

**Sardar Kaurey Khan Public Higher Secondary School
Muzaffargarh**



CLASS: 9TH

WINTER VACATION TASK

BIOLOGY

CHAPTER-6 (TOPIC WISE MCQ'S)

BOARD PAPERS-2014-2022

1. Which Scientist gave the concept of metabolism first? (4 times)
(A) Ibn-e-Nafees (B) Jabber Bin Hayan (C) Newton (D) William
2. Metabolism is derived from Greek word meaning (3 times)
(A) Division (B) Change (C) Deduction (D) Matter
3. In which biochemical reaction energy is released:
(A) anabolism (B) metabolism (C) catabolism (D) Newton
4. Molecules at which enzymes act are called. (2 Times)
(A) Catalyst (B) Substrates (C) Products (D) Charges
5. The kind of protein which catalysis a biochemical reaction is called:
(A) Enzymes (B) Harmones (C) Co-enzymes (D) None of these
6. In metabolism works as catalyst.
(A) Enzyme (B) Vitamins (C) Protein (D) Lipids
7. All biochemical reactions occurring in living organisms necessary for life are called as
(A) metabolism (B) anabolism (C) catabolism (D) mutalism
8. In all biochemical reactions for the synthesis of large compounds is involved in:
(2 times)
(A) Catabolism (B) Anabolism (C) Respiration (D) Transpiration
9. Term of metabolism is:
(A) Arabic (B) Chinese (C) Greek (D) Hindi

6.1. CHARACTERISTICS OF ENZYME:

10. Who first used the term Enzyme? (2 Time)
(A) Zacharias Janseen (B) Robert Brown (C) Winhelm Kuhne (D) Louis Pasteur
11. Enzymes are made up of: (2 times)
(A) Fatty acid (B) Nucleic acid (C) Carbohydrates (D) Amino acid
12. If organic cofactors are loosely attached with enzymes, they are called.
(A) Prosthetic group (B) co-enzymes (C) active site (D) activators
13. The Catalytic Region on Enzyme is called.
(A) Metabolic Site (B) Co-enzyme (C) Cofactor (D) Active Site
14. Which of the following Vitamins work as co-enzyme? (1 Time)
(A) Vitamin B (B) Vitamin D (C) Vitamin C (D) Riboflavin / folic acid
15. Enzyme used for the removal of protein Stains from clothes is: (2 times)
(A) Protease (B) Lipase (C) Amylase (D) Pepsin
16. Enzyme used for cleaning utensils is _____ (1 Time)
(A) amylase (B) trypsin (C) lipase (D) tylon
17. Protease enzyme are used for removal of _____ stains from cloths
(A) Fat (B) protein (C) starch (D) oil
18. Biological detergent is (3 times)
(A) pepsin (B) protease (C) glycogen (D) trypsin
19. Which of the following vitamins work as coenzyme?
(A) Vitamin B (B) Vitamin D (C) Vitamin C (D) riboflavin
20. Chemical nature of Enzymes is:
(A) Cellulose (B) Glucose (C) Lipids (D) Proteins
21. Example of vitamins is:
(A) Riboflavin (B) Glucose (C) Fatty acid (D) Glycerine
22. When organic co-factors are tightly bound to enzyme, they are called:
(A) Coenzyme (B) Apoenzyme (C) Cofactor (D) Prosthetic group
23. The part of enzyme molecule involved in catalysis is called:
(A) Active site (B) Cafactor (C) Coenzyme (D) Prosthetic group

6.1.1. FACTORS AFFECTING THE RATE OF ENZYME ACTION:

24. The optimum temperature for the maximum working speed of human enzyme (7 times)
(A) 27°C (B) 35°C (C) 0°C (D) 37°C

25- Trypsin enzyme shows its activity at:

- (A) medium pH (B) High pH (C) low pH (D) acidic pH

26- Medium in which trypsin enzyme works is called:

- (A) acidic (B) neutral (C) strong acidic (D) alkaline

6.2. MECHANISM OF ENZYME ACTION:

27. In 1894 proposed lock and key model.

- (A) Aristotle (B) Robert Hooke (C) Emil Fischer (D) Louis Pasteur

28. When did Daniel Koshland proposed induce fit Model?

- (A) 1894 (B) 1958 (C) 1968 (D) 1985

29. Who proposed the induced fit model of enzyme action? (2 times)

- (A) Emil Fischer (B) Daniel Koshland (C) Ibn-e-Nafees (D) Jabir Bin Hayan

30- Emil Fischer proposed lock and key model in which year?

- (A) 1956 (B) 1958 (C) 1898 (D) 1894

6.3. SPECIFICITY OF ENZYMES:

31. Lipase enzyme act on only. (6 times)

- (A) carbohydrates (B) proteins (C) lipids (D) starch

32. Enzyme lipase acts on lipids and convert them into: (2 times)

- (A) Acetic acid (B) lactic acid (C) Fatty acids and glycerols (D) Ascorbic acid

33. Starch is broken down by an enzyme called: (9 times)

- (A) Lipase (B) Pepsin (C) Amylase (D) None of these

34. Enzyme Amylase is used in.

- (A) Cloth washing (B) Saponification (C) Colouring (D) Dish wash

35. Which enzyme acts on lipids? (2 times)

- (A) protease (B) lipase (C) amylase (D) pepsin

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36- The term metabolism is derived from which language's word?

- (A) Latin (B) Arabic (C) Roman (D) Greek

37- Enzyme present in saliva is:

- (A) Amylase (B) Pepsin (C) Trypsin (D) Lipase

38- Pepsin enzymes works in.

- (A) Mouth (B) Intestine (C) Oesophagus (D) Stomach

39- Lipase enzyme acts on Lipids and digests them into fatty acids and.....

- (A) Vitamins (B) Glycerol (C) Glycogen (D) Glucose

Answers

1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	B	C	B	A	A	A	B	C	C	D	B	D	D
15	16	17	18	19	20	21	22	23	24	25	26	27	28
A	A	B	B	D	D	A	D	A	D	B	D	C	B
29	30	31	32	33	34	35	36	37	38	39			
B	D	C	C	C	D	B	D	A	D	B			

Chapter No. 6: Exercise (MCQ's)

1. What is TRUE about enzymes?

- (a) They make biochemical reaction to proceed spontaneously
 (b) They lower the activation energy of a reaction
 (c) They are not very specific in their choice of substrates
 (d) They are needed in large quantities

2. To what category of molecules do enzymes belong?

- (a) Carbohydrates (b) Lipids (c) Nucleic acids (d) Proteins

3. What is TRUE about cofactors?

- (a) Break hydrogen bonds in proteins (b) Help facilitate enzyme activity
 (c) Increase activation energy (d) Are composed of proteins

4. Prosthetic groups are:

- (a) Required by all enzymes
(b) Loosely attached with enzymes
(c) Proteins in nature
(d) Tightly bound to enzyme

5. When we add more substrate to an already occurring enzymatic reaction and there is no increase in the rate of reaction, what would you predict?

- (a) All active site have been occupied by substrate molecules
(b) The enzyme molecules have denatured
(c) More substrate acted as inhibitor
(d) More substrate has disturbed the pH of the medium

CHAPTER NO. 6

1	2	3	4	5
B	D	B	D	A

CHAPTER-6 (SHORT QUESTIONS AND ANSWERS) (TOPIC WISE) BOARD PAPERS-2014-2022

1. Define metabolism.

(2 Times)

Ans: It is a set of biochemical reactions that occur in living organisms in order to maintain life.

2. Define substrate and product./ What is substrate?/ Define the product of an enzyme action.

(2 times)

Ans: The molecules at which enzymes act are called substrates and enzymes converts substrate into different molecules called products.

3. Define activation energy.

(9 Times)

Ans: Minimum energy required to start the reaction.

4. How do Enzymes lower the activation energy?

(1 Time)

Ans: Enzymes may alter the shape of substrate and reduce the requirement of energy for this change. Some enzymes do so by disrupting the charge distribution on substrate.

5. Define the term enzymes and substrate.

Ans: Enzymes are proteins that catalyze (speed up) biochemical reactions and are not changed during the reaction. The molecules at which enzymes act are called substrates, and enzymes converts into different molecules called products.

6. Difference between catabolism and Anabolism.

(5 times)

Ans: Anabolism includes the biochemical reactions in which larger molecules are synthesized while catabolism includes the biochemical reaction in which larger molecules are broken down. Usually energy is released in catabolism and it is utilized in anabolism.

7. Define metabolism. Who was the first of all given the concept of metabolism?

(2 times)

Ans: The term metabolism is defined from a Greek word meaning "change". The concept of metabolism was first of all given by Ibn-e-Nafees, who stated that "the body and its parts are always undergoing change".

8. Define Metabolism and describe its importance.

Ans: Metabolism is the set of biochemical reactions that occur in living organisms in order to maintain life. These processes allow organisms to grow and reproduce, maintain their structures, and respond to their environments.

9. Write the categories of enzymes on the basis of the site where they work.

Ans: Intracellular Enzyme:

Enzymes of glycolysis working in cytoplasm.

Extracellular Enzyme:

Pepsin enzyme working in stomach cavity.

6.1. CHARACTERISTICS OF ENZYME:

10. Write any two characteristics of enzyme.

(2 times)

Ans: 1- Almost all enzymes are protein i.e. they are made of amino acids.

2- Enzymes are usually very specific for the type of reaction and for the nature of their substrates

11. Who first used the term enzyme?

Ans: Winhelm Kuhne was first used the term enzymes.

12. What are cofactors of an enzyme? Differentiate between prosthetic group and co-enzyme. / Define co-enzymes. / Write names of two co-enzyme. (3 Times)

Ans: Some Enzyme need additional component to work these none-protein molecules or ions called co-factors. Example: Metal ions, flavin and heme. If organic cofactor is tightly bound to enzyme they are called prosthetic group. If organic cofactor are loosely bound to enzyme are called co-enzyme. e.g. riboflavin, thiamine and folic acid. (2 times)

13. What is meant by metabolic pathway?

Ans: Several enzymes can work together in specific order, creating metabolic pathways. In a metabolic pathway, one enzyme takes the product of another enzyme as a substrate. After the reaction, the product is passed on to the next enzyme.

14. What is meant by enzymes? Also write any one function of it. (3 Times)

Ans: Enzymes are the proteins that catalyze i.e. 1. speed up biochemical reactions and are cannot changed itself during reaction.

Function:

i. Enzymes lower the energy of the activation in several ways.

ii. They may alter the shape of substrate and reduce the requirement of energy for this change.

15. Describe the use of enzymes in brewing industry./ Write the uses of enzymes in food and beverage industry.

Ans: Enzyme breaks starch and proteins. The products are used by yeast for fermentation to produce alcohol.

16. Name those industries where enzymes are used./ What factors affect the rate of enzyme reaction? (1 times)

Ans: 1- Food industry 2- Brewing industry
3- Paper industry 4- Biological detergent

17. Give two uses of biological detergents. / What is biological detergent? Give an example also. (3 times)

Ans: Protease: It is used for removal of protein stains from clothes.

Amylase: It is used in dish washing to remove resistant starch residues.

18. Write down two uses of enzymes. (3 Times)

Ans: i. Enzymes break starch into simple sugars are used in the production of white bread, bun etc.

ii. Enzymes break starch to lower its viscosity that aids in making the paper.

19. What are the function of co-enzymes?

Ans: Co-enzymes transport chemical groups from one enzyme to another. Some important vitamins (e.g. riboflavin, thiamine, folic acid) act as co-enzymes.

20. What is meant by active sites? Also write its function OR Write two benefits of active site.

Ans: Only a small portion of enzyme molecule is directly involved in catalysis. This catalytic region is called active site. It recognizes and binds substrates and then carries out the reaction.

21. When and who used the term Enzyme first?

Ans: In 1878, German physiologist Winhelm Kuhne first used the term enzyme.

22. What are biocatalyst?

Ans: Enzymes are Crucial to metabolism because they act as biocatalysts and speed up and regulate metabolic pathways.

6.1.1. FACTORS AFFECTING THE RATE OF ENZYME ACTION:

23. What is meant by denaturation of enzyme? Why enzymes becomes denature at high Temperature. (8 times)

Ans: When temperature is raised well above the optimum temperature, heat energy increases the vibrations of atoms of enzyme and the globular structure of enzyme is lost. This is known as the denaturation of enzyme.

24. How does pH affect enzyme activity? (2 times)

Ans: A slight change in pH causes retardation in enzyme activity or blocks it completely. Every enzyme has its specific pH value.

Change in pH can affect the ionization of the amino acids at the active site. These are point that effects the pH enzymes activities.

25. **Define Optimum temperature. What is the Optimum temperature of human enzymes? (3 Times)**

Ans: It is the temperature at which every enzyme works at its maximum rate at specific temperature. Example: The optimum temperature for human enzyme is 37°C.

26. **What is the effect of substrate concentration on the speed of enzymes?**

Ans: If enzymes molecules are available in a reaction increase in the substrate concentration increases the rate of reaction. If enzyme molecules are not available then increase the substrate concentration decreases the rate of reaction.

6.2. MECHANISM OF ENZYME ACTION:

27. **Write and explain the equation for the mechanism of enzyme action**

Ans: $E + S \longrightarrow ES_{(\text{complex})} \longrightarrow E + P$

When enzyme attaches with substrate, a temporary enzyme-substrate complex is formed. Enzyme catalyzes the reaction and substrate is transformed into product.

28. **Define Lock and Key Model. (5 Times)**

Ans: "Lock" and key model" According to this model, both enzymes and substrate has specific shape that fit exactly into one another. This model explains enzyme specificity.

29. **What is induced Fit Model of enzyme action? Or Give Koshland model regarding mechanism of enzyme action. (5 times)**

Ans: According to this model, active site is not a rigid structure rather it is molded into required shape to perform its function. "Induced-fit model" is more acceptable than "lock and key model" of enzyme action.

30. **Define inhibitors and activators.**

Ans: Enzyme production can be enhanced or diminished by a cell according to needs. Enzyme activity can also be regulated by inhibitors and activators.

31. **Are all enzymes made up of amino acids?**

Ans: Yes, all enzymes are made up of amino acids.

6.3. SPECIFICITY OF ENZYMES:

32. **Difference b/w intracellular and extracellular enzymes.**

Intracellular enzyme:	Extracellular enzyme
Enzyme which works inside a cell.	Enzyme which works in a cavity formed by cells.
Enzymes of glycolysis working in the cytoplasm.	Pepsin enzyme working in the stomach cavity.

33. **Write down the names of enzymes that act on protein and starch.**

Ans: Protein is broken by protease enzyme.
Starch is broken by amylase enzyme.

34. **What is the function of Amylase and Lipase?**

Ans: The enzymes protease (which breaks peptide bonds in protein) will not work on starch (which is broken down as amylase). Similarly lipase enzymes acts only on lipids and digests them into fatty acids and glycerol.

35. **Write down the specificity of enzymes. (4 Times)**

Ans: There are over 2000 known enzymes, each of which is involved in one specific chemical reaction. Enzymes are also substrate specific. The enzyme protease will not work on starch.

