

LeAP: Molecular Orbital Diagrams

- Due Aug 29, 2024 at 11:59pm
- Points 5
- Questions 6
- Available until Sep 2, 2024 at 11:59pm
- Time Limit None
- Allowed Attempts 2

Instructions

Lecture Application Practices (LeAPs) serve as initial opportunities for students to apply the information they've gathered from the pre-lecture videos and in-person lectures/lecture videos.

Students are strongly encouraged to complete LeAPs on the same day that the corresponding topic is completed in class. However, to provide consistent due dates, sets of LeAPs will be due on Thursdays at 11:59 PM - Chicago time. See the Weekly Schedules or Course Calendar for specific due dates for each activity.

Each LeAP is worth 5 points. Credit will be awarded based on accuracy. There is no time limit. Students will receive two attempts for each assignment and the highest score will be recorded in the gradebook. LeAPs may consist of multiple-choice, calculation, ranking, choose all that apply, and fill in the blank type questions.

This quiz was locked Sep 2, 2024 at 11:59pm.

Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	56 minutes	5 out of 5

🚫 Correct answers are hidden.

Score for this attempt: 5 out of 5

Submitted Aug 27, 2024 at 11:51am

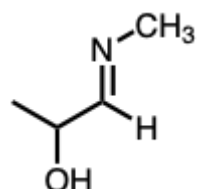
This attempt took 56 minutes.



Question 1

0.5 / 0.5 pts

Use the skeletal structure shown below to answer questions 1-6.



What is the hybridization of the nitrogen atom?

- ☐ sp hybridized
- ☒ sp² hybridized
- ☐ sp³ hybridized
- ☐ Nitrogen is not hybridized



Question 2

1 / 1 pts

Which **nitrogen** atomic orbital is used to form the N-C bond between N and the CH₃ group in the molecule?

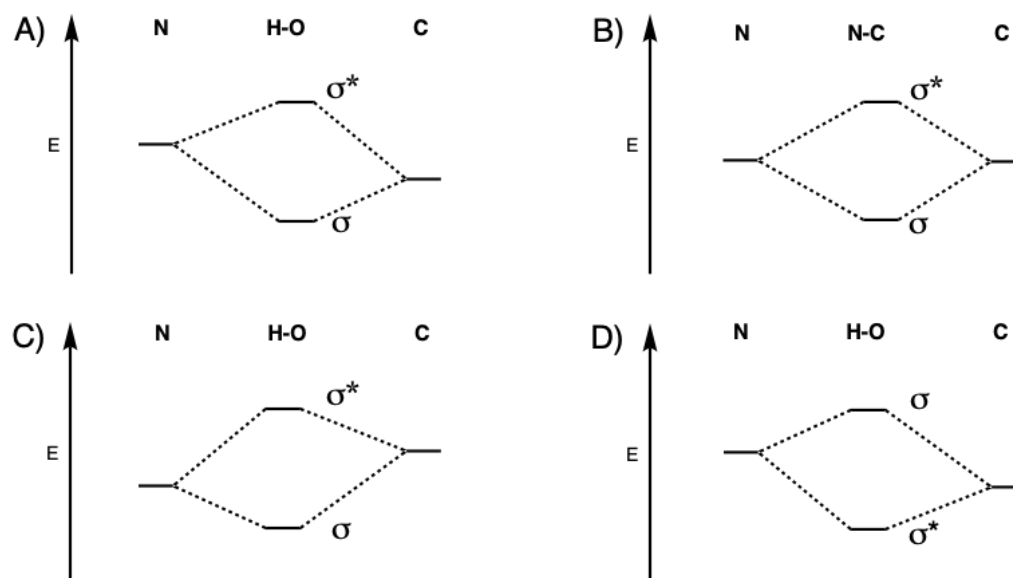
- ☐ s orbital
- ☐ p orbital
- ☐ sp orbital
- ☒ sp² orbital
- ☐ sp³ orbital



Question 3

1 / 1 pts

Which molecular orbital diagram best describes the N-CH₃ bond?



- ☐ A
- ☐ B
- ☒ C
- ☐ D



Question 4

1 / 1 pts

Using the molecular orbital diagram you chose in the previous problem, calculate the **bond order** for the N-CH₃ bond.

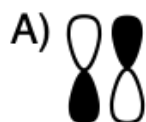
1



Question 5

0.5 / 0.5 pts

Now consider the **N=C** bond. What does the sigma star (σ^*) orbital look like for the N=C bond?



☐ A

☐ B

☒ C

☐ D



Question 6

1 / 1 pts

How many electrons are contained within the N=C bond?

☐ 1

☐ 2

☐ 3

☒ 4

Quiz Score: 5 out of 5