

Grade 10 – Life at Molecular, Cellular and Tissue Level (MCQ)

1. A group of similarly differentiated cells that perform a common function.
A Stem cells
B Protoplasm
C Tissue
D Molecules
2. Which statement is FALSE regarding plant cells?
A They have a cell wall.
B Their vacuoles are temporary.
C They have chloroplasts.
D They have mitochondria.
3. Which statement is FALSE regarding inorganic compounds?
A They don't contain C and H together.
B These compounds can contain a variety of different elements.
C They are absent in artificial fertiliser.
D They make up minerals.
4. The fluid mosaic model refers to the:
A Cell wall
B Cell membrane
C Golgi-apparatus
D Tonoplast
5. Mineral that can affect heart rate:
A Calcium
B Magnesium
C Iron
D Potassium
6. Responsible for digestion within the cell.
A Lysosome
B Centrosome
C Ribosome
D Endoplasmic Reticulum

7. Which statement is TRUE?
- A Inorganic compounds contain carbon.
 - B Proteins are needed for energy.**
 - C Vitamins help with healing after an injury.
 - D A deficiency of Vitamin C results in rickets.
8. This is used to test to test for the presence of fat:
- A Iodine
 - B DCPIP
 - C Translucent spot test**
 - D Benedict's solution
9. Lactose is an example of a:
- A Monosaccharide
 - B Disaccharide**
 - C Starch
 - D Polysaccharide
10. Magnification of a cell with an ocular lens of 10x and an objective lens of 55x.
- A 55X
 - B 5500X
 - C 5,5X
 - D 550X**
11. An inorganic compound ingredient of cytoplasm:
- A Water**
 - B Amino acids
 - C Glucose
 - D Vitamins
12. Which one of the following is NOT inorganic?
- A Magnesium
 - B Glucose**
 - C Water
 - D Sodium chloride
13. An organic compound...
- A sometimes contains carbon, but always contains oxygen
 - B always contains oxygen and sometimes contains nitrogen
 - C never contains hydrogen or oxygen
 - D sometimes contains hydrogen, but always contains carbon**

14. The organic compound most abundant in plant cell walls is...
- A protein
 - B starch
 - C cellulose**
 - D Lipid
15. Which one of the following is NOT biologically important regarding water?
- A It helps with the breaking down of food.
 - B It provides a medium for chemical reactions to take place.
 - C It prevents deficiency diseases.**
 - D It dissolves biological compounds.
16. The most important function of water during digestion is that...
- A it serves as a source of energy.
 - B it is important for the storage of energy in living organisms.
 - C it acts as a reagent in the breaking down of food.**
 - D it prevents deficiency diseases.
17. The macronutrient that makes up a portion of an ATP molecule:
- A Phosphorus**
 - B Calcium
 - C Potassium
 - D Iron
18. The micronutrient present in thyroxine, which, if there is a deficiency, can lead to goitre.
- A Magnesium
 - B Iodine**
 - C Iron
 - D Sodium
19. Calcium is needed by humans to...
- A help with clotting of blood.
 - B control water balance in the blood.
 - C prevent muscle cramps.**
 - D produce the hormone thyroxine.
20. Calcium is needed by humans to...
- A prevent beri-beri.
 - B prevent anaemia.
 - C prevent cretinism in children.
 - D prevent brittle bones.**