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36. **Write four names of Enzymes.**

Ans: (i) protease (ii) Lipase (iii) In roots (iv) pepsin

37. **Who and when proposed induced fit model?**

Ans: In 1958, American biologist Daniel Koshland proposed induced fit model.

38. **Define Active site of enzyme.**

Ans: Only small portion of enzyme molecule is directly involved in catalysis. This catalytic region known as active site.

39. **Who and when proposed lock and key model?**

Ans: A German chemist Emil Fischer, in 1894, proposed lock and key model.

Conceptual Short Questions

- 1- **Why enzymes are not used / utilized in reaction?**
 Ans: Because they only act as a biocatalyst and lowers the activation energy for reaction.
- 2- **How enzyme reaction rate is increased with temperature?**
 Ans: Rise in temperature to a certain limits heat adds in the activation energy and also provides kinetic energy for the reaction. So reactions are accelerated.
- 3- **What will happens if human body temperature is raised?**
 Ans: If the temperature of human body is raised very high it can denatur the active sites of enzymes which will effect reaction rate.
- 4- **How alcohol is prepared in industries?**
 Ans: Enzymes break starch and proteins. The products are used by yeast for fermentation to produce alcohol.
5. **Define anabolism. Is respiration catabolism? Give example. (3 Times)**
 Ans: **Anabolism:** The biochemical reaction in which larger molecules are synthesized is called anabolism.
 Yes, respiration is catabolism because in respiration larger molecules are broken down and energy is released.
6. **Define biocatalysts./ Write two benefits of biocatalysts. (1 Time)**
 Ans: Biocatalysts are enzymes which speed up and regulate metabolic pathways.
7. **What is the effect of temperature on enzymes?**
 Ans: Increase in temperature speeds up the rate of enzyme catalyzed reactions, but only to a point. Every enzyme works at its maximum rate at a specific temperature called as the optimum temperature for that enzyme.
8. **What is meant by saturation of active site? (2 times)**
 Ans: When the active sites of all enzymes are occupied at high substrate concentration. Any more substrate molecules do not find free sites active sites. This state is called saturation of active sites and reaction rate does not increase.
9. **What is optimum PH? Give an example. / In which medium pepsin and Trypsin enzymes work. / How PH of a medium affects the function of an enzyme?**
 Ans: All enzymes work at their maximum rate at a narrow range of pH called as optimum PH. For example pepsin (working in stomach) is active in acidic medium (low PH) while trypsin (working in small intestine) shows its activity in alkaline medium (High PH).
10. **Why is activation energy necessary?**
 Ans: The need for activation energy acts as a barrier to the beginning of reaction. Enzyme lower such barriers by decreasing the requirement of activation energy. Thus, in the presence of enzymes, reactions proceed at a faster rate.
11. **Why induced fit model is more acceptable than lock and key model.**
 Ans: According to this model, active site is not a rigid structure rather it is molded into required shape to perform its function. That's why induced fit model is more acceptable than lock and key model.

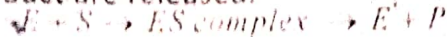
Section II(TOPIC WISE)(Extensive Questions) Board Papers-2014-2022

6.1	Write any three characteristics of Enzymes.	
1	What is the use of enzymes in different industries?	3 times
6.1.1	FACTORS AFFECTING THE RATE OF ENZYME ACTION:	
2	Write any two factors affecting the rate of enzyme action.	1 time
6.2	MECHANISM OF ENZYME ACTION:	
3	Explain the mechanism of enzyme action.	5 times
6.3	SPECIFICITY OF ENZYMES:	
4	Write a note on specificity of enzymes.	3 times

Solved Long Questions Ch-6 (2014-22) from 9 boards

1. Explain the mechanism of enzyme action.

Ans: **Mechanism Of Enzyme Action:** When enzyme attaches with substrate, a temporary enzyme-substrate (ES) complex is formed. Enzyme catalyzes the reaction and substrate is transformed into product. After it, the ES complex breaks and enzyme and product are released.



In order to explain the mechanism of enzyme action a German chemist Emil Fischer, in 1894, proposed **lock and key model**. According to this model, both enzyme and substrate possess specific shapes that fit exactly into one another. This model explains enzyme specificity.

In 1958, an American biologist Daniel Koshland suggested a modification to lock and key model and proposed **induced-fit model**. According to this model, active site is not a rigid structure rather it is molded into the required shape to perform its function. Induced fit model is more acceptable than "lock and key" model of enzyme action.

2. What is the use of enzymes in different industries?

Ans: **Food Industry:**

Enzymes break starch into simple sugars are used in the production of white bread, bun etc.

Paper Industry:

Enzymes break starch to lower its viscosity that aids in making the paper.

Brewing Industry:

Enzymes break starch and proteins. The products are used by yeast for fermentation to produce alcohol.

Biological detergent:

Protease enzymes are used for the removal of protein stains from clothes. Amylase enzymes are used in dish washing to remove resistant starch residues.

CHAPTER-7 (TOPIC WISE MCQ'S) IN BOARD PAPERS-2014-2022

7.1. BIOENERGETICS AND THE ROLE OF ATP:

1. Energy stored in the chemical bond is:

(A) Potential energy	(B) Kinetic energy	(C) Elastic energy	(D) Both A & B
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2. The loss of electron from atom is called:

(A) Reduction	(B) Oxidation	(C) Anabolism	(D) Catabolism
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3. The energy Currency of all cells is.

(A) ADP	(B) AMP	(C) ATP	(D) AFD
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4. From which bond of ATP.....energy is taken?

(A) P-P bond	(B) C-H bond	(C) C-O bond	(D) C-N bond
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5. ATP molecule was discover in.....

(A) 1829	(B) 1939	(C) 1929	(D) 1839
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6. ATP was discovered by

(A) Fritz Lipmann	(B) Karl Lohmann	(C) Hamann	(D) Both A and B
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7. Each ATP molecules has the number of sub units.

(A) 2	(B) 3	(C) 4	(D) 5
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8. ATP is an example of:

(A) amino acids	(B) fatty acid	(C) nucleic acid	(D) nucleotide
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9. The example of a nucleotide is:

(A) ATP	(B) DTP	(C) AMP	(D) ADP
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10. Nitrogenous base of ATP molecule is:

(A) adenine	(B) guanine	(C) cytosine	(D) thiamine
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11. Number of phosphate groups in ATP molecule:

(A) one	(B) two	(C) three	(D) four
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12. One molecule of ATP release energy.

(A) 7300 calories	(B) 3700 calories	(C) 370 calories	(D) 1700 calories
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13. One mole of ATP releases energy: (3 times)
 (A) 7.8 k.cal. (B) 7.9 k.cal (C) 7.10 k.cal (D) 7.3 k.cal
14. Food contains energy in its bonds: (D) Solar
 (A) Kinetic (B) Potential (C) Heat cal/mol energy:
 (D) 730
15. 7.3 kilo calories/ mole energy is equal to _____ cal/mol energy:
 (A) 73000 (B) 73 (C) 7300 (D) 730
16. The Covalent bond connecting two phosphates is indicated by the symbol:
 (A) Ratio (B) Proportion (C) Tilde (D) Colon

7.2. PHOTOSYNTHESIS:

17. By product of photosynthesis is: (3 times)
 (A) Carbon dioxide (B) Nitrogen (C) Oxygen (D) None of these
18. Stomata cover only _____ of the leaf surface: (6 times)
 (A) 1-2% (B) 2-3 % (C) 3-4% (D) 4-5%
19. Water enters into root hairs by means of
 (A) diffusion (B) osmosis (C) Active transport (D) passive transport
20. Raw Material for Photosynthesis is
 (A) H₂O, O₂ (B) CO₂, O₂ (C) Glucose (D) Water, CO₂

7.2.1. MECHANISM OF PHOTOSYNTHESIS:

21. In which part of chloroplast, light reactions of photosynthesis take place?
 (A) Outer membrane (B) Inner membrane (C) Stroma (D) Thylakoid membranes
22. Which reaction occurs on the thylakoid membrane of chloroplast.
 (A) Dark reaction (B) light reaction (C) Electron transport (D) Glycolysis
23. In which part of chloroplast dark reactions of photosynthesis take place:

- (A) Outer membrane (B) Inner membrane (C) Stroma (D) Thylakoid
 (2 Times)
24. The whole series of light reactions is called: (1 Time)
 (A) S-scheme (B) Z-scheme (C) L-scheme (D) None of these
25. The details of dark reaction were discovered by..... (3 Time)
 (A) Hans Krebs (B) Robert Brown (C) Malvin Calvin (D) de Duve
26. Dark reactions are part of
 (A) Respiration (B) necrosis (C) photosynthesis (D) metastasis
27. Malvin Calvin was awarded Nobel Prize due to his work on:
 (A) Transpiration (B) photosynthesis (C) respiration (D) evaporation
28. Compounds produced during light reactions are:
 (A) FADH (B) NADPH ATP (C) C₆ H₁₂ O₆ (D) C₁₂H₂₂O₁₁
29. Calvin got noble prize in:
 (A) 1961 (B) 1971 (C) 1985 (D) 1991

30. Which colour of light is more effective in photosynthesis?
 (A) Blue and red (B) Yellow and blue (C) blue and green (D) green and red
31. Another name for the dark reaction of Photosynthesis is:
 (A) Calvin cycle (B) Carbon cycle (C) Nitrogen cycle (D) Water cycle
32. Oxygen is produced as a by Product in the Process:
 (A) Respiration (B) Transpiration (C) Fermentation (D) Photosynthesis
33. _____ and his colleagues discovered details of Dark Reactions:
 (A) Robert Brown (B) Louis Pasteur (C) Aristotle (D) Malvin Calvin
34. In which of the following photosynthesis process does not occur?
 (A) Green plants (B) some protest (Algae) (C) Amoeba (D) Some bacteria

7.2.2. ROLE OF CHLOROPHYLL AND LIGHT:

35. Sun light is absorbed by:
 (A) Flower (B) Stem (C) Chlorophyll (D) Leaves
36. How much light is absorbed falling on the leaf surface?
 (A) 1% (B) 2% (C) 4% (D) 3%
37. Chlorophyll pigment absorbs maximum light in the wave length of: (5 times)
 (A) Green and blue (B) Only green (C) Green and red (D) Red and blue
38. When chlorophyll molecule absorbs light their energy level increases and are emitted?
 (A) Proton (B) Neutron (C) Electron (D) None of these

- 39- Chlorophyll absorb colours of light.
 (A) Red & Blue (B) Green & Blue (C) Green only (D) Green & red
- 40- The most important photosynthetic pigment is:
 (A) Chlorophyll a (B) Chlorophyll b (C) Chromoplast (D) Carotenoid
- 41- Karl Lohmann was awarded noble prize in:
 (A) 1940 (B) 1941 (C) 1958 (D) 1986
- 42- Main photosynthetic pigment is:
 (A) Chlorophyll 'b' (B) Chlorophyll 'a' (C) Carotenoids (D) Xanthophylls

7.3. RESPIRATION:

43. The greatest fuel energy for cellular respiration is: (2 times)
 (A) Glucose (B) Protein (C) Amino acid (D) Lipids
44. Through which process organisms gets energy. (1 time)
 (A) photosynthesis (B) respiration (C) transpiration (D) evaporation

7.3.1. AEROBIC AND ANAEROBIC RESPIRATION:

45. _____ is used in aerobic respiration:
 (A) oxygen (B) carbon dioxide (C) light (D) nitrogen
46. Aerobic respiration occurs in:
 (A) Cytoplasm (B) Plastids (C) Lysosomes (D) Mitochondria
47. Whose fermenting powers are used for making cheese and yogurt?
 (A) Bacteria (B) Virus (C) Fungi (D) Algae
- 48- Alcohol is prepared by:
 (A) Yeast (B) Algae (C) Onion (D) Pepper
- 49- During anaerobic oxidation of glucose molecule, _____ ATP molecules are gained as net profit:
 (A) 2 (B) 4 (C) 6 (D) 8

7.3.2. MECHANISM OF RESPIRATION:

50. Process of glycolysis is found in _____ (11 times)
 (A) ribosomes (B) cytoplasm (C) Golgi complex (D) vacuole
51. The compound that absorbs CO₂ is:
 (A) NaOH (B) KOH (C) Ca(OH)₂ (D) Mg(OH)₂
52. In which stage of respiration carbon dioxide gas is produced?
 (A) glycolysis (B) Krebs cycle (C) Electron transport chain (D) none of these
- 53- What is Nicotine amide dinucleotide (NAD)?
 (A) Enzyme (B) Coenzyme (C) Substrate (D) Catalyst
- 54- The example of three Carbon Molecules is:
 (A) Glucose (B) Pyruvic Acid (C) Starch (D) Ribose
- 55- In glycolysis, glucose (6C) molecule is broken into two molecules of:
 (A) NADH (B) FADH₂ (C) pyruvic acid (D) acetyl-CoA
- 56- Which step of cellular respiration occurs in cytoplasm?
 (A) Kreb's cycle (B) E.T.C (C) Glycolysis (D) Lactic acid fermentation

7.3.3. THE ENERGY BUDGET OF RESPIRATION:

57. How much ATP molecules are formed during Cellular Respiration: (2 times)
 (A) 40 (B) 38 (C) 63 (D) 36
- 58- How many ATP molecules are produced by a NADH in electron transport chain?
 (A) 1 (B) 2 (C) 3 (D) 4

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- 59- Final step of cellular respiration is:
 (A) Glycolysis (B) krebs cycle
 (C) Electron transport chain (D) Fermentation
- 60- The chemical formula of lactic acid is:
 (A) C₂H₂OH (B) C₃H₆O₃ (C) C₆H₂₂O₁₁ (D) C₆H₁₂O₆
- 61- Each FADH₂ produces ATP:
 (A) 2 (B) 4 (C) 6 (D) 8

								Answers							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
A	B	C	A	C	B	B	D	A	A	C	A	D	B	C	
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
C	C	A	B	D	D	B	C	B	C	C	B	B	A	A	
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
A	D	D	C	C	A	D	C	A	A	B	B	A	B	A	
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
D	A	A	A	B	B	B	B	B	C	C	D	C	C	B	
61															
A															

Chapter No. 7: Exercise(MCQ's)

