

1

Proteins may contain the elements

- (1) carbon. (2) hydrogen ✓ (3) iodine.
(4) nitrogen ✓ (5) oxygen. (6) sulphur.

- A. (2) and (5) only
B. (1), (3) and (4) only
C. (1), (2), (3), (4) and (5) only
D. (1), (2), (4), (5) and (6) only

2

Which of the following is/are the characteristic(s) of polysaccharides?

- (1) soluble in organic solvent
(2) sweet in taste
(3) insoluble in water

- A. (1) only
B. (3) only
C. (2) and (3) only
D. (1), (2) and (3)

3

The following table shows the results of some food tests on four samples:

Experiments	Samples			
	P	Q	R	S
Benedict's test	Brick-red precipitate	Blue	Brick-red precipitate	Blue
Iodine test	Brown	Blue-black	Brown	Blue-black
Protein test paper	Yellow	Green	Green	Yellow

Note: Positive result of protein test paper shows green colour while negative one shows yellow colour.

Which samples must contain glucose?

- A. P and R
- B. P and S
- C. Q and R
- D. cannot be determined

4

Which of the following are the properties of all images observed under a microscope?

- (1) inverted
 - (2) magnified
 - (3) brighter
 - (4) colourful
- A. (1) and (2) only
 - B. (1), (2) and (4) only
 - C. (1), (3) and (4) only
 - D. (2), (3) and (4) only

5

Which of the following comparisons between a prokaryotic cell and a eukaryotic cell is / are correct ?

- (1) Both have cell wall. ✗
- (2) Both have nucleic acid as the genetic material.
- (3) A prokaryotic cell has a smooth ER while a eukaryotic cell has a rough ER.

- A. (1) only
- B. (2) only
- C. (1) and (2) only
- D. (1), (2) and (3)

6

The table below shows the differences between animal cells and plant cells:

	Animal cells	Plant cells
(1)	Do not have a cell wall	Have a cell wall ✓
(2)	Usually have a large central vacuole	Have small or no vacuoles
(3)	Do not have chloroplasts	Some have chloroplasts
(4)	Usually have starch grains	Usually have glycogen granules

Which comparisons are correct ?

- A. (1) and (3) only
- B. (2) and (3) only
- C. (2) and (4) only
- D. (3) and (4) only

7

Which of the following statements about the applications of enzyme is/are correct ?

- (1) Protease is used in coagulating milk to produce yogurt.
- (2) Amylase is added to biological washing powders to remove stains on clothes.
- (3) Some enzymes can be used to make fruit juices look less cloudy.

- A. (2) only
- B. (3) only
- C. (1) and (2) only
- D. (1), (2) and (3)

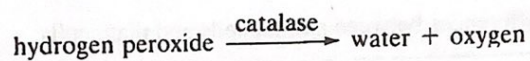
8

Which of the following is a catabolic reaction?

- A. hydrolysis of fat molecules
- B. synthesis of glycogen
- C. condensation of glucose molecules
- D. synthesis of protein

9

The following experiment investigates the activities of the enzyme catalase which can be found in the liver of human. It catalyzes the following reaction:



Catalase was added to 5 cm³ hydrogen peroxide solution and the oxygen evolved in the first minute was collected. The results are shown below:

<u>Test tube</u>	<u>Temperature (°C)</u>	<u>Volume of oxygen collected (cm³)</u>
P	0	0
Q	10	5
R	20	10
S	60	0

What conclusion can be drawn from the above results?

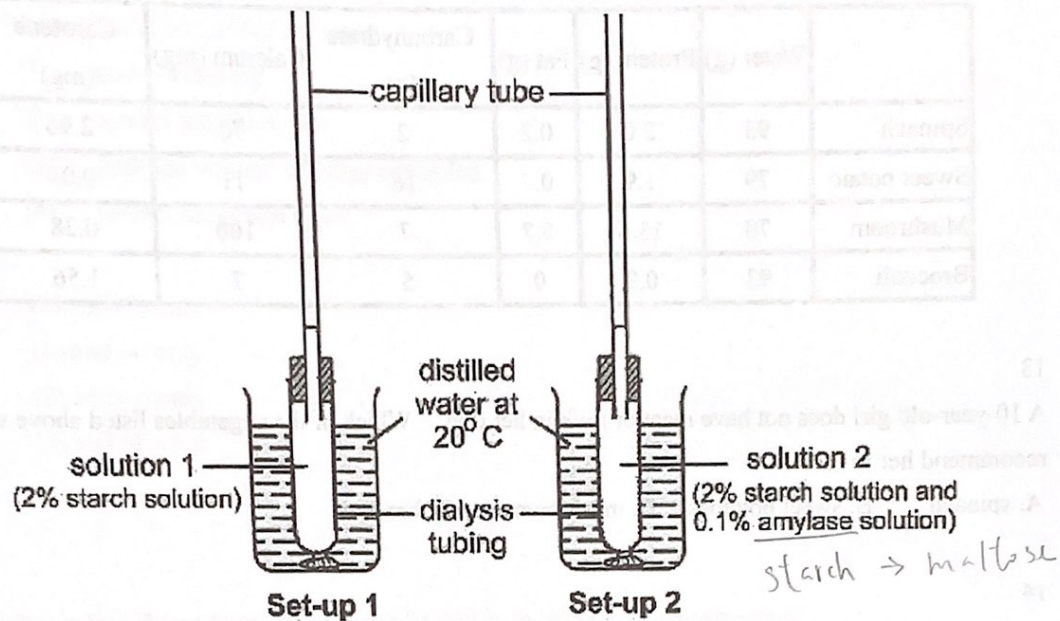
- A. The enzyme was destroyed at low and high temperatures. ✓
- B. For every 10°C increase in temperature, the reaction rate was double.
- C. The enzyme only worked at certain temperature range.
- D. Reaction rate varied linearly with temperature.

