



الإدارة المركزية للتعليم العام

مستشار مادة العلوم

Weekly Home Work

Week (2)

Integrated Science

Secondary one

Second Term 2026

مراجعة

أ / محمد عبد اللطيف محمد

د / حسين عبد الرحمن بخات

إشراف عام

د / هالة عبد السلام خفاجي

رئيس الإدارة المركزية للتعليم العام

والمشرف على مستشاري

المواد الدراسية

إعداد

أ / سحر ناصف موجه عام الإسكندرية

أ / عبد المسيح حزين موجه عام الأقصر

إشراف

د / عزيزة رجب خليفة

مستشار مادة العلوم

Lesson 1: The Biosphere and its Stability (Part Two)

Choose the correct answer

- 1- All four groups (carbohydrates, proteins, lipids, and nucleic acids) share the characteristic that they are
 - A) They store genetic information
 - B) They were dissolving easily in water
 - C) They were function as enzymes to regulate vital processes
 - D) They are organic compounds mainly containing carbon and hydrogen
- 2- When a person has a deep wound, a doctor advises increasing the intake of protein-rich foods. What is the scientific explanation for this?
 - A) Because proteins are involved in building body tissues and replacing damaged ones
 - B) Because proteins are the primary source of energy
 - C) Because proteins store energy for long periods
 - D) Because proteins prevent water loss from the wound
- 3- The relationship between the number of glucose molecules in disaccharide and polysaccharide and their solubility in water is relationship
 - A) direct
 - B) inverse
 - C) constant
 - D) not exists
- 4- The unit of measurement (kJ/g) is used to express
 - A) The molar mass of chemical compounds
 - B) The energy required to raise the temperature of water
 - C) The heat capacity of water
 - D) The amount of heat produced by the combustion of one gram of a substance
- 5- Which of the following foods would you expect to give the highest ΔT value when one gram of it is burned in a calorimeter?
 - A) A piece of bread
 - B) A piece of muscle fiber meat
 - C) A drop of olive oil
 - D) A piece of cucumber

6- A CGM device helps patients by monitoring

- A) Heart rate
- B) Blood sugar levels and carbohydrate availability
- C) Oxygen levels
- D) Blood viscosity

7- "Cholesterol" in the human body is involved in the formation of

- A) Vitamin D
- B) Starch
- C) Nucleic acids
- D) Muscle fibers

8- Proteins that fight infection are called

- A) Enzymes
- B) Immune bodies
- C) Keratin
- D) Phospholipids

9- Advances in electron microscopy technology have helped in

- A) converting sugar into fats
- B) increasing body weight
- C) understanding how molecules are arranged inside the cell
- D) cooling the cell

10- The "Genetic Code" results from the difference in

- A) the sequence of nitrogenous bases
- B) the type of sugar only
- C) the number of phosphate groups
- D) the sequence of amino acids

11- CRISPR-Cas9 technology is described as a

- A) light microscope
- B) digestive enzyme
- C) diet system
- D) high-precision molecular scissor

- 12 Why is DNA, and not RNA, responsible for transporting genetic information across generations?
- A) Because it is smaller in size
 - B) Due to its double-stranded structure
 - C) Because it exists in the cytoplasm
 - D) Because it does not contain phosphate
- 13 Which of the following alternatives represents the correct order for the speed of obtaining energy?
- A) Starch → Fats → Glucose
 - B) Glucose → Sucrose → Starch
 - C) Cellulose → Glucose → Fats
 - D) Glycogen → Protein → Sucrose

Essay Questions

1- An electron microscope can see membrane proteins, while a light microscope cannot, Explain?

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2- Give reasons: Why is RNA not used as a permanent store for genetic information, even though it carries nitrogenous bases?

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3- Explain how CRISPR-Cas9 technology treats Sickle Cell Anemia?

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4- "Uracil" is absent in DNA and "Thymine" is absent in RNA, Explain this sentence?

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Weekly Assessment

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Lesson 1: The Biosphere and its Stability (Part Two)

Model (A)

Choose the correct answer:

1-	The chemical bond that stores the greatest amount of energy in the ATP molecule is located between		
A)	Ribose sugar and the nitrogenous base		
B)	The first and second phosphate groups		
C)	The second and third phosphate groups		
D)	Carbon and hydrogen in the sugar		
2-	Adjusting diet pattern based on a CGM device improves		
A)	Bone density		
B)	Stability of energy levels		
C)	Speed of thinking only		
D)	Heart rate		
3-	The basic unit for measuring caloric content is ...		
A)	kJ/g	B)	cal / J
C)	kCal/g	D)	kcal/J
4-	Which of the following does NOT contain nitrogen in its structure?		
A)	Immune bodies		
B)	Enzymes		
C)	Muscles		
D)	Plant cell wall		

Essay Question

5- Explain: Genetic engineering plays a role in food sustainability despite climate change .

Lesson 1: The Biosphere and its Stability (Part Two)

Model (B)

Choose the correct answer:

1-	"Cellulose is involved in building cell walls, while starch is for storage" Which of the following explains this difference?		
A)	Difference in the elements composing them		
B)	Difference in biological function		
C)	Presence of phosphorus in starch		
D)	Solubility of cellulose in water		
2-	Why does the cell not use glucose energy directly without an intermediate compound (ATP)?		
A)	Because glucose is a complex sugar		
B)	Because glucose does not contain energy		
C)	Because ATP molecules have a simple structure		
D)	Because ATP represents a continuous and renewable energy		
3-	The unit most used in practice to measure the energy content of food is ...		
A)	kJ/g	B)	cal / J
C)	kCal/g	D)	kcal/J
4-	A practical application resulting from using the electron microscope to study cell membranes is		
A)	Designing drugs that target specific proteins inside the cell		
B)	Improving the ability of organisms to produce energy		
C)	Increasing the rate of cell division		
D)	Reducing the need for lipids in membranes		

Essay Question

5- Give reasons for: The presence of two types of nucleic acids (DNA and RNA) in living organisms .

Lesson 1: The Biosphere and its Stability (Part Two)

Model (C)

Choose the correct answer:

1-	"Chitin" in insects and "Cellulose" in plants are similar in the function of		
A)	Both are rapid sources of energy		
B)	Both are stored in the liver		
C)	Both dissolve in water		
D)	Both are involved in forming support structures		
2-	Proteins are distinguished from carbohydrates by the essential presence of the element		
A)	Carbon	B)	Nitrogen
C)	Hydrogen	D)	Oxygen
3-	If you have 1 Kcal, how much does that equal in Kilojoules?		
A)	0.418 KJ	B)	41.8 KJ
C)	418 KJ	D)	4.18 KJ
4-	What might happen if there were no RNA in the cell?		
A)	Protein synthesis will stop despite the presence of DNA		
B)	Proteins will continue to be synthesized normally		
C)	The number of nucleotides in the DNA will increase		
D)	DNA will become capable of producing energy directly		

Essay Question

5- Explain the role of mitochondria in "recharging" the ADP molecule .