- In which of the following steps of respiration, CO₂ is produced?
 - Glycolysis
 - Krebs cycle
 - Electron transport chain
 - All of these
- Oxygen takes part in aerobic respiration in:
 - Glycolysis
 - Link step between glycolysis and krebs cycle
 - Krebs cycle
 - Electron transport chain
- When a plant was kept in darkness for many days its leaves turned yellow. Why?
 - Leaves could not get oxygen and so there was no photosynthesis
 - Leaves could not get light and so there was no respiration
 - Leaves could not get oxygen and so there was no respiration
 - Leaves could not get light and so there was no photosynthesis
- From which bonds of ATP molecule energy is taken?
 - P-P bonds
 - C-H bonds
 - C-N bonds
 - C-O bonds
- In which component of the leaf cells, chlorophyll is present?
 - Stroma
 - Thylakoids
 - plasma membrane
 - Cytoplasm
- Which of these can enter into krebs cycle?
 - Glucose
 - Pyruvic acid
 - Citric acid
 - Acetyl Co-A
- When we work hard we suffer from muscle fatigue because muscle cells:
 - Carry out aerobic respiration at faster rate and so are tired
 - Carry out anaerobic respiration and so accumulate more CO₂
 - Carry out anaerobic respiration and so accumulate lactic acid
 - Carry out aerobic respiration and so accumulate lactic acid
- How many molecules of CO₂ are produced when krebs cycle operates once?
 - 01
 - 02
 - 03
 - 06
- In which of the following metabolic processes, oxidation as well reduction of molecules occur?
 - Photosynthesis
 - Respiration
 - Both
 - None of these
- Chlorophyll pigment absorbs maximum light in wavelengths of:
 - Green and blue
 - Green and red
 - Green only
 - Red and blue

CHAPTER NO. 7

1	2	3	4	5	6	7	8	9	10
B	D	D	A	B	D	C	B	C	D

CHAPTER-7(SHORT QUESTIONS AND ANSWERS) (TOPIC WISE) BOARD PAPERS-2014-2022

7.1. BIOENERGETICS AND THE ROLE OF ATP:

1. What is bio-energetics?

Ans: It is the study of energy relationship and energy transformations in living organisms. (7 times)

2. What is redox reaction?

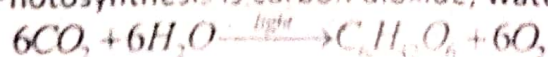
- Ans: It is the reaction which involves exchange of electrons between atoms.
3. Define oxidation and reduction./ What is meant by Reduction? (7 Times)
- Ans: The loss of electrons is called oxidation. The gain of electrons is called reduction.
4. Explain that electrons can be source of energy during oxidation reduction. (1 Time)
- Ans: Electrons can be an energy source. It depends upon their location and arrangement in atoms. For example when they are present in oxygen they make stable association and are not good energy source but if electrons are dragged away from oxygen and attached to other atom e.g. carbon or hydrogen. They make unstable association. They try to move back oxygen and when this happens energy is released.
5. Who discovered the ATP molecule? What is the function in cell in ATP? When and who asked ATP? (8 times)
- Ans: The major energy currency of all cells is a nucleotide called adenosine triphosphate (ATP).
 Functions: It is main energy source for majority of the cellular function like syntheses of macro molecules endocytosis, exocytosis etc. It has ability to store and release energy.
 Discovery: It was discovered in 1929 by Karl Lohmann and was proposed to be main energy transfer molecule in the cell by the noble prize winner, Fritz Lipmann in 1941.
6. What is ATP and who discover it? / When and what was discovered by Karl Lohman. (4 Times)
- Ans: ATP means Adenosine triphosphate. It is the main energy source for majority of the cellular functions like synthesis of the macromolecules. It was discovered in 1929 by Karl Lohmann.
7. Write down the three sub units of ATP. (4 Times)
- Ans: 1- Adenine 2- Ribose sugar 3- Phosphate groups
8. Show the diagram and structure of ATP. (3 Times)
- Ans:



9. How much energy is released from one mole of ATP? (2 times)
- Ans: The breaking of one phosphate bond releases about 7.3 kcal (7300 calories) per mole of ATP.

7.2. PHOTOSYNTHESIS:

10. Define photosynthesis. Write raw material for photosynthesis./ Define Photosynthesis and write its equation. (10 times)
- Ans: Photosynthesis is the synthesis of glucose from carbon dioxide and water in the presence of sunlight and chlorophyll, with oxygen as a by-product.
 Raw material for Photosynthesis is carbon dioxide, water and light energy.



11. What products are produced during photosynthesis?
- Ans: Products of photosynthesis: Glucose ($C_6H_{12}O_6$), oxygen (O_2) and water.
12. Why is Photosynthesis considered as anabolic process?
- Ans: It is an anabolic process because it is the synthesis of glucose from CO_2 and H_2O in the presence of sunlight and chlorophyll with O_2 as a by-product.

7.2.1. MECHANISM OF PHOTOSYNTHESIS:

13. Define light reactions. / What are dark reactions? / What is the difference between light and dark reaction? (3 times)

Ans:

light reaction	Dark reaction
In these reactions light energy is captured and is used to make high energy molecules (ATP and NADPH). These reactions are called light reactions and take place, on the thylakoid membranes of chloroplast.	In these reactions carbon dioxide is reduced to make glucose. In this phase energy from high energy molecules (ATP and NADPH) is utilized. As these reactions do not use light directly they are known as dark reactions.

14. Write any two events of dark reaction.

Ans: 1- CO₂ molecules are combined with 5-carbon compounds to form temporary 6-carbon compounds, each of which split into two 3-carbon compounds.
2- The carbon compounds are reduced to 3-carbon carbohydrates by using ATP and hydrogen from NADPH. The 3-carbon carbohydrates are used to manufacture glucose.

15. What is photolysis of water? (2 times)

Ans: Light breaks water molecule called photolysis and oxygen is released.

16. What is meant by Z-Scheme? (2 times)

Ans: The whole series of light reactions is called Z-scheme due to its Z-shaped flow chart.

17. Write names of two accessory pigments.

Ans: Chlorophyll-b and carotenoids.

18. Write about accessory pigments with an example.

Ans: Photosynthetic pigments are organized in the form of clusters called photosystems, in thylakoid membranes of chloroplast. Chlorophyll a is the main photosynthetic pigments others are called accessory pigments and includes chlorophyll b and carotenoids.

19. What is z-scheme and why is it called so?

Ans: The light reaction is called z-scheme due to z-shape flowchart.

20. Why and when Calvin was awarded Nobel Prize?

Ans: Calvin was awarded noble prize, in 1961 for his work on the details of photosynthesis.

7.2.2. ROLE OF CHLOROPHYLL AND LIGHT:

21. Write names of photosynthetic pigment.

Ans: Photosynthetic pigments:

Chlorophyll-a (the main photosynthetic pigment)

1. Chlorophyll-b 2- Carotenoids

22. What is sunlight energy? Write its function in plant.

Ans: Sunlight energy is absorbed by chlorophyll. It is then converted into chemical energy. Which derives the photosynthetic process. The light ray of different wavelengths are not only differently absorbed by photosynthetic pigments but are also differently effective in photosynthesis. The blue and red lights carry out more photosynthesis.

23. Describe the effect of intensity light on the speed of photosynthesis. (2 Times)

Ans: It decreases as light intensity decreases and increased as light intensity increases. However at much higher intensity, the rate of photosynthesis becomes constant.

24. What is the role of chlorophyll in photosynthesis?

Ans: Sunlight energy is absorbed by chlorophyll; it is then converted into chemical energy, which derive the photosynthetic process.

25. What are limiting factors in photosynthesis? Give two examples.

Ans: Any factor (absence are those) deficiency of which can decrease the rate of a metabolic reaction i.e photosynthesis. e.g. light intensity, temperature, concentration of carbon dioxide etc. (5 Times)

26. Write names of four limiting factors for photosynthesis.

Ans: i. Light intensity. ii. Temperature.
iv. Availability of water iii. Concentration of CO₂

27. Define photosystem/ What is meant by photosystems?

Ans: Photosynthetic pigments are organized in the form of clusters called photosystems.

28. What is meant by pigments? Write the name photosynthetic pigments.

Ans: Pigments are the substances that absorb visible light. Chlorophyll – a is the main photosynthetic pigment. Others are called accessory pigments and included chlorophyll – b and carotenoids.

29. Write two necessary conditions for photosynthesis.

Ans: **Light Intensity:** It decreases as light intensity decreases and increased as light intensity increases. However at much higher intensity, the rate of photosynthesis becomes constant.

Effect of CO₂ Concentration of Photosynthesis: As CO₂ concentration rises, the rate of photosynthesis goes on increasing. Increase in CO₂ concentration beyond a certain level causes the closure of stomata and it decreases the rate of photosynthesis.

Temperature: The rate of Photosynthesis decreases with decrease in temperature. It increases as temperature is increased over a limited range. But if light intensity is low, increasing the temperature has little influence on the rate of photosynthesis.

7.3. RESPIRATION:

30. Differentiate between photosynthesis and respiration. / What is cellular respiration and explain it. (2 Times)

Photosynthesis	Respiration
It is the synthesis of glucose from carbon dioxide and water in the presence of sunlight and chlorophyll with oxygen as a by-product.	During this process the C-H bonds are broken down by oxidation-reduction reaction. So carbon dioxide and water are formed. The cellular energy yielding process is called cellular respiration.

7.3.1. AEROBIC AND ANAEROBIC RESPIRATION:

31. Write down names of two compounds produced during respiration.

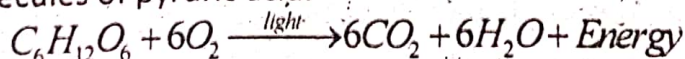
Ans: During respiration compound are produced: Carbon dioxide (CO₂), water (H₂O) and energy.

32. Write two differences of Aerobic and Anaerobic Respiration?/ Define aerobic and anaerobic respiration./ Define anaerobic respiration. (7 Times)

Aerobic Respiration	Anaerobic Respiration
Glucose (6C) molecule is broken down into two molecules of pyruvic acid (3C).	Glucose (6C) molecule is broken down into two molecules of pyruvic acid (3 C).
The molecules of pyruvic acid are completely oxidized to CO ₂ and H ₂ O and greater amount of energy is released.	Pyruvic acid is converted into ethyl alcohol or lactic acid and less amount of energy is released due to incomplete oxidation.
It occurs in the presence of oxygen.	It occurs in the absence of oxygen.

33. Define aerobic respiration and write its equation. (3 Times)

Ans: **Aerobic respiration:** In the presence of oxygen complete oxidation of glucose occurs with maximum release of energy. A molecule of glucose is broken down into two molecules of pyruvic acid.



34. What is meant by anaerobes? (2 times)

Ans: Some organisms including some bacteria and some fungi get energy from anaerobic respiration and are called anaerobes.

35. What is importance of aerobic and anaerobic respiration?/What is significance of anaerobic. (2 times)

Ans: **Importance of aerobic respiration:** Major sources of energy for most organisms.
Importance of anaerobic respiration: i. Source of energy for anaerobic organisms.
 i. Source of energy for aerobic organisms in short supply of O₂.

2- The fermenting powers of bacteria are used for making cheese and yogourt.

36. Define fermentation. Name its two types.

Ans: In the absence of oxygen, glucose is incompletely oxidized with less amount of energy released. In first phase, Glucose is broken down into two molecules of pyruvic acid but in second phase pyruvic acid is not completely oxidized.

Types: i. Alcoholic fermentation.

ii. Lactic acid fermentation.

37. **Write down types of fermentation. / Differentiate between alcoholic and lactic acid fermentation. / Define lactic acid fermentation. / Define alcoholic fermentation.**

Ans: There are two types of fermentation.

i. Alcoholic fermentation. ii. Lactic acid fermentation.

1. **Alcoholic fermentation:** It occurs in bacteria, yeast etc. in this type of anaerobic respiration, pyruvic acid is further broken down into alcohol (C_2H_5OH) and CO_2 . Pyruvic acid \rightarrow Ethyl Alcohol + CO_2 .

2. **Lactic acid fermentation:** In this type of anaerobic respiration, each pyruvic acid molecule is converted into Lactic acid ($C_2H_6O_3$).

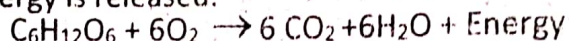
Pyruvic acid \rightarrow Lactic acid.

38. **Write the uses of fermentation in yeast.**

Ans: Fermentation in yeast is used in brewing and baking industries.

39. **Name the final products of Aerobic and anaerobic respiration.**

Ans: **Aerobic respiration:** Pyruvic acid molecule is completely oxidized to CO_2 , and water and all energy is released.



Anaerobic respiration: Pyruvic acid is not completely oxidized and it is transformed into ethyl alcohol or lactic acid.

40. **Define fermentation. Write down the name of its two types.**

Ans: The respiration in the absence of oxygen is called fermentation.

Types: Alcoholic fermentation, lactic acid fermentation.

7.3.2. MECHANISM OF RESPIRATION:

41. **Define Glycolysis? Where does process occur?**

(6 times)

Ans: It is a process in which Glucose (6-C) molecule is broken into two molecules of pyruvic acids (3-C) it occurs in cytoplasm.

42. **What is meant by Krebs cycle?**

(3 times)

Ans: In Krebs cycle, the pyruvic acid molecules are completely oxidized, along with the formation of ATP, NADH and $FADH_2$. Before entering in Krebs cycle, pyruvic acid is changed into a 2-carbon compound called acetyl-CoA.

43. **What do you know about electron transport chain?**

(4 times)

Ans: Electron transport chain is the final step of cellular respiration. It is the transfer of electron on an electron transport chain. In this step NADH and $FADH_2$ release electrons and hydrogen ions. These electrons are taken up by a series of electron carriers. When electron move through the series of electron carriers they lose energy which is used to synthesized ATP. At the end of chain, electrons and hydrogen ions combine with molecular oxygen and form water.

44. **What does FAD stand for?**

Ans: Flavin adenine dinucleotide (FAD is also coenzymes like NAD^+ . It gets 2 hydrogen and reduces to $FADH_2$

45. **Write names of two main steps of aerobic respiration.**

(2 times)

Ans: i. Glycolysis ii. Krebs cycle iii. Electron Transport chain

46. **What are FAD and NAD?**

Ans: Flavin adenine dinucleotide (FAD) is also a coenzyme like NAD^+ . It gets 2 hydrogen and reduces to $FADH_2$.

Nicotinamide adenine dinucleotide (NAD^+) is a coenzyme that takes electrons and carries phosphate with it, so is called $NADP^+$. One form of this Coenzyme also

47. **What is the source of fuel used in respiration?**

Ans: Glucose.

7.3.3. THE ENERGY BUDGET OF RESPIRATION:

48. **How many ATP are formed from NADH and $FADH_2$?**

Ans: Each NADH produces 3 ATP.

Each $FADH_2$ produces 2 ATP.

49. State how the varying carbon dioxide concentration affect the rate of photosynthesis.

Ans: As CO_2 concentration rises, the rate of photosynthesis goes on increasing until limited by other factors. Increase in CO_2 concentration beyond a certain level causes the closure of stomata and it decreases the rate of photosynthesis.

50. How lactic acid fermentation take place in skeletal muscle?

Ans: It occurs in skeletal muscles of human and other animals during extreme physical activities.

51. Define cellular respiration.

Ans: During this process C-H bonds are broken down by oxidation-reduction reaction and SO_2 carbon dioxide and water also produce with ATP. The cellular energy-yielding process is called cellular respiration.

Conceptual Short Questions

1- Which compound enters into Krebs's cycle?

Ans: Before entering in Krebs cycle, pyruvic acid combines with coenzyme A and changed into a 2-Carbon Compound called acetyl CO-A.

