	The end products are organic acids or alcohol and energy.

- Give reasons (2M)

Q. 37) Krebs cycle is also known as citric acid cycle.

Ans :– i) Sir Hans kreb proposed this cycle and hence it is called krebs cycle.

ii) Krebs cycle are series of cyclic chain reactions which begins with acetyl coenzyme A molecule which act with molecules of oxaloacutic acid.

iii) The reaction are catalyzed with the help of specific enzymes.

iv) The first molecule formed in this reaction is called citric acid.

v) Therefore krebs cycle is also called citric acid cycle.

Q. 38) Give reason

Oxygen is necessary for complete oxidation of glucose.

Ans :– (1) When glucose is completely oxidized in aerobic cellular respiration, it produces 38 molecules of ATP

(2) In cellular respiration, three processes take place one after the other, these are glycolysis krebs cycle and electron transport chain reactions.

(3) In absence of oxygen only glycolysis can occur but further two reactions will not take place.

(4) If glycolysis occurs in absence of oxygen it produces alcohol.

(5) By anaerobic glycolysis only two molecules of ATP are produced.

(6) This results in less energy supply to the body.

(7) Therefore, oxygen is necessary for complete oxidation of glucose.

Q. 39) Sometimes higher plants and animals too perform anaerobic respiration give reason.

Ans :– (i) When there is deficiency of oxygen in the surrounding, the aerobic respiration is not possible.

(ii) In such case, to survive, higher plants switch over to anaerobic respiration.

(iii) In some animal tissues in case of oxygen deficiency ceus perform anaerobic respiration

Q. 40) What are the steps of anaerobic respiration?

Ans :– Anaerobic respiration has two steps:

i) Glycolysis and ii) Fermentation

Q. 41) Explain the krebs cycle with reaction

Ans :- (a) Krebs cycle was proposed by Sir Hans kreb. It is also called as tricarboxylic acid cycle or citric acid cycle.

(b) The acetyl – coenzyme- A molecules enter the mitochondria located in the cytoplasm.

(c) They participate in the chemical reactions taking place in krebs cycle.

(d) Om the cyclic chemical reactions, acetyl-coenzyme – A is completely oxidized.

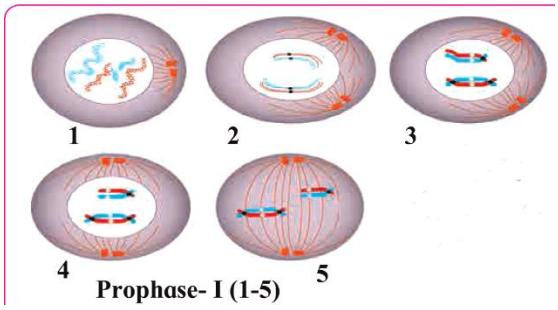
(e) It yields molecules of CO_2, H_2O, $NADH_2$, FAD H_2 and ATP upon complete oxidation.

Q. 42) Correct the diagram given below?

Ans :–

Q. 43) With the help of suitable diagrams, explain the five stages of I of prophase meiosis (5M)

Ans :– Stages of prophase – I of meiosis are as follows :



i) Stage I – Leptotene

- Chromosomes become prominent, long and thin structure in this stage
- Nucleuus enlarges, the nucleolus and nuclear membrane starts disintegrating in this stage

ii) Stage II – zygotene

- It is the Homologous chromosomes pair lengthwise
- In this stage Centriole divides and daughter centrioles move to opposite poles of the cell.

iii) Stage III (Pachytene)

In this stage chromosomes becomes short and thick by lengthwise contraction.

Crossing over between segments of non-sister choromatias takes Place in this stage

iv) Stage IV (Diplotene) :-

In this stage chromatids start repeles each other and begin to parate.

v) Stage V (Diakinesis) :-

Chromosomes shorten due to coiling in this stage

Nucleolus and nuclear membrane disappear in this stage

Spindle fibers begin to appear in this stage.

Q. 44) How all life processes contribute to the growth and development of the body? (5M)

Ans :- The different life processes that occurs in the body ave as follows:

i) nutrition

ii) respiration

iii) Transportation (circulation)

iv) excretion

Each of these life processes contribute growth and development in the human being.

i) Nutrition :- It is the process in which food is taken in digested absorbed and assimilated into body substances.

Digestion and assimilation of food provides the body with vital biomolecules like glucose, proteins, amino acids and fatty acids which ave essential for growth and development of the body.

ii) Respiration :- It is catabolic process by which organic compounds are oxidized to release chemical energy in the form of ATP

ATP produced during cellular respiration is the energy currency of the cell.

Respiration is important for growth and development of the cell.

iii) Transportation (circulation) :- It is the process by which transportation of essential substances like oxygen nutrients takes place throughout the body by blood and lymph.

Transport of O_2 and other essential substance are vital for the growth and development of the body.

iv) Excretion :- Excretion is the process of elimination harmful substances throughout the body.

These harful substance may be urea uric acid etc.

Elimination of these harmful substances is essential as they may cause serious damage to the body.

Enzymes act as catalysts and bring about the chemical reactions at faster pace. The digestive juices of stomach make

PH of digestive tract acidic while that of intestinal juice make it alkaline.

Q. 45) What is the importance of digestive juices in the digestive system? (2M)

Ans :- Digestive juice contains different enzymes.

Q. 46) Explain the glycolysis in detail (5M)

Ans :- The process of cellular respiration in which glucose, a six carbon molecule is broken down into pyruvic acid is called as glycolysis.

It is the first step, common to both aerobic and anaerobic respiration.

Oxygen is not essential in this process.

It takes place in the cytoplasm.

Oxidation of glucose molecules takes place step by step to form two molecules of each i.e. pyruvic acid, ATP, $NADH_2$ and water.

In anaerobic respiration, glucose is incompletely oxidized and less amount of energy is released as compare to aerobic respiration.

Glycolysis is also known as EMP pathway since it was discovered by the there scientists which are Embden, Meyerhof and Parnas.

Q. 47) How much quantity of each vitamin is required every day (2M)

Ans :-

Vitamin	Daily requirement
A	700 and 900 grams
B complex	100 mg/day for adults
C	75 mg
D	5 mg
E	10 mg
K	80 mg

Q. 48) Whether the gametes are diploid or haploid? Why?

(2M)

Ans :- Gametes are haploid in nature because Gametes contain half the number of chromosomes of parent cell so that they are haploid (n).

Q. 49) i) How many atoms of C, H and O are respectively present in a molecule of glucose?

ii) Which thpes of chemical bonds are present between all these atoms?

Ans :- i) A glucose molecule contains 6 atoms of carbon, 12 atoms of hydrogen and 6 atoms of oxygen.

ii) Covalent bonds are present between atoms in a glucose molecule.

Q. 50) From where do we obtain the lipids? (2M)

Ans :- We obtain lipids from the following fatty foods :

i) Milk

ii) Cheese

iii) Coconut oil

iv) Butter

v) Vegetable oil

vi) Nuts and seeds.

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