


**Pool Canvas**

Add, modify, and remove questions. Select a question type from the Add Question drop-down list and click **Go** to add questions. Use Creation Settings to establish which default options, such as feedback and images, are available for question creation.

Add Calculated Formula  Creation Settings

Name Chapter 1--Structure and Bonding

Description

Instructions

[Modify](#)

[Add Question Here](#)

Question 1 **Essay** **0 points**

[Modify](#) [Remove](#)

**Question** Give the ground-state electron configuration for carbon (atomic number 6).

**Answer**  $1s^2 2s^2 2p_x^1 2p_y^1$  or  $1s^2 2s^2 2p^2$

[Add Question Here](#)

Question 2 **Essay** **0 points**

[Modify](#) [Remove](#)

**Question** Give the ground-state electron configuration for fluorine (atomic number 9).

**Answer**  $1s^2 2s^2 2p_x^2 2p_y^2 2p_z^1$  or  $1s^2 2s^2 2p^5$

[Add Question Here](#)

Question 3 **Essay** **0 points**

[Modify](#) [Remove](#)

**Question** Give the ground-state electron configuration for magnesium (atomic number 12).

**Answer**  $1s^2 2s^2 2p^6 3s^2$

[Add Question Here](#)

Question 4 **Essay** **0 points**

[Modify](#) [Remove](#)

**Question** How many electrons does silicon have in its valence shell?

**Answer** four

[Add Question Here](#)

Question 5 **Essay** **0 points**

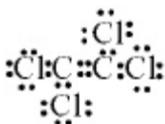
[Modify](#) [Remove](#)

**Question Exhibit 1-1**

Write valid Lewis (electron-dot) structures for each formula below. Show all electrons as dots and show all non-bonding electrons.

$C_2Cl_4$  tetrachloroethylene

**Answer**



[Add Question Here](#)

Question 6 **Essay** **0 points**

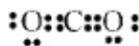
[Modify](#) [Remove](#)

**Question Exhibit 1-1**

Write valid Lewis (electron-dot) structures for each formula below. Show all electrons as dots and show all non-bonding electrons.

$CO_2$  carbon dioxide

**Answer**



[Add Question Here](#)

Question 7 **Essay** **0 points**

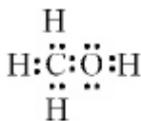
[Modify](#) [Remove](#)

**Question Exhibit 1-1**

Write valid Lewis (electron-dot) structures for each formula below. Show all electrons as dots and show all non-bonding electrons.

$CH_4O$  methanol

**Answer**



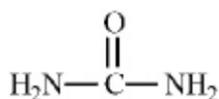
[Add Question Here](#)

Question 8 **Essay** **0 points**

[Modify](#) [Remove](#)

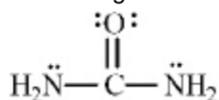
**Question Exhibit 1-2**

Consider the structure of urea, shown below, to answer the following question(s).



Refer to Exhibit 1-2. Fill in any non-bonding valence electrons that are missing from the line-bond structure.

**Answer**



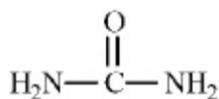
[Add Question Here](#)

Question 9 **Essay** **0 points**

[Modify](#) [Remove](#)

**Question Exhibit 1-2**

Consider the structure of urea, shown below, to answer the following question(s).



Refer to Exhibit 1-2. The carbon atom in urea is:

- $sp^3$  hybridized
- $sp^2$  hybridized
- $sp$  hybridized
- not hybridized

**Answer**

b

[Add Question Here](#)

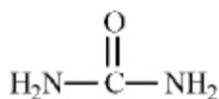
[Modify](#) [Remove](#)

Question 10 **Essay**

**0 points**

**Question Exhibit 1-2**

Consider the structure of urea, shown below, to answer the following question(s).