2- What is the relation of Coenzyme-A to respiration.

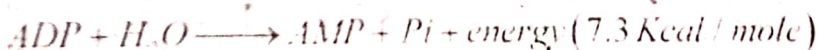
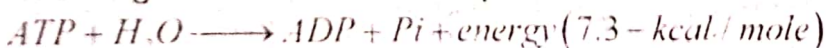
Ans: The enzyme which combines with pyruvic acid to form acetyl COA before entering Krebs cycle is called coenzyme A.

3- How much energy is released when one phosphate bond breaks in an ADP molecule?

Ans: 7.3 kilo calories / mole or 7300 calories / mole of ADP is released when one phosphate bond breaks.

4- What are the conversion equations for ATP to AMP?

Ans: Following are the conversion equations for ATP to AMP:



5- What are the raw materials for photosynthesis?

Ans: CO_2 and water are the raw materials for photosynthesis.

6. Why is it said that all life forms are dependent on photosynthesis?

Ans: Photosynthesis is the most important biochemical pathway and all life depends on it. Because through photosynthesis plant make sugar for their own use and make oxygen (O_2) as by product for the use of respiration in animals.

7. What is respiration energy budget? Give example.

Ans: During anaerobic respiration incomplete oxidation of glucose produces only 2 ATP. In aerobic respiration 36 ATP molecules are produced.

$$\text{ATP from } 10 \text{ NADH } (10 \times 3) = 30 \text{ ATP}$$

$$\text{ATP from } 2 \text{ FADH}_2 (2 \times 2) = 4 \text{ ATP}$$

$$\text{ATP from some other reaction} = 2 \text{ ATP}$$

$$\text{Total ATP} = 36 \text{ ATP}$$

8. How soy sauce is made?

Ans: The soy sauce is made through the fermentation by a fungus aspergillums.

9. Define two types of energy in living organisms.

Ans: In living organisms, energy exist in two form: kinetic energy is actively involved in doing work, and potential energy is stored for future use.

10. Why it is incorrect to say that energy relationship step of respiration is electron transport chain?

Ans: Energy is released in glycolysis and Krebs Cycle in the form of NADH and FADH_2 . Electron Transport chain transform the energy present in these compounds to ATP.

Ans:

Difference between Aerobic and Anaerobic Respiration		
Properties	Aerobic respiration	Anaerobic respiration
Presence of Oxygen	Yes	No
Number of ATP	36	2
Final products	CO ₂ , H ₂ O	Lactic acid or Ethanol + CO ₂
Site of occurrence	Glycolysis in cytoplasm and Krebs cycle and electron transport chain in mitochondria	In cytoplasm
Importance	Major source of energy for most organisms	<ul style="list-style-type: none"> • Source of energy for anaerobic organisms • Source of energy for aerobic organisms in short supply of O₂ • Source of many products (ethanol, cheese etc)

4. Differentiate between respiration and photosynthesis.

Ans:

Difference between photosynthesis and respiration		
Characteristics	Photosynthesis	Respiration
Metabolism	Anabolism	Catabolism
Energy investment / production	Investment of light energy to store it in the form of bond energy	Bond energy transformed into chemical energy of ATP
Organisms capable of;	Some bacteria, all algae all plants	All organisms
Site of Occurrence	Chloroplasts	In cytoplasm and mitochondria
Time of occurrence	In daytime only, in the presence of light	All the time

CHAPTER-8 (TOPIC WISE MCQ'S)

BOARD PAPERS- 2014-2022

8.1. MINERAL NUTRITION IN PLANTS:

- The example of Micronutrients is
 (A) Phosphorous (B) Calcium (C) Sulphur (D) iron
- Deficiency of which element causes the yellowing of leaves in plants: (2 times)
 (A) Zinc (B) Magnesium (C) Copper (D) Chlorine
- An example of micronutrient is:
 (A) Zinc (B) oxygen (C) nitrogen (D) carbon
- Involved in osmosis of water:
 (A) Copper (B) Chlorine (C) nitrogen (D) Sulphur
- Use of nitrogen fertilizers produce greenhouse gas:
 (A) Carbon monoxide (B) carbon dioxide (C) oxygen (D) nitrous oxide
- Regulate the opening and closing of stoma.
 (A) calcium (B) phosphorus (C) sulphur (D) potassium
- A macronutrient which is component of ATP, nucleic acid, and co-enzymes:
 (A) phosphorus (B) iron (C) iodine (D) boron

- 8- Citrus fruits are the source of vitamin: (A) "B" (B) "D" (C) "K" (D) "C"
- 9- The stomata open when guard cells: (A) Become Flaccid (B) Gain chloride ions (C) Become turgid (D) Loose water
- 10- A micronutrient required in nitrogen metabolism is: (A) Zinc (B) Iron (C) Chlorine (D) Nickel

8.2. COMPONENTS OF HUMAN FOOD:

- 11. What are the primary nutrients that provide quick energy? (2 times) (A) lipids (B) carbohydrates (C) proteins (D) nucleic acids
- 12. More than half of the total calories that every animal consumes come from: (A) Carbohydrates (B) Lipids (C) Protein (D) Vitamin
- 13. Every animal takes food, whose 2/3 part consists of: (A) Proteins (B) Carbohydrates (C) Minerals (D) Vitamins
- 14. One gram carbohydrate containsk-calories energy. (2 times) (A) 05 (B) 04 (C) 06 (D) 03
- 15. The most widely used carbohydrate to get energy is: (A) maltose (B) Sucrose (C) Glucose (D) Lactose
- 16. Lipids are composed of (A) Fatty acids (B) glycerol (C) amino acids (D) Both A and B
- 17. Butter contain _____ percent of saturated fatty acids: (2 times) (A) 50 (B) 60 (C) 70 (D) 80
- 18. How much % of Lipids is present in milk? (2 times) (A) 10% (B) 12% (C) 0.9% (D) 4%
- 19. One gram of lipids contains energy _____ kilo calories: (2 times) (A) 04 (B) 09 (C) 06 (D) 07
- 20. Energy present in one gram of protein is: (A) 4 Kilo Calories (B) 6 Kilo Calories (C) 5 Kilo Calories (D) 7 Kilo Calories
- 21. Daily need of major minerals is..... (A) more than 100mg (B) 100 mg (C) less than 100mg (D) 10 mg
- 22. Daily need for trace minerals is: (A) less than 100mg (B) more than 100mg (C) 100mg (D) 200mg
- 23. Which mineral is necessary for transport and storage of oxygen in body? (A) Copper (B) iron (C) zinc (D) iodine
- 24. It help in blood clotting: (A) Calcium (B) Phosphate (C) Nitrogen (D) Sodium
- 25. Element required for the function of Harmon Insulin is. (A) Iron (B) Chromium (C) Zinc (D) sodium
- 26. Essential for normal thyroid function is: (3 times) (A) iron (B)zinc (C) iodine (D) sodium
- 27. Which mineral is essential for development and maintenance of bones and teeth? (A) Potassium (B) Sodium (C) Iodine (D) Calcium
- 28. Which of the following is not a fat soluble vitamin? (A) Vitamin A (B) vitamin B (C) vitamin D (D) vitamin E
- 29. Which vitamin is water soluble? (4 times) (A) Vitamin A (B) Vitamin B complex (C) Vitamin D (D) Vitamin E
- 30. Fat soluble vitamins are: (1 Time) (A) A,B,C,D (B) A,D,E,K (C) A,C,E,K (D) B,C,E,D
- 31. In which year vitamin A was identified? (D) B,C,E,D (A) 1914 (B) 1913 (C) 1813 (D) 1920
- 32. Blindness is caused by the deficiency of vitamin. (3 times) (A) A (B) B (C) C (D) D
- 33. The disease caused by the deficiency of vitamin A is: (A) Scurvy (B) Rickets (C) Osteomalacia (D) night blindness
- 34. Scurvy is caused by the deficiency of (4 times) (A) vitamin A (B) vitamin K (C) vitamin D (D) vitamin C
- 35. Disease due to the deficiency of Vitamin "C" is: (2 times) (A) scurvy (B) rickets (C) ostemalacia (D) dry skin
- 36. Controls amount of calcium and phosphorus in blood: (D) Vitamin D (A) Vitamin A (B) Vitamin B (C) Vitamin C

37. Which solution indicates the presence of protein?
 (A) Sudan red (B) Iodine (C) Benedicts (D) Biurete

38- Percentage of Proteins in Bread is:
 (A) 12% (B) 11% (C) 10% (D) 9%

39- In children, deficiency of vitamin D causes:
 (A) Osteomalacia (B) Scurvy (C) Night blindness (D) Rickets

40- It is an example of macronutrients:
 (A) Iron (B) Boron (C) Chlorine (D) Oxygen

41- Which mineral acts as co-factor for enzyme?
 (A) Sodium (B) Potassium (C) Calcium (D) Chloride

8.2.1. EFFECTS OF WATER AND DIETARY FIBER:

42. Water makes the composition of protoplasm of all living things: (3 times)
 (A) 60% - 95% (B) 60% - 80% (C) 60% - 90% (D) 60% - 70%

8.2.3. PROBLEM RELATED TO NUTRITION (MALNUTRITION):

43. The disease of kwashiorkor and Marasmus is due to.
 (A) Minerals deficiency (B) Ulcer
 (C) Protein energy malnutrition (D) Over intake of nutrients

44. _____ is caused by deficiency of protein is:
 (A) Goiter (B) Osteoarthritis (C) Marasmus (D) colour blindness

45. The disease caused by the deficiency of iodine is: (5 times)
 (A) Scurvy (B) Rickets (C) Malaria (D) Goiter

46. Whose saying is this that make medicine to your nutrition?
 (A) A.F.A King (B) Aristotle (C) Buhar (D) Suqrat

47. "Lack of blood" is called disease namely:
 (A) kwashiorkor (B) anemia (C) marasmus (D) goiter

48. Disease due to deficiency of proteins is:
 (A) ulcer (B) goiter (C) anemia (D) kwashiorkor

49. Number of persons increasing in the world population after every one minute is:
 (A) 180 (B) 290 (C) 280 (D) 490

50- Carcinogens produce:
 (A) Diabetes (B) Cancer (C) Tetanus (D) Night Blindness

8.3. DIGESTION IN HUMAN:

51. Which one of the following organ is part of digestive system?
 (A) Lungs (B) Oral Cavity (C) Kidneys (D) Heart

52. The process of breaking up of complex substances into simpler substance is
 (A) Ingestion (B) Digestion (C) Assimilation (D) Absorption

53. The process of taking in food is called. (1 Time)
 (A) Ingestion (B) Digestion (C) Egestion (D) Absorption

8.3.1. HUMAN ALIMENTARY CANAL:

54. The second function of oral cavity is the grinding of food by teeth is called. (2 times)

(A) Lubrication (B) Defecation (C) Mastication (D) Assimilation

55. In adult human, oesophagus length is about: (5 times)
 (A) 20 cm (B) 25 cm (C) 30 cm (D) 35 cm

56. Cardiac sphincter is between
 (A) Stomach and oesophagus (B) stomach and small intestine
 (C) Oesophagus and small intestine (D) both A and B-

57. Which Enzyme works in stomach?
 (A) Lipase (B) Trypsin (C) pepsin (D) protease

58. Enzyme Pepsin works in (1 times)
 (A) Mouth (B) intestine (C) oesophagus (D) stomach

59. Enzyme present in saliva is:
 (A) Lipase (B) amylase (C) protease (D) trypsin

60. Inactive form of protein digesting enzyme is:
 (A) pepsinogen (B) pepsin (C) amylase (D) lipase

61. The organ specialized for the digestion of proteins:
 (A) Liver (B) Stomach (C) Pancreas (D) Oral Cavity

62. The name of compound that converts inactive enzyme pepsinogen into pepsin is:
 (A) Hydrochloric acid (B) water (C) mucus (D) lipase
 (6 times)
63. In stomach pepsinogen is converted into:
 (A) Pepsin (B) Bicarbonates (C) HCl (D) Gastrin
64. The part of alimentary canal in which maximum digestion occurs:
 (A) Oesophagus (B) Stomach (C) Small Intestine (D) Large Intestine
65. In _____ of the elementary canal, the maximum absorption of nutrients occurs:
 (A) small intestine (B) large intestine (C) pharynx (D) stomach
 (2 times)
66. Last 3.5 meters long part of small intestine is:
 (A) Duodenum (B) Jejunum (C) ileum (D) None of these
67. The reabsorption of water and salts is done in:
 (A) Large Intestine (B) Small intestine (C) Stomach (D) Liver
68. Faeces are temporarily stored in
 (A) Appendix (B) Rectum (C) Gall bladder (D) Pancreas
 (3 times)
69. Which vitamin is made by bacteria in colon?
 (A) Vitamin C (B) Vitamin d (C) Vitamin E (D) Vitamin K
- 70- Which of the following is not the function of Saliva:
 (A) Digestion (B) Absorption (C) Lubrication (D) Stabilization
- 71- Bacteria living in Colon produce:
 (A) Vitamins B (B) Vitamins C (C) Vitamins D (D) Vitamins K
- 72 Elimination of undigested food from the body is called:
 (A) ingestion (B) absorption (C) defecation (D) digestion
- 73- Hydrochloric acid kills the microorganisms present in which organ:
 (A) Colon (B) Small Intestine (C) Stomach (D) Large intestine
- 74- Which acid kills the microorganisms present in food?
 (A) Hydrochloric acid (B) Nitric acid
 (C) Acetic acid (D) Sulphuric acid
- 75- Length of Ileum is:
 (A) 3.5 m (B) 2.4 m (C) 25 cm (D) 4.0 m
- 76- Liver converts Ammonia to less Toxic Form:
 (A) Uric Acid (B) Fibrinogen (C) Bile Juice (D) Urea
- 77- The Pyloric Sphincter allows a little mass of Chyme to enter into which part:
 (A) Jejunum (B) Ileum (C) Ischium (D) Duodenum
- 78- It helps in the digestion of lipids through emulsification?
 (A) Pancreatic Juice (B) Gastric Juice (C) Intestinal Juice (D) Bile
- 8.3.2. ROLE OF LIVER:**
79. Weight of liver in an adult human is.
 (A) 2.5kg (B) 1.5kg (C) 3 kg (D) 2 kg
- 80- The largest gland of the body is:
 (A) Pancreas (B) Heart (C) Liver (D) Gallbladder
- 8.4. DISORDERS OF GUT:**
81. The mother of diseases is called:
 (A) Goiter (B) constipation (C) obesity (D) marasmus
 (2 times)
- 82- Gastric ulcer is found in?
 (A) Lungs (B) Liver (C) Stomach (D) Kidneys
- 2022**
- 83- In adults deficiency of vitamin D causes the disease:
 (A) Rickets (B) Scurvy (C) Blindness (D) Osteomalacia
- 84- Jejunum is long _____:
 (A) 2.8 m (B) 2.7 m (C) 2.5 m (D) 2.4 m
- 85- In Butter, amount of Unsaturated Fatty Acids is:
 (A) 30% (B) 35% (C) 70% (D) 75%
- 86- The second function of oral cavity is the grinding of food by teeth is called:
 (A) Mastication (B) Lubrication (C) Absorption (D) Defecation
- 87- Which of the mineral hardens tooth enamel?
 (A) Calcium (B) Iron (C) Chloride (D) Floride

