Multiple choice questions for structure and bonding

Education in Chemistry
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Example multiple choice quizzes

This resource has five sets of multiple choice questions each written in the formats described by the accompanying article. They are written for the topic of structure and bonding for the age range 14-16.

Set A: positive questions

Set B: negative questions

Set C: Multiple completion questions

Set D: Best answer question

Set E: Assertion reason questions

These quizzes have also been prepared in the Socrative quizzing programme and can be downloaded into your own account using the following codes and links.

Set A: positive questions SOC-46393762

https://b.socrative.com/teacher/#import-quiz/46393762

Set B: negative questions SOC-46393774

https://b.socrative.com/teacher/#import-quiz/46393774

Set C: Multiple completion questions SOC-46393795

https://b.socrative.com/teacher/#import-quiz/46393795

Set D: Best answer questions SOC-46393809

https://b.socrative.com/teacher/#import-quiz/46393809

Set E: Assertion reason questions SOC-46393832

https://b.socrative.com/teacher/#import-quiz/46393832

Set A: positive questions

Select the correct answer A–D.

1) How many covalent bonds does carbon form?
   A. None, it does not form covalent bonds.
   B. 2
   C. 3
   D. 4

2) The structure normally associated with ionic bonding is ...
   A. a giant lattice.
   B. a simple molecule.
   C. a giant molecule.
   D. a regular arrangement of ions surrounded by a sea, or cloud, of electrons.

3) All the substances listed are solids at room temperature. Which substance has a simple molecular structure?
   A. Sodium
   B. Iodine
   C. Carbon (graphite)
   D. Strontium

4) Magnesium is in group 2 in the periodic table. Which of the following formulas for magnesium compounds is correct?
   A. MgO_2
   B. MgS_2
   C. MgF_2
   D. Mg_2O

5) Why does sodium chloride not conduct electricity in its solid form?
   A. Ions in its structure are in fixed positions.
   B. It contains no free electrons.
   C. It has a giant covalent molecular structure.
   D. Ions in its structure only have single negative and single positive charges.

6) Which of the following statements explains why silicon dioxide has a high melting point?
   A. It has a giant ionic structure with strong electrostatic attraction between ions.
   B. It has a giant covalent structure with strong covalent bonds between atoms.
   C. It has a simple molecular structure with weak forces between molecules.
   D. It has a giant metallic structure with a strong attraction between positive ions and the sea of electrons.

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Set A answers 1) D 2) A 3) B 4) C 5) A 6) B

Set B: negative questions

1) Which of the following substances does not conduct electricity?

A. Brass
B. Copper
C. Carbon (graphite)
D. Carbon (diamond)

2) Which of the following does not contain ions that are free to move?

A. $MgCl_2(aq)$
B. Mg(s)
C. $MgCl_2(l)$
D. Mg(l)

3) Which of the following does not explain a substance displaying a high melting point?

A. Strong intermolecular forces between molecules.
B. Many strong covalent bonds.
C. Strong electrostatic attraction between oppositely charged ions.
D. Strong electrostatic attraction between positive ions and delocalised electrons.

4) Which of the following does not contain ionic bonds?

A. Sulfur dioxide
B. Sodium oxide
C. Silver oxide
D. Strontium oxide

5) Which of the following does not contain covalent bonds?

A. Carbon (graphite)
B. Carbon (diamond)
C. HCl (g)
D. NaCl (s)

6) Which of the following does not have a giant structure?

A. Diamond
B. Graphite
C. Iodine
D. Silicon dioxide

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Set B answers 1) D 2) B 3) A 4) A 5) D 6) C

Set C: multiple completion questions

For the following questions, one or more of the options may be correct. Select your answer, A-D, using the following code.

Code			
A	**B**	**C**	**D**
1,2, and 3 only correct	1 and 3 only correct	2 and 4 only correct	4 only correct

1) Which of the following **does not** contain ionic bonds?

1. Sulfur dioxide
2. Sodium oxide
3. Silicon dioxide
4. Silver oxide

2) Which of the following is not a property of substances with ionic bonding?