Refer to Exhibit 1-2. The predicted  $\text{NH}_2\text{-C=O}$  bond angle in urea is:

- $109.5^\circ$
- $120^\circ$
- $180^\circ$
- not predictable

**Answer**

b

[Add Question Here](#)

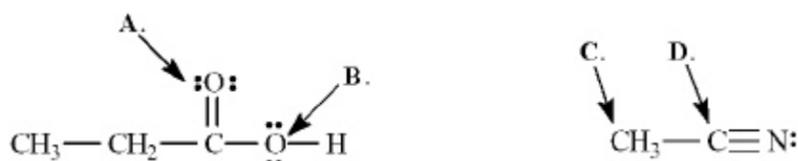
[Modify](#) [Remove](#)

Question 11 **Essay**

**0 points**

**Question Exhibit 1-3**

Determine the hybridization for the indicated atoms in each structure below.



Refer to Exhibit 1-3. The hybridization of this oxygen atom (A) is \_\_\_\_\_.

**Answer**

$sp^2$

[Add Question Here](#)

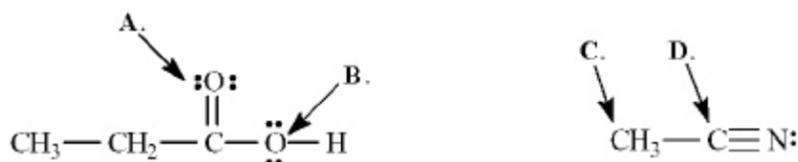
[Modify](#) [Remove](#)

Question 12 **Essay**

**0 points**

**Question Exhibit 1-3**

Determine the hybridization for the indicated atoms in each structure below.



Refer to Exhibit 1-3. The hybridization of this oxygen atom (B) is \_\_\_\_\_.

**Answer**

$sp^3$

[Add Question Here](#)

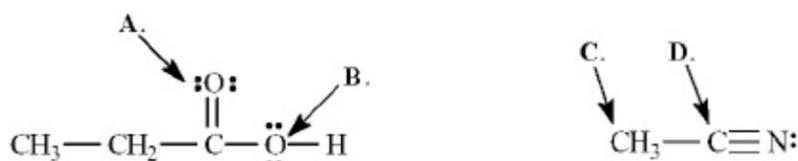
[Modify](#) [Remove](#)

Question 13 **Essay**

**0 points**

**Question Exhibit 1-3**

Determine the hybridization for the indicated atoms in each structure below.



Refer to Exhibit 1-3. The hybridization of this carbon atom (C) is \_\_\_\_\_.

**Answer**

$sp^3$

[Add Question Here](#)

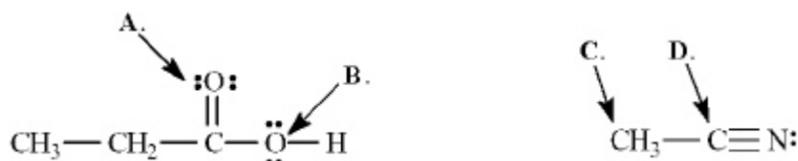
[Modify](#) [Remove](#)

Question 14 **Essay**

**0 points**

**Question Exhibit 1-3**

Determine the hybridization for the indicated atoms in each structure below.



Refer to Exhibit 1-3. The hybridization of this carbon atom (D) is \_\_\_\_\_.

Answer

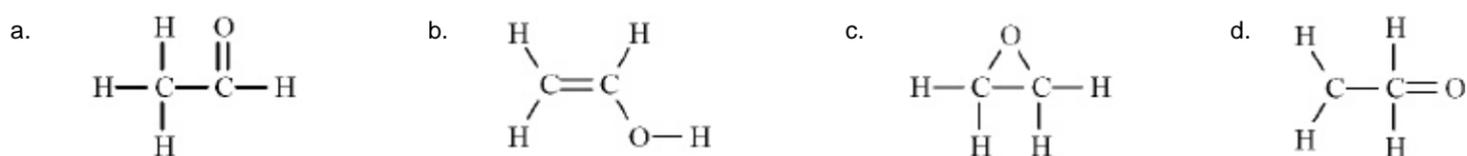
 $sp$ [Add Question Here](#)

Question 15 Essay

0 points

[Modify](#) [Remove](#)

**Question** The molecular formula  $C_2H_4O$  can be converted into three-line bond (Kekulé) structures that are consistent with valence rules.