Answers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
D	B	A	B	D	D	A	D	C	D	B	A	B	B	C	D	C	D
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
B	A	A	A	B	A	B	C	D	B	B	B	B	A	D	D	A	D
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
D	D	D	D	B	D	C	C	D	C	B	D	A	B	B	B	A	C
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
B	A	C	D	B	A	B	A	A	C	A	C	A	B	D	D	D	C
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87			
C	A	A	D	D	D	B	C	C	C	D	D	A	A	D			

Chapter No. 8: Exercise (MCQ's)

- What are the primary nutrients that provide quick useable energy to body?
(a) Carbohydrates (b) Proteins (c) Lipids (d) Nucleic acids
- The wavelike movement of muscle that pushes food through digestive system is called:
(a) Churning (b) Emulsification (c) Absorption (d) Peristalsis
- Micronutrients of plants are:
(a) Available in the soil only in small amounts (b) Required by plants in small amounts
(c) Small molecules required by plants (d) Useful, but not required by plants
- Which of the following does not occur in oral cavity?
(a) Lubrication of food (b) Beginning of protein digestion
(c) Breaking the food into small fragments (d) All of the above do occur in oral cavity
- Where are villi found?
(a) Esophagus (b) Stomach (c) Small intestine (d) Large intestine
- Ulcers occur in:
(a) Stomach (b) Duodenum (c) Esophagus (d) All of these
- Which group of enzymes breaks up starches and other carbohydrates?
(a) Proteases (b) Lipases (c) Amylases (d) None of these
- Pancreas produces digestive enzymes and releases them into:
(a) Colon (b) Gallbladder (c) Liver (d) Duodenum
- In stomach, pepsinogen is converted into:
(a) Pepsin (b) Bicarbonate (c) CHI (d) Gastrin
- Hepatic portal vein carries blood from _____ to _____.
(a) Small intestines, liver (b) Small intestines (c) Liver, heart (d) Small intestines, colon
- Which of the following is not a function of liver?
(a) Converts glucose to glycogen (b) Converts glycogen to glucose
(c) Manufactures fibrinogen (d) Produces digestive enzymes
- The diseases of kwashiorkor and marasmus may be due to:
(a) Mineral deficiency (b) Over-intake of nutrients
(c) Protein-energy malnutrition (d) Ulcer
- Which food group is our body's best source of energy?
(a) Meat Group (b) Fats, oils and sweets (c) Breads and cereals (d) Milk and cheese
- What may be the reason that children need more calcium and iron?
(a) Both calcium and iron for bones (b) Both calcium and iron for blood
(c) Calcium for blood and iron for bones (d) Calcium for bones and iron for blood
- The process of breaking down large droplets of fat into small droplets is called:
(a) Emulsification (b) Absorption (c) Peristalsis (d) Digestion

CHAPTER NO. 8

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	D	B	B	C	D	C	D	A	A	D	C	C	D	A

10. What is meant by Eutrophication?

Ans: Increase in chemical nutrients in a ecosystem called Eutrophication.

11. What is the importance of fertilizer in agriculture?

Ans: Fertilizers can increase the soil drainage, aeration and the ability of the soil to hold nutrients.

12. What is the role of calcium and magnesium in plants life?

Ans: Calcium activates enzymes, is a structural component of cell wall, influences water movement in cells. While Magnesium is a structural component of chlorophyll. It is also necessary for the functioning of plant enzymes to produce carbohydrates, sugar and fats. It is also used for fruit and nut formation and essential for germination of seeds.

8.2. COMPONENTS OF HUMAN FOOD:**13- What do you meant by carbohydrates, which is the simplest carbohydrate?**

Ans: These are the basic source of energy for all animals. Glucose in the simplest carbohydrates.

14- Write down the sources of carbohydrates.

Ans: 1- Bread 2- Pastas 3- Beans 4- Potatoes 5- Bran 6- Rice

15- What is the function of lipids in body and what are their sources?

Ans: Lipids play many roles in bodies. They are used to form membranes, the sheaths surrounding neurons and certain hormones. Lipids are also extremely useful energy source. One gram of lipid contains 9 kilo calories of energy.

Important sources of lipids include milk, butter, cheese, eggs, mutton, fish, mustard seeds, coconut and dry fruit etc.

16- What are lipids? Write names of its two types? / What are the harmful of (3 times)

Ans: The lipids present in food are composed of fatty acids and glycerol.

Types: i- Saturated Fatty Acids ii- Unsaturated Fatty Acids

17- Differentiate between Saturated and Unsaturated Fatty Acid. Give one example./ Define saturated fatty acid with an example. (3 Times)

Saturated Fatty Acids	Unsaturated Fatty Acids
These have all of their C-atoms bonded to H-atoms	These have some of their C-atoms bonded to H-atoms
These solid at room temperature e.g, Butter contains 70% saturated fatty acid.	These are liquids at room temperature e.g, Butter contains 30% unsaturated fatty acids.

18- What are the sources of lipids? (4 times)

Ans: 1- Milk 2- Butter 3- Cheese 4- Eggs 5- Mutton 6- Fish
7- Mustard seeds 8- Coconut 9- Dry fruits.

19- What is protein and from where we get it?

Ans: Proteins are essential components of cytoplasm, membranes and organelles. They are composed of amino acid. Dietary sources of proteins are meat, eggs, grains and dairy product such as meat and milk.

20- Describe any four sources of Proteins./ Write down dietary sources of proteins. (3 times)

Ans: Meat, eggs, grains, legumes.

21- How protein formed and what is its function in the body?

Ans: (i) Proteins are composed of amino acids. (ii) They play a role as enzymes.
(iii) They can be used for gaining energy. (iv) We use protein for growth.

22- What are minerals and from where we get them?

Ans: **Minerals:** - There are the substances which are required for various activities and structures. Mineral are the inorganic elements that originate in the earth and cannot be made in body.

Most of the minerals in human diet are obtained directly from plants and water or indirectly from animal foods.

23- Differentiate between major minerals and trace minerals. (3 Times)

Major Minerals	Trace Minerals
These are required in the amounts of 100 mg or more per day.	These are required in amounts less than 100 mg per day.

24- What is the role of sodium in human diet?

- Ans:** 1- Sodium maintains fluid balance in the body
2- It helps in absorption of other nutrients. (2 Times)
- 25- What is the role of iron in human body?**
- Ans: Role of Iron:**
- 1- Oxygen transport and storage.
 - 2- Component of Haemoglobin in RBCs and Myoglobin in muscle cells.
 - 3- Cellular energy production also require iron.
 - 4- It acts as co-factor for many enzyme of cellular respiration.
 - 5- Iron support immune functions.
- 26- Describe one role of calcium and iron in the human body.** (1 Time)
- Ans:** Calcium: It is essential for the development and maintenance of bones and teeth.
Iron: It plays a major role in oxygen transport and storage.
- 27- Write two functions of fluoride?**
- Ans:** 1- Fluoride stabilizes bone mineral. 2- It hardens tooth enamel.
- 28- Write Role of Calcium and Fluoride In Human Body?**
- Ans:** Calcium activates enzyme and it is also needed for maintaining cell membranes and connective tissues and for activation of several enzymes.
Fluoride stabilizes bone mineral and hardens the tooth enamel.
- 29- Write the role of phosphorus and zinc in plants.**
- Ans:** Phosphorus: Component of ATP, nucleic acids and coenzymes, necessary for seed germination, photosynthesis, protein formation etc.
Zinc: Required in large number of enzymes.
- 30- What is the role of Iron and zinc in human diet?**
- Ans:** Role of Iron: Iron plays major role in oxygen transport and storage. It is component of hemoglobin in red blood cells and myoglobin in muscle cells. Cellular energy production also requires iron. It also acts as a cofactor in many enzymes of cellular respiration. It supports immune system.
Role of Zinc: Zinc aids in insulin action. It also helps in growth and reproduction. It acts as a cofactor. It also supports the immune system.
- 31- What is the role of calcium in human body?** (1 Time)
- Ans:** It is essential for the development and maintenance of bones and teeth. It is also needed for the maintenance of cell membranes and connective tissues and for the activation of several enzymes.
- 32- Which diseases are caused due to the deficiency of calcium in human beings.**
- Ans:** Deficiency of calcium causes spontaneous discharge of nerve impulse which may result in tetany, bones also become soft, blood clots slowly and wounds heal slowly.
- 33- What do you mean by vitamin? Write the name of its types./ Write down the name of fat soluble vitamins.** (1 Time)
- Ans:** Vitamins are the chemical compounds that are required in low amounts but are essential for normal growth and metabolism.
Types: Fat- Soluble vitamin (A, D, E and K)
Water-Soluble vitamin (B and C)
- 34- What are water soluble vitamins? Give two examples.**
- Ans:** The vitamins which are dissolved into the water are called water soluble vitamins e.g, vitamins B and vitamin C.
- 35- Write down the four sources of vitamin A.** (3 Times)
- Ans:** Sources of vitamin A.
- (i) Leafy vegetable (spinach, carrots)
 - (ii) Yellow fruits
 - (iii) Fish liver
 - (iv) Egg, milk, butter
- 36- What is the function of vitamin C in body?** (1 Time)
- Ans:** Vitamins C in white blood cells enables the immune sytem to function properly. It is needed to form the collagen (a fibrous protein) that gives strength to connective tissues.
- 37- Write down the sources of Vitamin C and which are deficiency symptoms of it?** (5 times)
- Ans:** We get vitamin C from citrus fruits (e.g, oranges, lemons and grape fruit). Leafy green vegetables, liver etc. Its deficiency causes disease. i.e. scurvy. symptoms of scurvy include muscle and joint pain, swollen and bleeding gums, dry skin etc.

38- What is scurvy? Write down its symptoms?/ Describe deficiency of vitamin C. (4 Times)

Ans: Scurvy is a disease due to lack of vitamin C. In this condition synthesize collagen is unstable. Symptoms of scurvy includes muscle and joint pain, slow wounds healing.

39- What is the function of vitamin D? (1 times)

Ans: The best known function of vitamins D is to help regulate the blood levels of calcium and phosphorous. It increases the absorption of these minerals from intestine and their deposition on bones.

40- Enlist four sources of Vitamin D.

Ans: Sources of vitamin D:

Fish liver oil, milk, ghee (butter), synthesized by skin.

41- Write Sources and Deficiency symptoms of Vitamin D? (2 times)

Ans: Sources of vitamin D: Fish liver oil, Milk, ghee and butter, synthesized by skin.

Deficiency symptoms of vitamin D: Rickets in children, osteomalacia in adults.

42- What type of diseases occur due to the deficiency of vitamin D? (2 times)

Ans: Due to deficiency of vitamin D there is a disease called rickets in children in which bones weakens and osteomalacia in which increases risk of fracture in bones.

43- From which sources of vitamin A and vitamin D are obtained?

Ans: Sources of vitamin A: Leafy vegetables, yellow fruits, fish, liver, egg, milk and Butter.

Sources of vitamin D: Fish liver oil, Milk, Ghee and Butter, synthesized by skin.

44- Differentiate between fat soluble and water soluble vitamins.

Ans: Vitamins which are soluble in fats called fat soluble vitamins. e.g vitamin A, D, E and K. While the vitamins which are soluble in water called water soluble vitamins. e.g vitamin B and C.

45- Write down the names of diseases caused by the deficiency of Vitamin A.

Ans: i. Night blindness ii. Hyperkeratosis

iii. Keratomalacia iv. Dry skin

46- Write components of Human food.

Ans: i. carbohydrates ii. Lipids iii. Proteins iv. Minerals v. Vitamins

47- What are the source of iron in human body?

Ans: Human gets iron form red meat, egg yolk, whole wheat, fish, spinach, mustard etc.

48- What is the role of calcium & potassium in human body?

Ans: Calcium: Development and maintenance of bones and teeth, blood clotting.

Potassium: Fluid balance in the body, Acts as a co - factor for enzymes.

49- Write down any two symptoms of deficiency of Vitamin A.

Ans: (i) Poor growth (ii) Blindness (iii) Dry skin.

8.2.1. EFFECTS OF WATER AND DIETARY FIBER:

50- Write down the importance of water for human./ How water is important in our diet? (2 times)

Ans: 1- Approximately 60% of the adult human body is composed of water.

2- Nearly all life sustaining chemical reactions require an aqueous environment.

51- Define dehydration.

Ans: It is the process of loss of water.

52- What is meant by dietary fibers? / What is role of dietary fibers? (3 Times)

Ans: Dietary fiber is the part of human food that is indigestible. It is found only in plant foods and it moves undigested through stomach and small intestine and into colon.

53- Write down any two advantages of fibrous food.

Ans: (i) It helps in constipation. (ii) It helps in lowering cholesterol levels.

54- Why full grain bread is better than white bread?

Ans: Because grain bread or wheat bread is the part of the dietary fibers.

55- Differentiate between insoluble and soluble dietary fibers. / What important function performed by soluble fibers. (5 Times)

Ans:

Insoluble dietary fibers	Soluble dietary fibers
They travels quickly through small intestine	They breaks down as it passes through alimentary canal.
Its sources are wheat bran, cereals and skin of many fruits and vegetables.	2- Its sources are oats, beans, barley and many fruits and vegetables.

56. **What is a dietary fiber? Give its sources.** (2 times)
 Ans: Dietary fibre (also known as roughage) is the part of human food that is indigestible. The sources of insoluble dietary are wheat bran, cereals and skins of many fruits and vegetables while the sources of soluble dietary fibre are Oats, beans, barley and many fruits and vegetable.
57. **Write the sources of soluble dietary fibres?**
 Ans: The sources of soluble dietary fibres are oats, beans, barley and many fruits and vegetables.

8.2.2. BALANCED DIET:

- 58- **Define balance diet.** (3 Times)
 Ans: A balanced diet may be defined as the one which contains all the essential nutrients in correct proportion for the normal growth and development of body.

8.2.3. PROBLEM RELATED TO NUTRITION (MALNUTRITION):

- 59- **Define malnutrition.** (2 Times)
 Ans: The problems related to the nutrition are grouped as malnutrition. It is also referred to under nutrition resulting from inadequate consumption, poor absorption or excessive loss of nutrients.

- 60- **What is under nutrition? Give an example.** (1 times)
 Ans: It means that inadequate consumption, poor absorption or exercises loss of nutrients called under nutrition. e.g. children with marasmus show poor growth and look small for their age.

- 61- **Define starvation.** (1 Time)
 Ans: Starvation is a severe reduction in nutrients and energy intake and is the most horrible effect of malnutrition.

- 62- **Write down the major causes of over nutrients.**
 Ans: (i) It causes reduction in daily physical activity.
 (ii) High intake of carbohydrates and fats leads to obesity, diabetes and cardiovascular diseases.