1. High melting point
2. Crystallinity
3. Conduct electricity when molten
4. Conduct electricity in the solid state

3) Which of the substances has ions in its bonding model?

1. Copper
2. Carbon dioxide
3. Copper oxide
4. Carbon

4) Which of the substance has free electrons in its bonding model?

1. Carbon (diamond)
2. Carbon (graphite)
3. Carbon dioxide
4. Copper

5) Which of the following statements about water is not correct?

1. Water molecules contain covalent bonds.
2. Water has weak forces between molecules.
3. Water has a low melting point.
4. Water molecules contain H^+ and OH^- ions.

6) Which of the following phrases would be used in a description for the bonding in BOTH metals and ionic salts?

1. Strong electrostatic attraction
2. Ions
3. Giant lattice
4. Delocalised electrons

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Set C answers 1) B 2) D 3) B 4) C 5) D 6) A

Set D: Best answer questions

1) Which of the following gives the best explanation for why a substance does not conduct electricity?

A. The bonding in the substance is not ionic.
B. The bonding model in the substance does not have free electrons.
C. The bonding model does not have ions which are free to move, or free electrons.
D. The bonding model does not have ions or free electrons.

2) Which of the following statements gives the best explanation for the fact that carbon forms 4 bonds?

A. Carbon is in group 4 of the periodic table
B. Carbon has 2 shells of electrons.
C. Carbon forms 4+ ions.
D. Carbon has 4 electrons in its outer shell.

3) Which of the following statements gives the best explanation for the high solubility of potassium bromide?

A. The ions are free to move.
B. There are positive and negative ions present in the substance.
C. The positive and negative ions are attracted to different regions of the polar water molecules.
D. Like dissolves like.

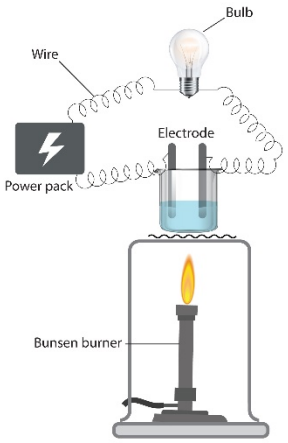
4) Which of the following covalent molecules is the best illustration of typical properties of substances with simple molecular covalent structures?

A. Water
B. Hydrogen
C. Iodine
D. Sulfur

5) Which of the following gives the best explanation for the fact that sodium chloride is crystalline?

A. There is strong electrostatic attraction between oppositely charged ions.
B. It contains a regular 3D arrangement of positive and negative ions.
C. The crystal contains ions.
D. There are free electrons present which reflect the light.

6) The picture shows an apparatus that a teacher used for demonstrating the properties of ionic substances. The teacher heats a sample of sodium chloride which contains two electrodes which are part of the circuit shown. The bulb does not light. What is the best explanation for this?



A. The circuit is not complete.
B. Sodium chloride does not conduct electricity.
C. The power pack wasn't set up correctly.
D. The teacher did not heat the sample to the melting point of sodium chloride.

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Set D answers 1) C 2) D 3) C 4) B 5) B 6) D

Set E: assertion reason questions

For questions 1-5, use the following code

A	Both statements are correct and the second statement is a correct explanation of the first.
B	Both statements are correct, but the second statement is not a correct explanation of the first.
C	Only statement 1 correct
D	Only statement 2 correct
E	Neither statement correct

1) Statement 1: tap water does not conduct electricity.
Statement 2: tap water contains dissolved salts.

2) Statement 1: silicon dioxide is used for lining furnaces.
Statement 2: silicon dioxide has a high melting point.

3) Statement 1: sodium chloride has a high melting point.
Statement 2: ions are arranged in a regular lattice.

4) Statement 1: metals conduct electricity.
Statement 2: metal lattices contain layers of positive ions.

5) Statement 1: chlorine is a liquid at room temperature.
Statement 2: chlorine has simple molecular covalent bonding.

6) Statement 1: iodine is a solid at room temperature.
Statement 2: iodine is in group 7 of the periodic table.

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Set E answers 1) D 2) A 3) B 4) B 5) D 6) B