- a. Which one of the Kekulé structures is **not** consistent with valence rules?  
 b. Explain why the structure you chose in part **a** is not consistent with valence rules.

**Answer**

- a. d  
 b. The carbon bonded to the oxygen atom in structure d is pentavalent; it has 10 valence electrons. Carbon can only have eight valence electrons. In addition, the other carbon has only six valence electrons when it would prefer to have eight.

[Add Question Here](#)

Question 16 Essay

0 points

[Modify](#) [Remove](#)

**Question** The original question was combined with #15. This placeholder question is here to maintain the integrity of the numbering system between the printed copy and ExamView. Therefore, it has been marked "do not use on test" in ExamView's question information dialog. As a result, this placeholder question is automatically prevented from being chosen as a test question.

**Answer**

Answer not provided.

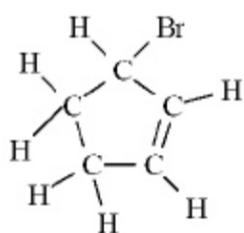
[Add Question Here](#)

Question 17 Essay

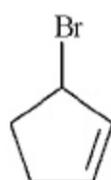
0 points

[Modify](#) [Remove](#)

**Question** Convert the following structure to a skeletal drawing and give its molecular formula.



3-bromo-1-cyclopentene

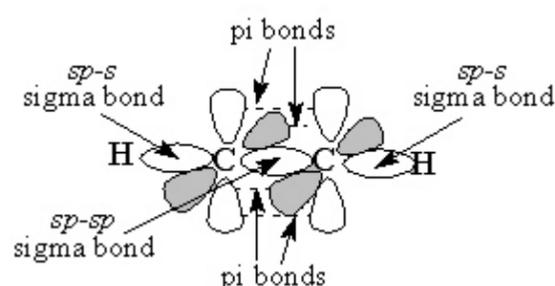
**Answer**Molecular formula:  $C_5H_7Br$ [Add Question Here](#)

Question 18 Essay

0 points

[Modify](#) [Remove](#)

**Question** Draw an orbital picture for acetylene,  $C_2H_2$ . Clearly label each bond type and indicate the type of orbitals involved in each bond.

**Answer**[Add Question Here](#)

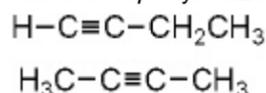
Question 19 Essay

0 points

[Modify](#) [Remove](#)**Question Exhibit 1-4**

Propose possible structures for a molecule that meets each of the following descriptions.

Refer to Exhibit 1-4. Contains two  $sp^3$  hybridized carbons and two  $sp$  hybridized carbons.

**Answer**[Add Question Here](#)

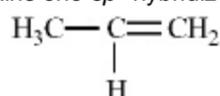
Question 20 Essay

0 points

[Modify](#) [Remove](#)**Question Exhibit 1-4**

Propose possible structures for a molecule that meets each of the following descriptions.

Refer to Exhibit 1-4. Contains one  $sp^3$  hybridized carbon and two  $sp^2$  hybridized carbons.

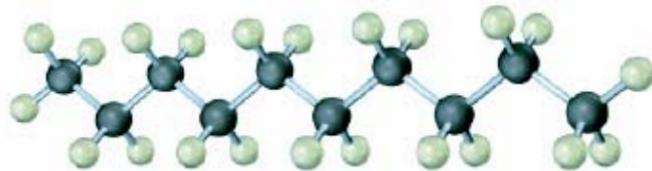
**Answer**[Add Question Here](#)

Question 21 Essay

0 points

[Modify](#) [Remove](#)

**Question** Convert the following molecular model into a condensed structure and a skeletal structure.



**Answer**  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$



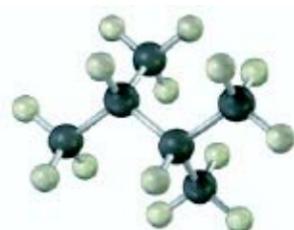
[◀ Add Question Here](#)