- 63- **What are common forms of malnutrition?**
 Ans: (A) Protein deficiency (i) Kwashiorkor (ii) Marasmus
 (B) Mineral deficiency (i) Goiter (ii) Anemia

- 64- **What is kwashiorkor? Or Write down a few lines on a disease Kwashiorkor. What are the causes and symptom of Kwashiorkor.** (2 Times)
 Ans: Kwashiorkor is disease occurs due to protein deficiency at the age about 12 months when breast feeding is discontinued. It can also develop at any time during a child's growing years children may grow to normal height but are abnormally thin.

65. **What do you know about Marasmus?** (6 times)
 Ans: Marasmus is a disease usually developed between the age six months and one year patient lose all their body fat and muscle strength and acquire a skeletal appearance. Children with marasmus show poor growth and look small for age.

66. **Write the symptoms of goiter and Anemia.** (2 times)
 Ans: If sufficient iodine is not available in a person diet thyroid gland become enlarged and cause swelling in Neck.
 If body fails to receive amount of iron adequate no of hemoglobin, molecules are not formed. Then the patient is weak and there is a shortage of oxygen supply.

67. **Write down the name of two diseases caused by minerals deficiency.**
 Ans: 1- Goiter 2- Anemia.

68. **What is goiter? What are its causes?/ Describe the reason of disease Goiter. Also write its effects on body. /Write the symptoms and causes of Goiter.** (4 Times)
 Ans: Goiter is condition caused by an insufficient amount of iodine in diet. Iodine used by the thyroid gland to produce hormones that control the body's normal functioning and growth. If sufficient iodine is not available in a person's diet thyroid gland becomes enlarged and it results in swelling in neck.

69. **Give causes of obesity. / What is mean obesity.**
 Ans: Causes: Insufficient amount of iodine in diet. Iodine used by the thyroid gland to produce hormones that control the body's normal functioning and growth. If sufficient iodine is not available in a person's diet thyroid gland becomes enlarged and it results in swelling in neck.

- Ans: Obesity may due to malnutrition people who take food that contains energy more than their requirements and do very little physical work can be obese. (2 Times)
70. **What is famine? What is the major cause of famine?** (2 Times)
- Ans: It is a severe reduction in nutrient and energy intake and is the most horrible effect of malnutrition.
The major causes of famines are unequal distribution of food, drought, flooding and increasing population.
71. **Write down decades of Ethiopian and North Korean famine.**
- Ans: **Ethiopian Famine Decade: 1983 -- 1985**
North Korean Famine Decade: 1990s
72. **What is drought? Write down any of its two demerits.** (1 Time)
- Ans: (i) A drought is a period of time when there is not enough water to support agricultural and human needs.
(ii) Drought decrease or even stop the crop yield.
(iii) Drought results in famine.
73. **What is world food program (WFP)? Write its function.** (2 times)
- Ans: **WFP:** The world food program is the food aid branch of the United Nations.
Function: It is the world's largest agency providing food to more than 90 million people in 80 countries.
74. **Write the names of two diseases caused by mineral deficiency.**
- Ans: i. Goiter ii. Anemia
75. **What is protein energy Malnutrition?**
- Ans: Protein energy malnutrition means inadequate availability or absorption of energy and proteins in the body. It may lead to diseases such as Kwashiorkor and Marasmus.
76. **Write two drawbacks of use of caffeine?**
- Ans: The caffeine present in colas increases the heart rate and raises blood pressure.
77. **Write two causes of obesity.**
- Ans: People who take food that contains energy more than their requirement and do very little physical work can become obese.

8.3. DIGESTION IN HUMAN:

78. **Differentiate between Assimilation and Absorption.** (2 times)
- Ans: **Assimilation:** It is the conversion of simple food into complex substances.
Absorption: It is the diffusion of digested food into blood and lymph.
79. **Differentiate between Digestion and Defecation./ What is digestion?** (2 times)
- Ans: The process of breaking up complex substances into simple substances is called digestion.
Elimination of undigested food from the body called defecation.
80. **Define ingestion.** (5 times)
- Ingestion:** The process of taking in food.

8.3.1. HUMAN ALIMENTARY CANAL:

81. **Name the part of Human Alimentary Canal.**
- Ans: Oral cavity, pharynx, esophagus, stomachs, small intestine, large intestine, salivary glands.
82. **What is oral cavity? Write its two functions.** (2 times)
- Ans: It is the space behind the mouth and has many vital functions in digestion of food.
Functions:
i. Food selection ii. Mastication
83. **Define mastication.**
- Ans: **Mastication:** The grinding of food by teeth in oral cavity is called mastication or chewing.
84. **Difference between bolus and chyme. / Define Bolus./ how is bolus formed?** (8 times)
- Ans: **Define chime.**
Bolus: During the process chewing, lubrication and semi-digestion, the pieces of food are rolled up by the tongue into small, slippery and spherical mass called bolus.
Chyme: The starch in our bite and the protein in mutton have been partially digested and the food has been converted into soup like mixture called chyme.

85. **Define Churning. / Write two function of churning.** (3 times)
 Ans: The walls of stomach contract and relax and these movements help in through mixing of gastric juice and food. This action also produces heat which helps to melt the lipid content of food.
86. **What is sphincter? Describe its types.** (2 times)
 Ans: These are the openings of stomach which are guarded by muscles. Types are cardiac sphincter, pyloric sphincter.
 It helps in the digestion of lipids through emulsification.
87. **Which sphincters play role in the movement of food in and out of stomach?**
 Ans: 1- Cardiac sphincter 2- Pyloric sphincter
88. **What is the effect of HCl on Pepsin? / Difference between pepsinogen and pepsin.**
 Ans: HCl effect on pepsin: In stomach pepsin is released in its inactive form pepsinogen, HCl converts the inactive pepsinogens into its active form i.e. pepsin. HCl makes pepsin active to digest the protein portion of food.
89. **Describe the function of Pepsin in Stomach.** (2 times)
 Ans: Pepsin is a powerful protein digesting enzyme.
90. **What is gastrin?**
 Ans: Some cells of stomach walls release a hormone called gastrin. It stimulates the gastric glands of stomach to secrete gastric juice.
91. **What is gastric Juice? Name the enzyme present in gastric juice. / Write a note gastric gland.** (2 Times)
 Ans: In stomach gastric glands secrete gastric juice, contains mucous, hydrochloric acid and protein digesting enzyme pepsinogen.
92. **Define peristalsis. / What do you mean peristalsis.** (5 Times)
 Ans: Peristalsis is defined as the waves of contraction and relaxation in smooth muscles of Alimentary canal walls. Peristalsis move food from oral cavity to rectum.
93. **Write the names of two juices secreted in small intestine of man.**
 Ans: Pancreatic juice, intestinal juice.
94. **Give the role of bile in digestion.**
 Ans: Bile from liver help in digestion of lipids through emulsification by keeping lipid droplets separate from another.
95. **What are bile pigments?**
 Ans: Bile contains pigments that are the by-products of red blood cell destruction in liver; these bile pigments are eliminated from body with faeces.
96. **Write three parts of large intestine.**
 Ans: Caecum, Colon and rectum.
97. **Give two functions of large intestine.** (2 times)
 Ans: (i) Elimination of faeces. (ii) Absorption of water and salt.
98. **What type of bacteria live in colon?**
 Ans: Many bacteria live in colon. They produce vitamin K, which is necessary for the coagulations of blood.
99. **What is appendix?** (4 times)
 Ans: A non-functional finger like process called appendix arises from the blind end of caecum. Inflammation of appendix due to infection causes severe pain.
100. **What is stomach? Where does it locate?**
 Ans: Stomach is dilated part of alimentary canal. It is J-shaped, located in the left of abdomen, just beneath diaphragm.
101. **What is meant by Villi? Write down its function.**
 Ans: There are circular folds in the inner walls of ileum. These folds have numerous finger like projections called villi. Villi increase the surface area of the inner walls and it helps a lot in the absorption of digested food.
102. **What is gastric juice? Also write down its chemical composition. / Name of enzymes present in gastric juice.** (2 times)
 Ans: When food enters the stomach, the gastric glands found in the stomach wall are stimulated to secrete gastric juice. Gastric Juice is composed chiefly of mucous, Hydrochloric acid, and a protein digesting enzyme pepsinogen.
103. **Write the role of duodenum in small intestine.**

Ans: Duodenum comprises of the first to inches (25 cm) of small intestine and it is the part of alimentary canal when most of the digestive process occurs. These foods is further mixed with three different secretions.

104. What is meant by cardiac and pyloric sphincter? (2 times)

Ans: Stomach has two sphincters. Cardiac sphincters are between stomach and esophagus while pyloric sphincter is between stomach and small intestine. Bolus enters stomach from esophagus through cardiac sphincter.

105. What is Gall bladder? Give it's function.

Ans: A pear shaped greenish yellow sac i.e., gall bladder lies along the right lobe of liver on ventral side.

Liver secretes bile, which is stored in gall bladder. When gallbladder contracts, bile is released into duodenum through common bile duct.

106. Why pepsin does not digest stomach wall?

Ans: Pepsin is a powerful protein digesting enzyme. Pepsin does not digest the stomach walls because pepsin is not released in its active form. Rather it is secreted as inactive pepsinogen, which requires HCl for activation. The mucous of gastric Juice forms a thick coating over the inner walls of stomach and neutralize the HCl there. It makes pepsinogen difficult to be activated and to attack stomach walls.

107. Write benefit of Mastication.

Ans: The second function of oral cavity is the grinding of food by teeth is called Mastication. This is useful because oesophagus can pass only small pieces. Enzymes can also not act on large pieces of food. They require small pieces with large surface area to attack.

108. What is Gastric Juice? Write down its chemical composition.

Ans: When food enters stomach, the gastric glands found in the stomach walls are stimulated to secrete gastric Juice. Gastric Juice is composed of Mucous, Hydrochloric acid, and a protein digesting enzyme pepsinogen.

109. What is the length of Aesophagus in human?

Ans: Length of aesophagus is about 25 cm long.

8.3.2. ROLE OF LIVER:

110. Which is the largest gland of human body and where it is located?

Ans: Liver is the largest gland of human body. It lies beneath the diaphragm on the right hand side of abdomen.

111. Write any two functions of liver. (2 times)

Ans: 1. Digestion 2. Deamination 3. Converts ammonia into urea.

112. Describe any two functions of liver beside digestion. (2 Times)

Ans: It destroys the old red blood cells. It converts ammonia to less toxic form urea.

113. What is Liver? How does it weight in an adult human? What is largest gland in human? / Write the weight and size of liver in adult human.

Ans: Liver is the largest gland of body. It is multi lobed and dark reddish in appearance. It lies beneath the diaphragm on the right side of abdomen. In an adult human, it weighs about 1.5 kg and is the size of football.

8.4. DISORDERS OF GUT:

114. What is constipation? How can it be treated? (1 Time)

Ans: Constipation is condition where a person experiences hard faeces that are difficult to eliminate.

Treatment: Treatment of constipation is with a change in dietary and exercise habits. The medicine called laxatives (e.g. paraffin) are used for treatment.

115. Give symptoms of constipation.

Ans: Symptoms of constipation are hard faeces that are difficult to eliminate.

116. What are the main causes of constipation? (2 times)

Ans: Excessive absorption of water through colon, insufficient intake of dietary fiber, dehydration, use of medicine and tumours in rectum or anus.

117. Write down two types of stomach ulcer.

Ans: Peptic Ulcer, gastric ulcer

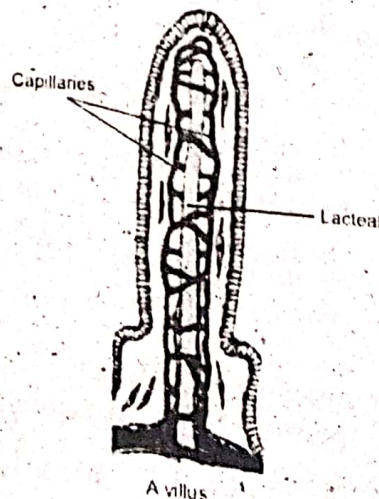
118. What is peptic ulcer?

Ans: Ulcer or peptic ulcer is a sore in the inner wall of gut (in oesophagus, duodenum or stomach).

- 119. What is ulcer? What are its causes?** (2 times)
Ans: Ulcer is a sore in the inner wall of gut (in aoesphagus, duodenum, or stomach). The causes of ulcer includes excess acid, infection, long term use of anti-inflammatory medicines, smoking, drinking coffee, coals and eating spicy foods.
- 120. What is Diarrhoea? Write its symptoms also?**
Ans: Diarrhea is a condition in which the sufferer has frequent watery, loose bowel movements. This condition may be accompanied by abdominal pain, nausea, and vomiting. It occurs when required water is not absorbed in blood from colon.
- 121. Enlist preventive measures to save from ulcer. / How is ulcer treated?**
Ans: Ulcer is treated with medicines, which neutralize the acidic effects of gastric juice. Spicy, acidic foods and smoking should be avoided as preventive measures.
- 122. Write the symptoms of ulcer.** (2 times)
Ans: The signs and symptoms of ulcer include abdominal burning after meals or at midnight. Server after an episode of regurgitation, nausea, loss of appetite and weight loss.
- 123. What is anemia? Write two symptoms.**
Ans: The term anemia literally means "a lack of blood". If body fails to receive sufficient amount of iron, adequate number of hemoglobin molecules are not formed. In this case, these are not enough functioning of red blood cells. The patient is weak and there are shortage of oxygen supply to body's cells.
- 124. Write name of two disease of GUT.**
Ans: 1. Diarrhea 2. Constipation 3. Ulcer
- 125. What is gastric ulcer? Write its causes.**
Ans: Ulcer of stomach is called gastric ulcer. The causes of ulcer include excess acid, infection, long term use of anti-inflammatory medicines, smoking, drinking coffee, colas and eating spicy foods.

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- 126. Draw and label structure of villus.**
Ans:



- 127. Write any two disorders of gut.**
Ans: (i) Ulcer (ii) Diarrhoea (iii) Constipation
- 128. Write weight and size of liver in adult human.**
Ans: It weighs about 1.5 kg and is the size of a football.
- 129. Write down symptoms and treatment of ulcer.**
Ans: **Symptoms:** Signs and symptoms of ulcer includes abdominal burning after meal or at midnight. Sever ulcer may cause abdominal pain, nausea, loss of appetite, and weight loss.
Treatment: Ulcer is treated with medicines, which neutralize the acidic affects of gastric juice.