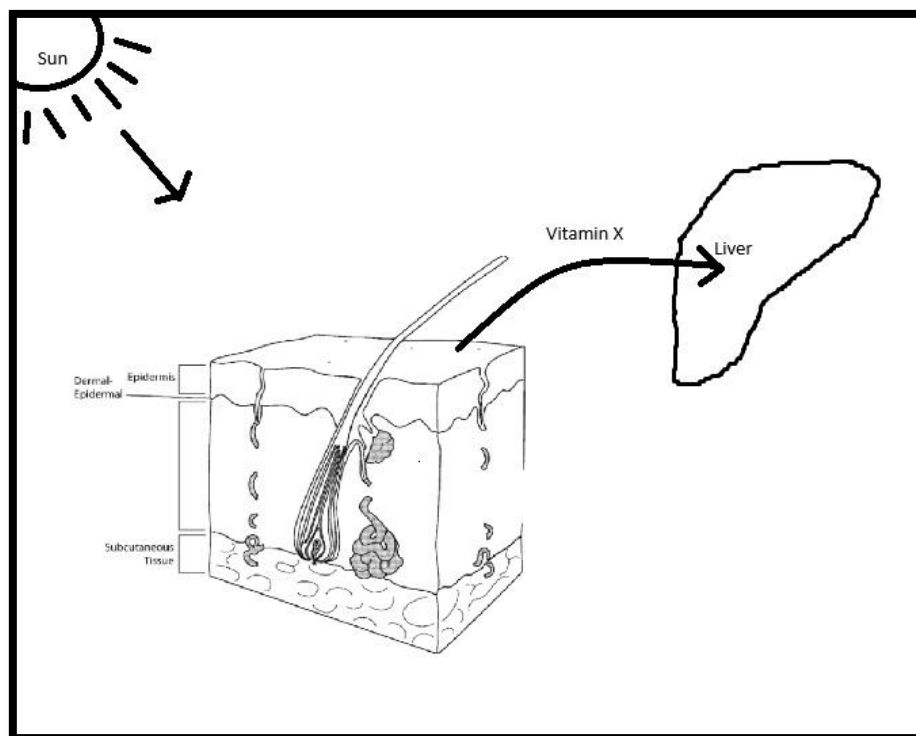
21. Iron is needed by humans to...
- A allow muscles to contract.
 - B prevent nerve impulses from occurring.
 - C prevent anaemia.**
 - D build bones and teeth.
22. Which of the following is used to test for the presence of starch?
- A Fehling's solution
 - B Ether
 - C Benedict's solution
 - D Iodine solution**
23. An iodine deficiency in the human diet usually causes...
- A anaemia.
 - B hyposalivation of thyroxine.**
 - C beri-beri.
 - D rickets.
24. Under normal conditions, the main source of energy for humans is...
- A proteins.
 - B lipids.
 - C carbohydrates.**
 - D vitamins.
25. The elements that plants absorb from the air are...
- A nitrogen and hydrogen.
 - B hydrogen and carbon.**
 - C oxygen and carbon.
 - D nitrogen and phosphorus.
26. Which of the following are important structural components of cell membranes?
- A Lipids and proteins**
 - B Carbohydrates
 - C Carbohydrates and lipids
 - D Carbohydrates, lipids and proteins
27. Which of the following are directly needed for the digestion of starch, proteins and fats?
- A Water and enzymes**
 - B Oxygen and enzymes
 - C Water and carbohydrates
 - D Carbon dioxide and enzymes

28. The main chemical elements present in biological molecules are...
- A carbon, oxygen, hydrogen and nitrogen.
 - B phosphorus, hydrogen, oxygen and carbon.
 - C carbon, oxygen, nitrogen and sulphur.
 - D hydrogen, nitrogen, sulphur and oxygen.
29. Which micronutrient is an important element of energy carriers involved in respiration and photosynthesis?
- A Sodium
 - B Magnesium
 - C Calcium
 - D Phosphorus
30. All digestible carbohydrates reach the tissues of mammals in the form of...
- A sucrose.
 - B glucose.
 - C calcium.
 - D glycogen.
31. Proteins differ from carbohydrates in that...
- A they all act as enzymes.
 - B some are hormones.
 - C they are the main source of energy.
 - D they contain nitrogen.
32. Which characteristic of starch makes it suitable as a storage material in plants?
- A It is a product of photosynthesis.
 - B It is chemically active.
 - C It is easily digestible.
 - D It is insoluble in water.
33. Lipids are insoluble in...
- A chloroform.
 - B water.
 - C ether.
 - D alcohol.
34. Which of the following statements regarding proteins is **incorrect**?
- A Proteins are structural components of cell membranes.
 - B Many proteins are hormones.
 - C All proteins are enzymes.
 - D Proteins make up an important part of chromosomes.

