

المعلومات العامة

الأسئلة المعلنة للعام الدراسي 2010

9

1

Why does a clay pot that has been fired to over 600 °C not become soft again when placed in water?

- The water between clay particles has evaporated, lowering the porosity of the clay.
- The density of the clay is so high that water molecules cannot form bonds with clay particles.
- The chemical structure of the clay has changed and it cannot absorb water.
- The outside layer of clay has hardened and become a barrier to water absorption.

Key: 3

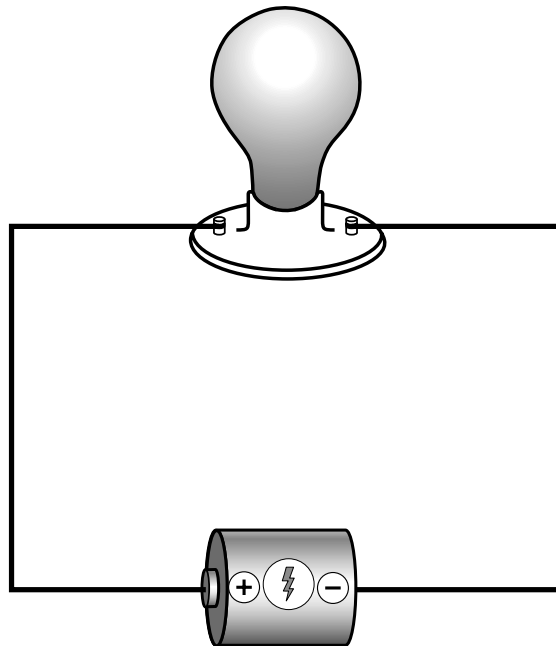
Strand: Materials

Standard: 14.6 Know that changes in molecular structure account for the changes in the properties of clay when it is fired.

DOK: 01 Understanding

2

The diagram below shows an electrical circuit.



Which of these best describes what will happen to the circuit when a resistor is added before the light bulb?

- current increases
- current decreases
- voltage increases
- voltage decreases

Key: 2

Strand: Physical processes

Standard: 21.5 Know that electrical components have resistance that impedes the flow of electricity through them and that this is measured in ohms.

DOK: 02 Application

3

What is a gene?

- a chromosome
- a section of DNA
- a type of RNA
- a building block of proteins

Key: 2

Strand: Life science

Standard: 06.3 Know that a gene is a section of DNA.

DOK: 01 Understanding

The solid ionic salt potassium chloride (KCl) has a melting point of 776 °C and can conduct electricity strongly when melted. The liquid covalent compound hexane (C₆H₁₄) has a melting point of -96 °C and does not conduct electricity in any state.

Explain the differences in the following physical properties of potassium chloride and hexane in terms of their chemical bonds.

Melting point:

Answer: _____

Electrical conductivity:

Answer: _____

Key Elements

A. Melting point – A response indicating that:

- Ionic compounds (like KCl) have to be heated to high temperatures to be melted because the attraction between the ions that form an ionic crystal is strong.
AND
- The interparticle forces in covalent compounds (like hexane) are weaker because covalent molecules have no ionic charge.

B. Electrical conductivity – A response indicating that:

- KCl is ionic so when it is melted the K^+ and Cl^- ions can move freely. When an electrical current is applied electricity can be carried through the movement of ions.
AND
- Hexane is a covalent molecule, where the C-H bonds share a pair of electrons and cannot have movement of charge.

2 key elements	2 pts
1 key element	1 pt
Incorrect answer	0 pts
No answer	Blank

Points: 2

Strand: Materials

Standard: 13.9 Explain the difference in the physical properties of ionic and covalent compounds in terms of their bonding.

DOK: 02 Application

In Qatar, hot water from certain industries such as desalination and power production plants is discharged into the sea.

Why is heat considered a pollutant of the sea ecosystem?

Answer: _____

What is done in Qatar to minimize hot water discharge into sensitive environments?

Answer: _____

Key Elements

A. A response indicating that heat can disturb aquatic animals and plants / can increase or decrease rate of reproduction of some organisms / can allow colonization of non-native species / can kill aquatic organisms.

B. A response indicating that waste hot water is processed in cooling plants (such as Ras Laffan Plant).

2 key elements	2 pts
1 key element	1 pt
Incorrect answer	0 pts
No answer	Blank

Points: 2

Strand: Materials

Standard: 15.6 Know that pollution of the sea by waste heat from industry is a major problem for Qatar industry; know how this form of pollution is being prevented.

DOK: 01 Understanding

In humans, how many chromosomes are in a cell produced by meiosis?

Answer: _____

Give an example of a cell produced this way.

Answer: _____

Correct Answer:	
A. 23 chromosomes	
(Note: do not accept 23 <u>pairs</u> of chromosomes)	
B. A reproductive cell such as sperm or eggs	
(Note: Any example of a reproductive cell is an acceptable answer such as sperm, eggs, pollen etc.)	
2 key elements	2 pts
1 key element	1 pt
Incorrect answer	0 pts
No answer	Blank

Points: 2

Strand: Life science

Standard: 07.1 Explain how cells divide by mitosis during growth and by meiosis to produce gametes.

DOK: 02 Application