Conceptual Short Questions

- 1- **Why plants show abnormalities?**
 Ans: Plants require essential nutrients for the growth. In the absence of the any type of nutrient plant show abnormalities i.e Oxygen, -Nitrogen.
- 2- **Why proteins are the main structural component?**
 Ans: Because proteins are the main constituent of cell membranes, Muscles Ligaments and tendons.
- 3- **How we can prevent Hyper-tension?**
 Ans: A good Calcium Nutrition with along low salt and high potassium intake, prevents from hypertension.
- 4- **Why level of water soluble vitamins decreases quickly?**
 Ans: Because water-soluble vitamins can be destroyed with heating quickly and can be excreted from the body quickly as compared to fat-soluble vitamins.
- 5- **Why HCl is necessary in stomach?**
 Ans: HCl converts the inactive enzyme pepsinogen into its active form pepsin. HCl also kills microorganisms in food.
- 6- **Where vitamins K is produced?**
 Ans: Many Bacteria live in colon of large intestine. They produce vitamin K for Coagulation of blood when necessary.
- 7- **What is eutrophication? What is its effect on earth?/ Define Eutrophication.**
 Ans: Eutrophication is defined as increase in chemical nutrient in an ecosystem. The extra amount of chemical nutrients may cause of increase the soil acidity.
- 8- **What are the health risks if we take more saturated fatty acids in our diet?**
 Ans: Saturated fatty acids can increase a person's cholesterol level. An increased cholesterol level may eventually result in clogging of arteries and heart diseases. (2 times)
- 9- **How the deficiency of vitamin A causes blindness?**
 Ans: When vitamin A is inadequate, the lack of rhodopsin makes it difficult to see in dim light. If it is left untreated it can cause blindness. (3 times)
- 10- **Write effects of carbonated soft drinks.**
 Ans: Soft drinks are very acidic and make our bodies poor in oxygen. They contain phosphoric acid which dissolves calcium out of the bones. This results in bone weakening. The caffeine present in colas increases the heart rate and rises blood pressure.

Section II(TOPIC WISE)(Extensive Questions)

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8.1	MINERAL NUTRITION IN PLANTS:	
1	Describe the important of fertilizer	5 times
8.2	COMPONENTS OF HUMAN FOOD:	
2	What is the function of carbohydrate and protein in human diet?	1 time
3	Give significance of iron, iodine and fluoride in Human diet	1 time
4	Explain role of calcium and iron in animals/human.	2 times
5	Write the role of Vitamin A, B and C in human diet.	1 time
6	Write about the importance of any two vitamins in human body.	1 time
8.2.1	EFFECTS OF WATER AND DIETARY FIBER:	
7	Write a short note on dietary Fiber	3 times
8.2.3	PROBLEM RELATED TO NUTRITION (MALNUTRITION)	
8	Describe the effects of malnutrition.	2 times
9	Explain protein-energy malnutrition	1 time
10	Explain diseases caused by mineral deficiency.	1 time

CHAPTER-9 (TOPIC WISE MCQ'S)

BOARD PAPERS- 2014-2022

9.1. TRANSPORT IN PLANTS:

1. Transport of water and soluble materials from roots to the aerial parts is done by: (3 times)

- (A) Phloem tissues (B) Xylem tissues (C) Stomal tissues (D) Both A & B

9.1.2. TRANSPIRATION:

2. The water lost percent by Transpiration is:

- (A) 80 % (B) 30 % (C) 90 % (D) 40 %

3. Transpiration rate depends upon

- (A) Leaf surface area (B) water content (C) temperature (D) all of these

4. In which tissues guard cells are found

- (A) mesophyll (B) xylem (C) epidermal (D) phloem

5. Stomata close when guard cells:

- (A) Lose water (B) gain chloride ions (C) become turgid (D) gain potassium ions

6. Outside the conducting tissues there is a narrow layer of thin walled cells, which is called:

- (A) Pericycle (B) Endodermis (C) Xylem (D) Phloem

7. Amount of Water lost via Transpiration is;

- (A) 95 % (B) 90 % (C) 85 % (D) 80 %

8. Rate of transpiration decreases by the increase of.

- (A) temperature (B) Air movement (C) air humidity (D) Leaf surface area

9. Guard cells belong to:

- (A) Pericycle (B) Stomata (C) Cortex (D) Endodermis

10. The transpiration as regulated by.

- (A) mesophyll cells (B) guard cells (C) xylem cells (D) phloem cells

11. Temperature that causes closure of stomata?

- (A) 10°C - 15°C (B) 20°C - 25°C (C) 30°C - 35°C (D) 40°C - 45°C

12. Guard Cells are part of:

- (A) Cortex (B) Stomata (C) Endodermis (D) Pericycle

13. Most of the transpiration occurs through:

- (A) Stomata (B) Mesophyll (C) Cuticle (D) Lenticels

14. The loss of water from plant surface through evaporation is called:

- (A) Guttation (B) Transportation (C) Transpiration (D) Transduction

15. Some plants open their Stomata during night when water stress is:

- (A) more (B) less (C) equal (D) no

9.1.3. TRANSPORT OF WATER:

16. The force which carries water upward through Xylem in plant is called:

- (A) Osmosis (B) Turgor (C) Transpiration (D) Transpiration Pull

17. Severe deficiency of water in plants is called as

- (A) Desiccation (B) Respiration (C) Transpiration (D) Nutrition

18. A single layer of cells which surrounds the pericycle is called:

- (A) Cortex (B) Endodermis (C) Xylem (D) Phloem

19. The broad-zone present external to endodermis is called:

- (A) Cortex (B) Pericycle (C) Root hair (D) Xylem

9.1.4. TRANSPORT OF FOOD:

20. Which part of plant is responsible for transport of food?

- (A) Xylem (B) Phloem (C) Root (D) Leaf

21. In phloem movement of food is _____ way

- (A) Four way (B) three way (C) two way (D) one way

9.2.1. BLOOD:

22. How much water makes the part of plasma.

- (A) 90 - 92 % (B) 90 - 91 % (C) 90 - 80 % (D) 90 - 70 %

23. **Proteins make percentage by weight of plasma:**
 (A) 7-12% (B) 7-18% (C) 7-9% (D) 7-21--%
24. **An average volume of blood in adult body is about. (6 times)**
 (A) 5 litres (B) 10 litres (C) 15 litres (D) 20 litres
25. **The normal PH of blood is: (2 Times)**
 (A) 7.3 (B) 7.4 (C) 7.5 (D) 7.6
26. **Which protein is blood clotting? (4 times)**
 (A) Albumin (B) fibrinogen (C) globulin (D) hemoglobin
27. **A Cubic millimeter of blood contains Red blood cells in males.**
 (A) 5 to 5.5 million (B) 4 to 4.5 millions (C) 6 to 6.5 million (D) 2 to 3 millions
28. **The life of red blood cells is _____ days. (4 times)**
 (A) 120 (B) 122 (C) 124 (D) 126
29. **During embryonic development red blood cells are produced in:**
 (A) Sternum (B) Spleen (C) Ribs (D) Vertebrae
30. _____ are the most numerous in healthy human blood:
 (A) red blood cells (B) white blood cells (C) platelets (D) monocyte
31. **Which cell play role in body defence?**
 (A) Erythrocytes (B) Thrombocytes (C) Basophils (D) Leukocytes
32. **Which of these are responsible for blood clotting? (4 times)**
 (A) Platelets (B) Erythrocytes (C) Neutrophils (D) Basophils
33. **One cubic millimeter of blood contains platelets.**
 (A) 240,000 (B) 250,000 (C) 260,000 (D) 270,000
34. **The function of Platelets is:**
 (A) Blood clotting (B) Engulfing the Bacteria
 (C) To produce anti bodies (D) To produce antigen
35. **In dengue fever, which cells are shorten?**
 (A) R.B.C (B) Platelets (C) W.B.C (D) None
36. **Blood cancer is: (1 Time)**
 (A) Thalassaemia (B) Pneumonia (C) Leukaemia (D) Arthritis
37. **Which is the hereditary disease?**
 (A) Malaria (B) Typhoid (C) Leukaemia (D) Thalassaemia
38. **Who discovered ABO blood group system? (2 times)**
 (A) Karl Landsteiner (B) Lamark (C) Rudolfvirchow (D) Malvin Calvin
39. **Which one of the following blood groups is universal donar? (5 times)**
 (A) A (B) O (C) AB (D) B
40. **"AB" blood group individuals are called:**
 (A) Sickle cells (B) Universal donors (C) Universal Recipients (D) Necrosis
41. **A person with AB blood group can denote blood to which blood group:**
 (A) A (B) B (C) AB (D) O
42. **When blood cells are removed from blood, remaining part is:**
 (A) plasma (B) serum (C) protein (D) water
43. **Salts make up plasma by weight:**
 (A) 0.6% (B) 0.8% (C) 0.7% (D) 0.9%
44. **The Universal Recipient has Antigen.**
 (A) A (B) B (C) Rh (D) A&B
45. **Plasma protein which keeps balance of water in blood is:**
 (A) Fibrinogen (B) albumin (C) antibodies (D) Fibrin
46. ----- prevents blood clotting.
 (A) Basophils (B) Neutrophils (C) Eosinophil's (D) Monocytes
47. **Blood cells involved in blood clotting:**
 (A) red blood cells (B) white blood cells (C) plasma (D) platelets
48. **The universal recipient individuals have blood group: (2 times)**
 (A) AB (B) O (C) B (D) A
49. **A person having none of the antigen A and B has blood group.**
 (A) "B" (B) "AB" (C) "O" (D) "A"
50. **The production of great number of immature and abnormal white blood cell disease is knows as:**
 (A) Thalassaema (B) Haemophilla (C) Leukaemia (D) Myocardial infarcation

51- The protein which maintains the water balance of blood is:

- (A) Fibrinogen (B) Albumin (C) Haemoglobin (D) Globulin

52- The Average Life Span of Platelets is:

- (A) 1--2 Days (B) 4--5 Days (C) 10--12 Days (D) 7 -- 8 Days

53- Volume of plasma in the blood is:

- (A) 40 % (B) 45 % (C) 55 % (D) 60 %

9.2.2. HUMAN HEART:

54. In normal adult human, the weight of heart.

- (A) 200-250gram (B) 150-200gram (C) 250-350gram (D) 100-200Gram

55. An healthy woman's heart beat rate per minute is:

- (A) 70 (B) 75 (C) 72 (D) 80

56. The heart rate of healthy person is:

- (A) 70 beats/min (B) 75 beats/min (C) 80 beats/min (D) 85 beat/min

57. Which chamber has the thicker wall in human heart?

- (A) Right atrium (B) left atrium (C) right ventricle (D) left ventricle

58. When does our heart rest?

- (A) at night (B) during sitting (C) never (D) during sleep

59. In one heart beat, diastole remains about seconds.

- (A) 0.6 (B) 0.8 (C) 0.4 (D) 0.7

60. Lub-dubb can be heard with the help of _____

- (A) telescope (B) microscope (C) stethoscope (D) sound box

61- Human Heart is enclosed In Double Membranous sac called:

- (A) Pleura (B) Pericardium (C) Peritonium (D) Pericaro

62- The scientist who discovered the pumping action of heart was:

- (A) Linnaeus (B) William Harvey (C) Robert Brown (D) Schwan

63- In one heart beat, atrial systole remains about _____ second.

- (A) 0.4 (B) 0.3 (C) 0.2 (D) 0.1

64- The opening between right atrium and right ventricle is guarded by:

- (A) Tricuspid valve (B) Bicuspid valve
(C) Pulmonary semilunar valve (D) Aortic semilunar valve

65- Ventricular systole lasts about in:

- (A) 0.1 sec (B) 0.2 sec (C) 0.3 sec (D) 0.4 sec

9.2.3. BLOOD VESSELS:

66. The Blood vessels that carry blood away from heart.

- (A) Arteries (B) Veins (C) Capillaries (D) Lymph

67. These are smallest blood vessels:

- (A) Arteries (B) capillaries (C) veins (D) lymph vessels

68- Blood pressure in Veins is:

- (A) High (B) Very high (C) Medium (D) Low

69- The largest artery is called.

- (A) Renal artery (B) Hepatic artery (C) intercostal (D) Aorta

70- A blood vessel that carries blood towards heart is called:

- (A) arteries (B) capillaries (C) arteriols (D) veins

71- An artery that supplies blood to liver:

- (A) Renal artery (B) Femoral artery (C) Hepatic artery (D) Coronary artery

72- The capillaries are thick equal to _____ cell / cells.

- (A) one (B) two (C) three (D) four

9.2.4. GENERAL PLAN OF HUMAN BLOOD CIRCULATORY SYSTEM:

73. Pumping action of heart was discovered by.

- (A) Kelvin (B) Email Fisher (C) William Harvey (D) Robert Hooke

74. Hepatic portal vein carries blood from. (1 Time)
 (A) Small intestine to liver (B) Small intestine to heart
 (C) Liver to heart (D) Small intestine to colon.

9.3. CARDIOVASCULAR DISORDERS:

75. Myocardium means: (5 times)
 (A) Death of tissues (B) muscles of heart (C) ambulus (D) chyme
76. Death of heart tissues is called: (3 Times)
 (A) Arteriosclerosis (B) Atherosclerosis (C) Thalassemia (D) Myocardial infarction
77. World heart day is celebrated on: (2 times)
 (A) 28 May (B) 28 September (C) 23 March (D) 30 December
78. Which disease causes more deaths in the world?
 (A) malaria (B) AIDS (C) Cancer (D) Heart Attack.
- 79- Myocardial infarction means:
 (A) Thrombus (B) Embolus (C) Embolus (D) Tissue death
- 80- About what percentage of our population is diabetic?
 (A) 10% (B) 12% (C) 25% (D) 33%
- 81- Angina pectoris is what type of pain?
 (A) Kidney pain (B) Lungs pain (C) Gastric pain (D) Chest pain

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- 82- Salts make up _____ of plasma by weight.
 (A) 0.9% (B) 1.0% (C) 0.8% (D) 1.1%
- 83- In most plants food is transported in the form of:
 (A) Glucose (B) Sucrose (C) Fructose (D) Maltose
- 84- Root hairs belong to.
 (A) Pericycle cell (B) Stomatal cell (C) Epidermal cell (D) Cortical cell

Answers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B	C	D	C	A	A	B	C	B	B	D	B	A	C	B
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
D	A	B	A	B	C	A	C	A	B	B	A	A	B	A
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
D	A	B	A	B	C	D	A	B	C	C	A	D	D	B
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A	D	A	C	C	B	D	C	C	B	A	D	C	C	C
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
B	B	D	A	C	A	B	D	D	D	C	A	C	A	B
76	77	78	79	80	81	82	83	84						
D	B	D	D	A	D	A	B	C						

Chapter No. 9: Exercise (MCQ's)

- In most plants, food is transported in the form of:
 (a) Glucose (b) Sucrose (c) Starch (d) Proteins
- Stomata close when guard cells:
 (a) Lose water (b) Gain chloride ions (c) Become turgid (d) Gain potassium ions
- Trace the pathway of water from soil through the plant to atmosphere.
 (a) Endodermis, cortex, epidermis, xylem, intercellular spaces in mesophyll, stomata
 (b) Epidermis, endodermis, phloem, cortex of leaf, intercellular spaces of mesophyll, stomata
 (c) Root hairs, epidermis, cortex, xylem, endodermis, intercellular spaces in mesophyll, Stomata
 (d) Root hairs, cortex, endodermis, xylem, intercellular spaces in mesophyll, stomata