[Modify](#) [Remove](#)

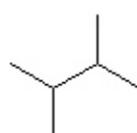
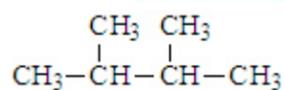
Question 22 **Essay**

**0 points**

**Question** Convert the following molecular model into a condensed structure and a skeletal structure.



**Answer**



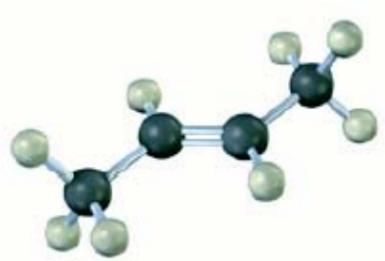
[◀ Add Question Here](#)

[Modify](#) [Remove](#)

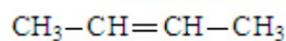
Question 23 **Essay**

**0 points**

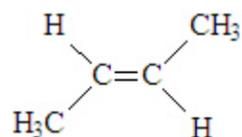
**Question** Convert the following molecular model into a condensed structure and a skeletal structure.



**Answer**



or more specifically;



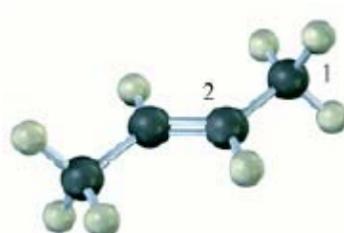
[◀ Add Question Here](#)

[Modify](#) [Remove](#)

Question 24 **Essay**

**0 points**

**Question** Indicate the hybridization on each of the carbon atoms indicated with a number in the molecular model shown.



**Answer**

Carbon 1:  $sp^3$   
Carbon 2:  $sp^2$

[◀ Add Question Here](#)

[Modify](#) [Remove](#)

Question 25 **Essay**

**0 points**

**Question** Draw the orbital diagram showing the ground-state electron configuration of sulfur.

**Answer**



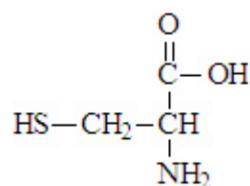
[◀ Add Question Here](#)

## Question 26 Essay

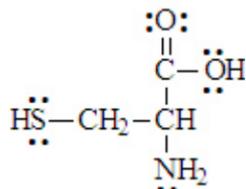
0 points

[Modify](#) [Remove](#)

**Question** Fill in any nonbonding valence electrons that are missing from the following structural representation of the amino acid cysteine.



Answer

[Add Question Here](#)

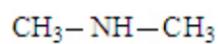
## Question 27 Essay

0 points

[Modify](#) [Remove](#)

**Question** There are two substances with the molecular formula  $\text{C}_2\text{H}_7\text{N}$ . Draw them and describe how they differ.

**Answer**  $\text{CH}_3-\text{CH}_2-\text{NH}_2$



The two structures differ in the number of hydrogen atoms and carbon atoms bonded to the nitrogen atom. The first structure contains the carbon atoms bonded in a two carbon chain while in the second structure the two carbon atoms are isolated from each other by the nitrogen atom.

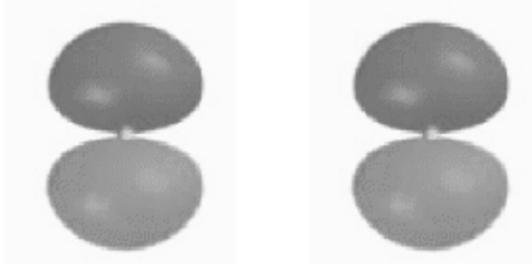
[Add Question Here](#)

## Question 28 Multiple Choice

0 points

[Modify](#) [Remove](#)