10

Which of the following is the fate of excess carbohydrates in the human body?

- A. It is stored as glycogen in the liver and muscles, or as fats under the skin.
- B. It is stored as glycogen in the liver and muscles, or as proteins under the skin.
- C. It is stored as proteins in the liver and muscles, or as fats under the skin.
- D. It is stored as fats in the liver and muscles, or as glycogen under the skin.

Directions: Questions 11 and 12 refer to the diagram below, which shows the initial condition of two set-ups :



11

After 1 hour, the liquid level in the capillary tube of set-up 2 rises more rapidly than that of set-up 1. This is because

- A. solution 1 has a lower water potential than solution 2.
- B. the dialysis tubing of set-up 1 is less permeable to water than that of set-up 2.
- C. sugar is produced in solution 2 but not in solution 1.
- D. solution 2 contains less starch than solution 1.

12

What treatments can increase the rate of rise of the liquid level in the above set-ups?

- (1) using a capillary tube with a smaller internal diameter
- (2) raising the temperature of the distilled water from 20°C to 30°C
- (3) using a smaller dialysis tubing

- A. (1) and (2) only
- B. (1) and (3) only
- C. (2) and (3) only
- D. (1), (2) and (3)

Directions: Questions 13-16 refer to the following table which shows the composition of 100 g of four vegetables :

	Water (g)	Protein (g)	Fat (g)	Carbohydrate (g)	Calcium (mg)	Carotene (mg)	Vitamin C (mg)
Spinach	93	2.0	0.2	2	70	2.96	31
Sweet potato	79	1.9	0.7	16	11	0.01	18
Mushroom	70	13.6	5.7	7	100	0.28	25
Broccoli	93	0.9	0	5	7	1.56	105

13

A 10-year-old girl does not have meat or milk in her diet. Which of the vegetables listed above will you recommend her to eat?

- A. spinach B. sweet potatoes C. mushroom D. broccoli

14

If she has bleeding gums, which vegetable is most effective in helping her to recover?

- A. spinach B. sweet potatoes C. mushroom D. broccoli

15

The amount of urea excreted in the urine may increase if a person eats a lot of

- A. spinach. B. sweet potatoes. C. mushroom. D. broccoli.

16

A person has normal vision in bright light condition but cannot see clearly in dim light. This disease can be healed most effectively by eating

- A. spinach. B. sweet potatoes. C. mushroom. D. broccoli.

17

Canine teeth cannot be found in

- A. a dog. B. a human. C. a tiger. D. a cow.

18

Which of the following is *not* a function of the liver?

- A. regulation of blood glucose level
 B. storage of glycogen
 C. storage of calcium and iron
 D. deamination taken place

19

What are the main functions of the rib cage?

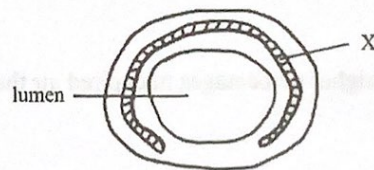
- (1) assist breathing
- (2) control breathing rate
- (3) limit the volume of lungs expanded
- (4) protect lungs and heart ✓

- ~~A.~~ (1) and (2) only
- B. (1) and (4) only
- ~~C.~~ (2) and (3) only
- D. (3) and (4) only

20

The diagram below shows the cross section of a part in the human respiratory tract:

(The diagram is **not** drawn to scale.)

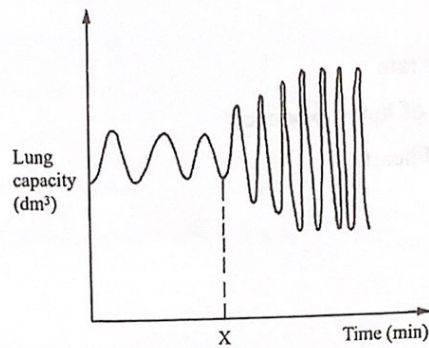


What is the function of structure X?

- A. to control the size of lumen
- B. to provide support
- C. to produce sound
- D. to secrete mucus

21

The graph below shows the lung capacity of a man:



What does the man do, starting from X, to cause the change in breathing pattern?

- A. doing exercise
- B. sleeping
- C. sneezing
- D. taking deep breaths

22

Which of the following gases have higher percentages in expired air than in inspired air?

- (1) carbon dioxide ✓
- (2) nitrogen
- (3) oxygen ✗
- (4) water vapour

- A. (1) and (2) only
- B. (1) and (4) only
- C. (2) and (3) only
- D. (3) and (4) only

23

Mucus in the respiratory tract helps to

- (1) warm the air up.
- (2) moisten the air.
- (3) trap the dust particles in the air.

- A. (1) and (2) only
- B. (1) and (3) only
- C. (2) and (3) only
- D. (1), (2) and (3)

24

Which of the following structures is / are found in the nasal cavity?

- (1) ciliated epithelium
- (2) mucus-secreting cells ✓
- (3) hairs ✓

- A. (1) only
- B. (2) only
- C. (1) and (3) only
- D. (1), (2) and (3)

25

Coughing carries lot of droplets from the respiratory tract to the air. Such droplets help to spread diseases because they may contain

- A. mucus.
- B. water.
- C. dissolved oxygen.
- D. bacteria or viruses.