4. When fibrinogen makes blood clot it separates from blood and the remainder is called:
 (a) Plasma (b) Lymph (c) Serum (d) Puss
5. What is correct about human red blood cells?
 (a) Have limited life span (b) Are capable of phagocytosis
 (c) Produce antibodies (d) Are multinucleate
6. Which of the following tissue layer is found in all blood vessels?
 (a) Smooth muscle (b) Endothelium (c) Skeletal muscle (d) Connective tissue
7. When do the atria contract?
 (a) Before diastole (b) After systole (c) During diastole (d) During systole
8. Which of the following contains deoxygenated blood in an adult human?
 (a) Left atrium (b) Pulmonary artery (c) Pulmonary vein (d) All of the above
9. Which of the following chambers has the thickest walls in human heart?
 (a) Right atrium (b) Left atrium (c) Left ventricle (d) Right ventricle
10. Which of these statements is correct about circulatory system?
 (a) It transports hormones (b) Capillaries have thicker walls than veins
 (c) Systemic circulation carries blood to and from the lunge (d) All are true
11. Exchange of materials between blood and surrounding tissues occurs in:
 (a) Arteries (b) Veins (c) Capillaries (d) All of the above
12. Which of the following is a type of leukocytes?
 (a) Lymphocyte (b) Eosinophil (c) Monocyte (d) All of the above
13. Which of the following is a function of human blood?
 (a) It regulates body temperature (b) It transports wastes
 (c) It provides defence (d) All of the above
14. Valves to prevent the backflow of blood are found in:
 (a) Arteries (b) Veins (c) Capillaries (d) All of the above
15. Plasma is made up of water and _____
 (a) metabolites and wastes (b) Salts and ions
 (c) proteins (d) All of the above
16. Which of these are responsible for blood clotting?
 (a) Platelets (b) Erythrocytes (c) Neutrophils (d) Basophils
17. Find the correct path of blood circulation?
 (a) Left, atrium, left, ventricle, lungs, right, atrium, right ventricle, body
 (b) Right atrium, right, ventricle, lungs, left atrium, left ventricle, body
 (c) Left atrium, left ventricle, right atrium, right ventricle, lungs, body
 (d) Right atrium, lungs right ventricle, left atrium, body, left ventricle
18. A patient with blood group A can be given the blood of donor who has:
 (a) Blood group A or B (b) Blood group A or O
 (c) Blood group A only (d) Blood group O only
19. The death of heart tissue is called:
 (a) Atherosclerosis (b) Arteriosclerosis (c) Myocardial infarction (d) Thalassaemia
20. What happens when a mismatched blood group is injected in recipient?
 (a) Antibodies of the recipient's blood destroy donor's RBCs
 (b) Antibodies of the donor's blood breakdown recipient's RBCs
 (c) Both of these can happen
 (d) None of these happens and such transfusion can be safe

CHAPTER NO. 9

1	2	3	4	5	6	7	8	9	10	11	12
B	A	D	C	A	B	D	B	C	A	C	D
13	14	15	16	17	18	19	20				
D	B	D	A	B	B	C	C				

CHAPTER-9 (SHORT QUESTIONS AND ANSWERS) (TOPIC WISE) BOARD PAPERS-2014-2022

9.1. TRANSPORT IN PLANTS:

1. What are conducting "tissues" for food in plants? Write their composition also.

Ans: Phloem tissues are the conducting tissues for food in plants. These tissues are composed of sieve tube cell and companion cells.

2. What is role of xylem and phloem tissues in plant's life? (2 times)

Ans: Xylem tissue is responsible for the transport of water and the dissolved substances from roots to aerial parts. The phloem tissue is responsible for the conduction of dissolved organic matter between different parts of plants body. It contains vessel elements and tracheas.

3. Write the function of root in plant.

Ans: The root provides the support to the plant. The root hairs present at the surface of the root provide large surface area for absorption of water and minerals from root.

4. Write down two characteristics of root hairs. Or Function of root. (2 times)

Ans: Root hairs provides large surface area for absorption of water and minerals. They grow out into the spaces between soil particles where they are in direct contact with water to absorb the water and salts by osmosis, diffusion and active transport.

9.1.2. TRANSPIRATION:

5. What do you meant by transpiration? Explain it. (4 Times)

Ans: Transpiration is the loss of water from plant surface through evaporation. This loss may occur through stomatal in leaves through the cuticle present on leaf epidermis and through special opening called lenticels present in the stem of some plant. Most of transpiration occurs through stomata and is called stomatal transpiration.

6. What is difference between lenticels and stomata?

Ans: Stomata is the small pores which are present the inner surface of leaves. Lenticels are the small pores which are present in stem and branches of leaves.

7. How stomata open and close?

Ans: Most plants keep their stomata open during the day and close them at night. When guard cells get water and become turgid, their shapes are like two beans and the stoma between them opens. When guard cells loose water and become flaccid, their inner sides touch each other and stoma closes.

8. Describe the function of Stomata in Plants. (2 times)

Ans: It is the responsibility of stomata to regulate transpiration via the actions of guard cells.

9. What is transpirational Pull? (5 times)

Ans: Pulling force created by the transpiration that moves water from roots to upper parts of plant.

10. Why transpiration is important for plants? (3 times)

Ans: When water transpire from the surface of plant, it leaves a cooling effect on plant. This is especially important in warmer environment. Moreover, the wet surfaces of leaf cells allow gaseous exchange.

11. Why transpiration is known as necessary evil?

Ans: Transpiration as evil: During the condition of drought loss of water from plant result wilting and death.

Transpiration as necessary: It creates transpiration pull responsible for conduction of water. It leaves a cooling effect to plant.

12. What are the harmful effects of transpiration? (2 times)

Ans: Transpiration may be a harmful process in the sense that during the conditions of drought, loss of water from plant results in serious desiccation, wilting and often death.

13. Which factors affect the rate of transpiration? (1 Time)

Ans: i) Humidity ii) temperature iii) pH

14. What is the effect of temperature on the rate of transpiration? (4 Times)
 Ans: Higher temperature reduces the humidity of surrounding air and also increases the kinetic energy of water molecules. In this way it increases the rate of transpiration. The rate of transpiration doubles with every rise of 10°C in temperature. But very high temperature i.e. 40-45°C causes closure of stomata. So transpiration stops and plant does not lose the much needed water. (2 times)
15. How air humidity affects the transpiration?
 Ans: In humid air, the rate of diffusion of water vapours is reduced and the rate of transpiration is low.
16. Write the role of vascular system in plants.
 Ans: All land plants, have developed complex vascular tissues (xylem and phloem) that move water and food, throughout the plant body.
17. How Transpiration rate affects when air movement changes?
 Ans: Wind carries away the evaporated water from leaves and it causes an increase in the rate of evaporation from the surface of mesophyll. When air is still, the rate of transpiration is reduced.

9.1.3. TRANSPORT OF WATER:

18. What is Cohesion Tension Theory? (5 times)
 Ans: Cohesion-Tension Theory: According to this theory, the force which carries water (dissolved materials) upward through the xylem is transpiration pull. Transpiration creates a pressure difference that pulls water and salts up from roots.
19. What is the difference between cohesion and adhesion?
 Ans: Adhesion: The attachment of water molecules to the inner surface of xylem vessel is called adhesion.
 Cohesion: The mutual attachment of water molecules is called cohesion.

9.1.4. TRANSPORT OF FOOD:

20. How transport of food occurs in plants?
 Ans: Phloem transports synthesized food from the leaves to the rest of the plant body by pressure flow mechanism from source to sink.
21. What is meant by "source" in plants? Explain with an example.
 Ans: Source includes the exporting organs, typically a mature leaf or storage organ.
 Example: A storage organ is capable of storing food and exporting the stored materials. e.g root of beet is a sink in first growing season but becomes source in next growing season when sugars are utilized in the growth of new shoots. (2 times)
22. Define pressure-flow mechanism.
 Ans: In pressure flow mechanism the food is moved from sources to sinks. (5 Times)
23. What is the difference between source and sink?
 Ans: Source: Source include the exporting organs, typically a mature leaf or storage organ.
 Sinks: Sinks are the areas of active metabolism or storage.

9.2. TRANSPORT IN HUMAN:

24. Name two systems of transport in human. (2 times)
 Ans: (i) Blood Circulatory System. (ii) Lymphatic system.
25. Explain transport of food in Human beings.
 Ans: The task of the transport of materials, food in human body is performed by two complex system i.e.
 (a) The blood circulatory system. (b) The lymphatic system.
26. Define blood circulatory system and also write two main components of the human blood circulatory system. (2 Times)
 Ans: The system in which blood circulate in network of arteries, veins and capillaries. The main component of the human blood circulatory system are blood, heart and blood vessels.
27. What do you meant by closed circulatory system? In which animal is it present?
 Ans: A system in which the blood never leaves the network of arteries, veins and capillaries.
 Example: Higher animals like birds reptiles.

9.2.1. BLOOD:

28. What do you meant by blood? Write composition of a healthy man.

Ans: The blood is a specialized body fluid (a connective tissue) that is composed of the liquid called blood plasma and blood cells.

In a healthy person, plasma constitutes about 55% by volume of blood and cells or cell like bodies are about 45% by volume of the blood.

29. What is meant by human blood plasma? (2 Times)

Ans: Blood plasma is pale yellow liquid, component of blood that normally holds the blood cells in whole body contain water, salts, protein make up 55% of body is called plasma of blood.

30. What is fibrinogen? Write down its function.

Ans: Fibrinogen: It is a blood clotting protein in the blood.

Function: It helps in clotting blood

31. Write the names of two proteins present in blood plasma. (2 times)

Ans: Important proteins present in plasma.

i. Fibrinogen: It is blood clotting protein.

ii. Albumin: It maintains the water balance of blood.

32. What is composition of Blood Plasma?

Ans: Composition of blood plasma is consisting of protein, salts, water, metabolites and wastes.

33. How blood is taken from artery? How is plasma separated from blood? (2 times)

Ans: Blood is taken from an artery and an anticoagulant (chemical that inhibits blood clotting) is mixed in it. After five minutes plasma separates from blood cells, which settle down

34. Name different types of blood cells. (2 times)

Ans: 1- Red Blood Cells (Erythrocytes) 2- White Blood Cells (Leukocytes)

3- Platelets (Thrombocytes)

35. What are Red Blood Cells? Write down their number in human beings.

Ans: Red blood cells are called erythrocytes and they have oxygen and also part of hemoglobin. Human body contains 5 million cells per cubic.

36. What is the function of red blood cells?

Ans: About 95% of the cytoplasm of red blood cells is filled with hemoglobin, which transports oxygen and small amount of carbon dioxide. The remaining 5% consists of enzymes, salts and other proteins.

37. How white and Red Blood Cells Differs?

Ans: Red blood cells are like biconcave disc without nucleus, contain hemoglobin. White blood cells are Granular and agranular, contain nucleus, larger in size than RBCs.

38. What is average age of R.B.C?

Ans: Average life span of RBC is four months (120 days) after which it breaks down in liver and spleen.

39. What is the number of White Blood Cells in human beings and what is their function? (1 times)

Ans: White blood cells are called army of body. It defends the body against germs. Normal numbers of WBCs in 1 cubic millimeter of blood contains 7000-8000 WBCs.

40. Write the names of two main types of white blood cells.

Ans: 1- Granulocytes 2- Agranulocytes

41. Write the functions of white blood cells. Or "What is the function of leukocytes? (2 Times)

Ans: Functions of WBCs:

(i) Their function as main agents in body's defense system.

(ii) Destroy small particles by phagocytosis. (Neutrophils)

(iii) Break inflammatory substances and kill parasites (Eosinophils)

(iv) Prevent blood clotting (Basophils)

42. Write the function of T and B lymphocytes.

Ans: B and T lymphocytes produce antibodies and kill germs.

43. Differentiate between Eosinophils and Basophils.

Eosinophils	Basophils
These can break inflammatory substances and kill parasites.	These can prevent blood clotting.

44. What are Thrombocytes / Platelets? Describe their functions / number.

- Ans: **Thrombocytes:** Thrombocytes or platelets are not cells but are fragments of large cells of bone marrow called megakaryocytes. They do not have any nucleus and any pigment.
Number: one cubic millimeter of blood contains 250,000 platelets.
Function: Platelets help in blood clotting. The clot serves as a temporary seal at the damaged area.
45. **What is the number of platelets in blood and what is their function? (3 times)**
 Ans: One cubic millimeter of blood contains 250,000 platelets.
Function: Platelets help in blood clotting. The clot serves as a temporary seal at the damaged area.
46. **What do you mean by pus? / How Pus is formed? / You see pus at the site of infection, how is it formed (3 times)**
 Ans: **Pus:** Pus is whitish watery fluid which is produced at a site of infection. WBCs die in the process of killing the germs. These dead cells accumulate at the site of infection and make pus.
47. **You see "Pus" at the site of infection on your skin. How is it formed? (2 times)**
 Ans: When wound is formed on body part then white blood cell is break the germs and make a white substance on wound is called pus.
48. **Write the effect of Dengue Fever on platelets. / Patient bleeds from nose, gums and under the skin in dengue fever, why? (1 times)**
 Ans: In dengue fever there is sharp decrease in number of platelets in blood, because of this patients bleed from the nose, gums and under the skin.
49. **Write the names of two diseases of blood.**
 Ans: 1- Leukaemia (Blood cancer) 2- Thalassemia
50. **What is Thalassemia? How can it be cured? / What is the cause of Thalassemia and what is its treatment. (2 Times)**
 Ans: It is a genetic problem due to mutation in the gene of hemoglobin the mutation results in the production of defective hemoglobin and the patient cannot transport oxygen properly.
Treatment: Blood replacement regularly. Bone marrow transplant.
51. **Define antigen. (2 times)**
 Ans: Antigen is a molecule that can stimulate an immune response (antibody production).
52. **Write blood groups of human blood. / Classify blood groups in terms of ABO system.**
 Ans: There are four different blood groups.
 1. A person antigen A on RBCs has blood group A.
 2. A person antigen B on RBCs has blood group B.
 3. A person antigen A,B on RBCs has blood group AB.
 4. A person none of A,B antigen has blood group O.
53. **Which persons are universal donors and universal recipients? (3 times)**
 Ans: **Universal donor:** Blood group O individuals are called universal donor. **Universal Recipients:** Blood groups AB individuals are universal acceptor.
54. **Why O blood group individuals are called universal donors? (1 Time)**
 Ans: O blood group is called universal donor because they can donate blood to the recipients of every other blood group.
55. **What is Rh blood group system and who discovered it. (2 times)**
 Ans: In this system, there are two blood group i.e. Rh- positive and Rh-negative. These blood groups are distinct from each other on the basis of antigens called Rh factors present on the surface of the RBCs. Karl Landsteiner discovered the Rh-blood group system
56. **What is blood cross match?**
 Ans: It is used for the confirmation of no agglutination; blood samples of donor and the recipient are cross-matched.
57. **What is meant by transfusion?**
 Ans: It is the process of transferring blood or blood based products from one person into the circulatory system of another.
58. **Write the functions of neutrophils and basophils.**