35. The vitamin that prevents scurvy is found in...
- A butter, plant oils and milk.
 - B milk, fish liver oil and cheese.
 - C** citrus fruit, tomatoes and spinach.
 - D meat, liver and whole grain bread.
36. Which of the following combinations prevents rickets in children?
- A Vitamin C and phosphorus
 - B** Vitamin D and calcium
 - C Vitamin B₁ and sodium
 - D Vitamin A and iron
37. Which vitamins are found in milk and dairy products?
- A Vitamins C and E.
 - B Vitamins B₁ and C.
 - C Vitamins B₂ and D.
 - D** Vitamins A and D.
38. What is the function of vitamins in the human body?
- A** To support enzyme function
 - B To prevent goitre in adults
 - C To act as an energy source during respiration
 - D To serve as building material for cells
39. Cellulose is...
- A a soluble sugar.
 - B the only reserve food in seed embryos.
 - C** the main component of cell walls.
 - D used in cell membranes in mammals.
40. Which of the following is involved in the photochemical reactions in the retina of the eye?
- A Vitamin C
 - B Vitamin B₁
 - C Vitamin B₃
 - D** Vitamin A
41. A symptom of rickets is...
- A** malformation of bones.
 - B bleeding gums.
 - C poor night vision.
 - D nerve and heart conditions.

42. Scurvy is a deficiency disease that can be prevented by adding more ... to the diet.
- A citrus fruit
 - B whole grain foods
 - C liver oil and carrots
 - D dairy products
43. All enzymes are...
- A proteins.
 - B inorganic compounds.
 - C vitamins.
 - D hormones.
44. Which of the following is NOT applicable to enzymes?
- A They control digestion and absorption of food in mammals.
 - B They are inorganic catalysts.
 - C They sometimes require co-enzymes to function properly.
 - D They consist of protein molecules.
45. Retinol is present in large quantities in fish oils. Which of the following statements is FALSE?
- A It is a water-soluble compound.
 - B It is also known as Vitamin A.
 - C A deficiency causes night blindness.
 - D It is stored in the liver and muscle cells.

Questions 46 to 48 are based on the image below, which shows the production of a certain hormone in the human body.



46. The vitamin X that is produced is...
- A Vitamin A.
 - B Vitamin B₂.
 - C Vitamin D.**
 - D Vitamin K.
47. If there is a deficiency of this vitamin in a child's diet, the child will most likely develop...
- A anaemia.
 - B pellagra.
 - C scurvy.
 - D rickets.**
48. Which food is needed to prevent the deficiency named in QUESTION 47?
- A Egg yolk**
 - B Tomatoes
 - C Whole grain bread
 - D Citrus fruit

Questions 49 to 51 are based on the image below.



49. The children show symptoms of a deficiency of...
- A starch.
 - B protein.**
 - C vitamin E.
 - D vitamin K.

50. The condition shown by the children is called...
- A anaemia.
 - B cretinism.
 - C pellagra.
 - D kwashiorkor.**
51. Which food can prevent the condition in QUESTION 50?
- A Beets and pumpkin
 - B Corn and sweet potato
 - C Eggs and fish**
 - D Potatoes and rice

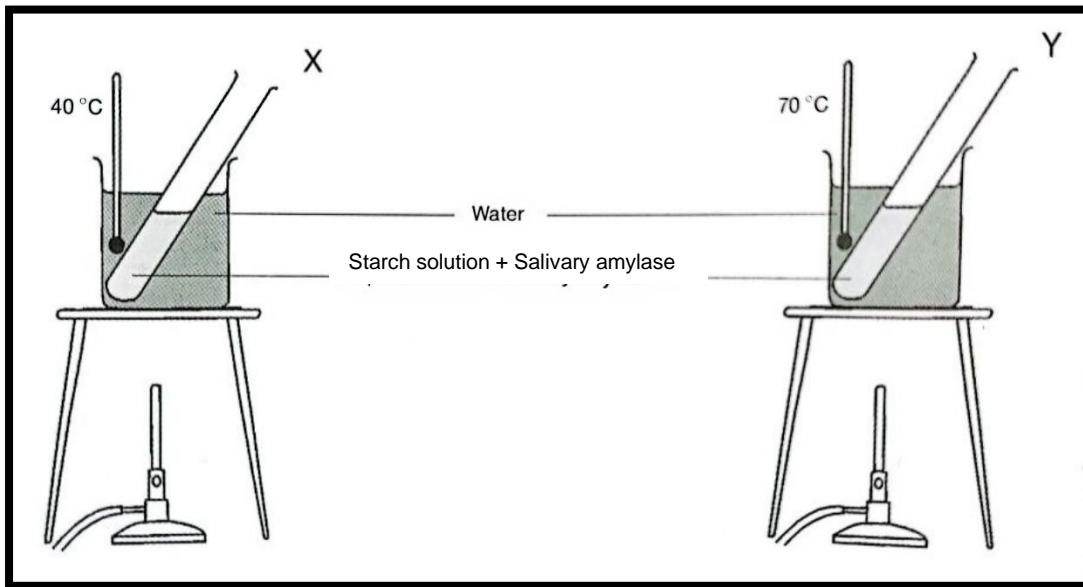
52. The composition of a type of food is shown below.

