

GRADE 10 BIOLOGY QUIZ WITH ANSWERS

70 QUESTIONS WITH ANSWERS ON ENZYMES, NUTRIENTS IN FOOD, PLANT NUTRIENTS AND DEFICIENCY DISEASES AND NUTRITIONAL DEFICIENCIES

Characteristics of Enzymes

1. What is an enzyme?
An enzyme is a biological catalyst that speeds up chemical reactions in living organisms.
2. What is meant by the specificity of enzymes?
Enzymes are specific to the substrates they bind to, meaning they only catalyze specific reactions.
3. Define the term "optimum temperature" for enzymes.
The optimum temperature is the temperature at which an enzyme functions most efficiently.
4. How does temperature affect enzyme activity?
Enzyme activity increases with temperature up to the optimum, but high temperatures can denature enzymes.
5. What happens to enzymes at very low temperatures?
Enzyme activity slows down significantly because molecular movement decreases.
6. Define the term "optimum pH" for enzymes.
The optimum pH is the specific pH level at which an enzyme works best.
7. How does pH affect enzyme activity?
Extreme pH levels can denature enzymes, reducing or stopping their activity.
8. Give an example of an enzyme with an acidic pH optimum.
Pepsin, which works best in the acidic environment of the stomach.
9. Explain the industrial use of enzymes in biological washing powders.
Enzymes like proteases and lipases break down protein and fat stains in clothes.
10. How are enzymes used in baking?
Enzymes like amylases break down starches into sugars to aid fermentation and improve texture.
11. Describe how enzymes are used in brewing.
Enzymes convert starches into fermentable sugars, aiding alcohol production.
12. Why do high temperatures denature enzymes?
High temperatures break the bonds maintaining the enzyme's structure, causing it to lose its shape and function.
13. Why are enzymes essential in industrial applications?
Enzymes increase reaction efficiency, reduce energy requirements, and are biodegradable.
14. Name an enzyme used in lactose-free milk production.
Lactase.
15. Why are enzymes preferred in some industrial processes?
They are specific, efficient, and work under mild conditions, saving energy and costs.

16. What happens to enzyme activity when the pH is far from the optimum?
The enzyme's structure can be altered, reducing its activity or rendering it inactive.
17. What is denaturation?
Denaturation is the process where the enzyme's structure is altered, preventing it from functioning.
18. How are enzymes utilized in the dairy industry?
Enzymes like rennet are used to curdle milk in cheese production.
19. Name an enzyme found in saliva.
Amylase.
20. Why are enzymes in washing powders effective at low temperatures?
They are specially designed to work efficiently in cold water, saving energy.

Nutrients in Food and Their Importance

21. What are the main nutrients found in food?
Carbohydrates, proteins, lipids, vitamins, minerals, water, and fiber.
22. Name a test used to identify reducing sugars in food.
Benedict's test.
23. What is the importance of carbohydrates in the diet?
Carbohydrates provide energy.
24. What is the role of proteins in the body?
Proteins are essential for growth, repair, and the production of enzymes and hormones.
25. What is the importance of lipids in the diet?
Lipids provide energy, insulation, and help in the absorption of fat-soluble vitamins.
26. What is the significance of dietary fiber (roughage)?
Fiber aids digestion and prevents constipation.
27. Why is water essential for the body?
Water is necessary for hydration, temperature regulation, and biochemical reactions.
28. What vitamin deficiency causes scurvy?
Vitamin C deficiency.
29. What is the deficiency disease associated with vitamin D?
Rickets.
30. Which mineral deficiency causes anemia?
Iron deficiency.
31. What is the cause of goiter?
Iodine deficiency.
32. How does a lack of protein affect the body?
It can lead to kwashiorkor or marasmus.
33. What is a balanced diet?
A balanced diet contains the correct proportions of carbohydrates, proteins, fats, vitamins, minerals, water, and fiber.
34. Why does a pregnant woman need more nutrients?
To support the growth and development of the fetus.
35. What are the dietary needs of a lactating mother?
Increased protein, calcium, and fluid intake to support milk production.

36. Name a food source high in carbohydrates.
Rice.
37. What is a good source of protein?
Eggs.
38. Name a food high in lipids.
Butter.
39. Which vitamin is essential for blood clotting?
Vitamin K.
40. Why is vitamin A important?
It is crucial for vision, immune function, and skin health.

Plant Nutrients and Deficiency Diseases

41. What are macronutrients in plants?
Nitrogen, potassium, and phosphorus (NPK).
42. Name three micronutrients required by plants.
Calcium, magnesium, and iron.
43. What is chlorosis in plants?
A condition where leaves turn yellow due to lack of chlorophyll.
44. Which nutrient deficiency causes stunted growth in plants?
Nitrogen deficiency.
45. What does phosphorus do for plants?
It aids in energy transfer, photosynthesis, and root development.
46. What is the role of potassium in plants?
Potassium regulates water uptake and activates enzymes.
47. How does magnesium affect plants?
Magnesium is essential for chlorophyll production.
48. Which nutrient deficiency causes leaf flecking?
Boron deficiency.
49. Why is nitrogen important for plants?
Nitrogen is a key component of amino acids, proteins, and chlorophyll.
50. What is the effect of sulfur deficiency in plants?
It leads to pale or yellow leaves and poor growth.

Food Tests and Sources of Nutrients

51. What reagent is used to test for starch?
Iodine solution.
52. How do you test for proteins in food?
Biuret test.
53. What is the test for fats and oils?
Ethanol emulsion test.
54. Name a source of vitamin C.
Citrus fruits.

55. What is a rich source of vitamin D?
Sunlight and fish liver oil.
56. Name a good source of dietary fiber.
Whole grains.
57. Which food is high in calcium?
Milk.
58. Name a source of iron.
Spinach.
59. Which nutrient is found in large amounts in nuts?
Lipids.
60. What is the primary source of energy in our diet?
Carbohydrates.

Nutritional Deficiencies and Well-Balanced Diets

61. What causes kwashiorkor?
Protein deficiency.
62. Name a symptom of marasmus.
Severe wasting and underweight.
63. What is the main cause of obesity?
Excess calorie intake and low physical activity.
64. Why do athletes require a high-protein diet?
To repair muscles and support growth after intense activity.
65. What is the importance of a balanced diet for pre-school children?
To ensure proper growth and development.
66. Why do the aged need less energy in their diet?
Their activity levels are lower, reducing energy requirements.
67. What dietary changes should a sick person make?
Increase fluid and nutrient intake for recovery.
68. How does potassium help the human body?
It regulates fluid balance, muscle contractions, and nerve signals.
69. Name a source of omega-3 fatty acids.
Fish like salmon.
70. What is the role of vitamin E?
Vitamin E acts as an antioxidant, protecting cells from damage.