**Question** Overlap of the two atomic orbitals shown could result in a:



Answer

- s bond
- s or p depending on the direction of the overlap.
- p bond

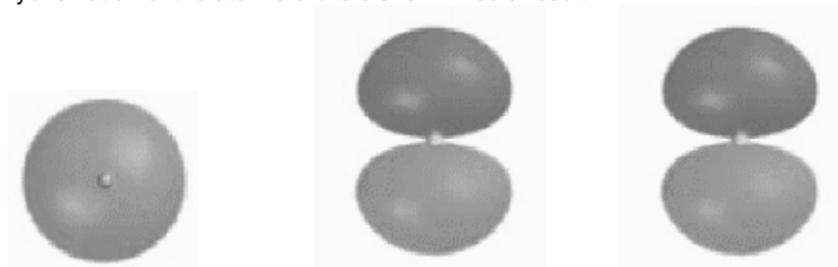
[Add Question Here](#)

## Question 29 Multiple Choice

0 points

[Modify](#) [Remove](#)

**Question** Hybridization of the atomic orbitals shown would result in:



Answer

- sp hybridization
- $sp^3$  hybridization
- $sp^2$  hybridization

[Add Question Here](#)

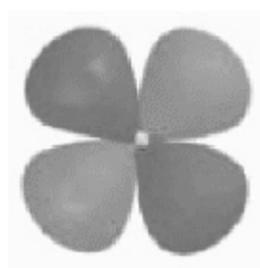
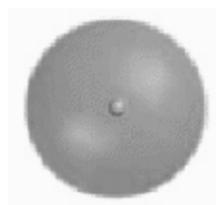
## Question 30 Multiple Choice

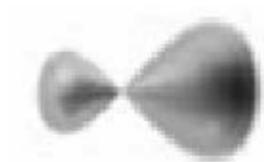
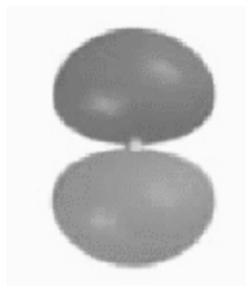
0 points

[Modify](#) [Remove](#)

**Question** Which of the following represents a hybrid orbital?

Answer





[Add Question Here](#)

[Modify](#) [Remove](#)

Question 31 **Multiple Choice**

**0 points**

**Question** What type of hybridization is exhibited by carbon in the following substance?:



**Answer**

- $sp$  hybridization
- $sp^2$  hybridization
- $sp^3$  hybridization

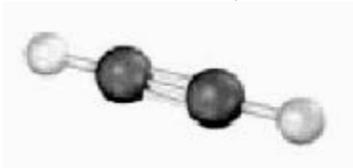
[Add Question Here](#)

[Modify](#) [Remove](#)

Question 32 **Multiple Choice**

**0 points**

**Question** What type of hybridization is exhibited by carbon in the following substance?:



**Answer**

- $sp^3$  hybridization
- $sp$  hybridization
- $sp^2$  hybridization

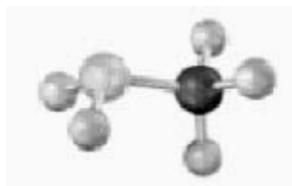
[Add Question Here](#)

[Modify](#) [Remove](#)

Question 33 **Multiple Choice**

**0 points**

**Question** What type of hybridization is exhibited by the nitrogen atom in the following substance and how many lone pairs are present on the nitrogen?:



**Answer**

- $sp$  hybridization and 2 lone pairs
- $sp^3$  hybridization and 1 lone pair
- $sp^3$  hybridization and 2 lone pairs
- $sp^2$  hybridization and 1 lone pair
- $sp$  hybridization and 1 lone pair
- $sp^2$  hybridization and 2 lone pairs

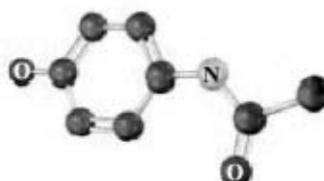
[Add Question Here](#)

[Modify](#) [Remove](#)

Question 34 **Multiple Choice**

**0 points**

**Question** If all the missing bonds in the following structure are sigma bonds to hydrogen atoms, how many hydrogen atoms are missing from this structure? Atoms other than carbon are labeled.



**Answer**

- 7
- 10
- 12
- 14
- None of these is the correct number.

[Add Question Here](#)

OK