Nutrient	Composition (%)
Carbohydrate	3,8
Lipid	4,7
Protein	3,5
Fibre	0
Water	82,0

This food is most likely...

- A Wholewheat bread
 - B Grilled beef
 - C Milk**
 - D Potatoes
53. Which of the following is a characteristic of monosaccharides?
- A They act as insulation under the skin.
 - B They are easily denatured by changes in pH and temperature.
 - C They serve as an energy source in cells.**
 - D They are large, water-soluble molecules.
54. Which of the following is only found in animals?
- A Starch
 - B Glucose
 - C Cellulose
 - D Keratin**
55. Lipids and carbohydrates differ from each other in which way?
- A Lipids are insoluble in alcohol.
 - B The ratio of hydrogen and oxygen in lipids is less than 2:1.
 - C Lipids are more soluble in water.
 - D The ratio of hydrogen and oxygen in lipids is greater than 2:1.**

Questions 56 and 57 refer to the diagram below.



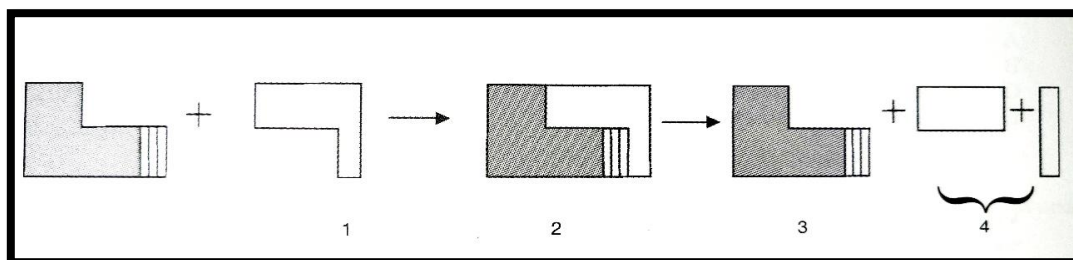
56. When the contents of test tube X is tested with a diluted iodine solution after 20 minutes, the colour will...

- A change from colourless to violet.
- B change from blue-black to brown.
- C change to blue-black.
- D stay brown.**

57. The enzymes in test tube Y will...

- A lose their form and function permanently.**
- B temporarily become inactive.
- C catalyse the reaction in the test tube.
- D temporarily become denatured.

Questions 58 and 59 refer to the diagram below.



58. Which component represents an enzyme?

- A 1
- B 2
- C 3**
- D 4

59. The reaction illustrated here shows the process of...

- A denaturation.
- B catabolism.**
- C condensation.
- D synthesis.

60. All enzymes...

- A work best at pH 7.
- B are very stable molecules.
- C are inorganic catalysts.
- D function best at optimum temperature.**

61. Study the nutritional information below.

Food types (per 100g)	Protein (g)	Fat (g)	Carbohydrate (g)
White bread	8,0	1,7	54,3
Lettuce	1,0	0	1,2
Apples	0,3	0	12,0
White sugar	0	0	100,0
Cheese	25,4	4,5	0
Bananas	1,1	0	19,2

The above data shows that...

- A Bananas contain less energy than apples.**
- B White bread provides more energy than white sugar.
- C Lettuce can provide more structural material than cheese.
- D Cheese is a good energy source and also provides components for cell membranes.