First Midterm – CHM1321-B

Professor Sandro Gambarotta

Date:_14 February 2019 **Length:_80 min____** **Last Name:** [redacted]

First Name: [redacted]

Student # [redacted]

- **Instructions:**
  - **Molecular Model Kit strongly encouraged**
  - **Closed book exam**
  - **Periodic table allowed**

Read carefully:

By signing below, you acknowledge that you have read and ensured that you are complying with the following statement.

Cellular phones, unauthorized electronic devices or course notes (unless an open-book exam) are not allowed during this exam. Phones and devices must be turned off and put away in your bag. Do not keep them in your possession, such as in your pockets. If caught with such a device or document, the following may occur: academic fraud allegations will be filed which may result in you obtaining a 0 (zero) for the exam.

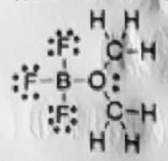
Signature:_____

Question	scores	Question	
1	1 / 1	10	2 / 2
2	3 / 3	11	2 / 2
3	1 / 1		
4	2 / 2		
5	1 / 1		
6	1 / 1		
7	1 / 1		
8	2 / 2		
9	5 / 5		

Total 21 / 21 → 10 /10

Question 1 (1 point)

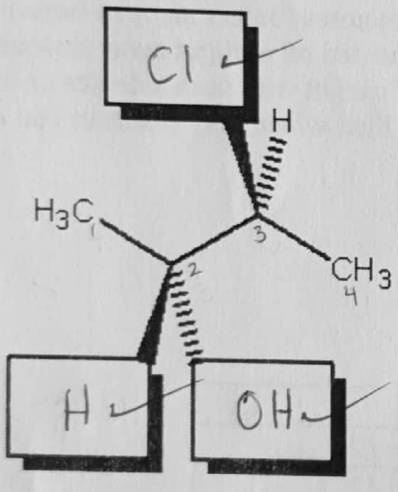
What are the formal charges on boron and oxygen in the following structure?



B = 1-, O = 1-
B = 1-, O = 1+
B = 1+, O = 1+
B = 1+, O = 1-
B = 1-, O = 0

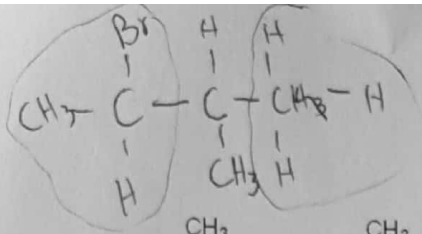
Question 2 (3 points)

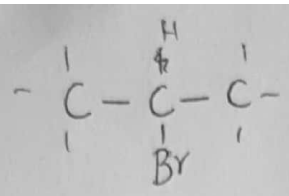
Complete the following zig-zag structure so that it represents (2*R*,3*S*)-3-chlorobutan-2-ol.

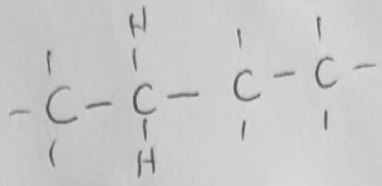


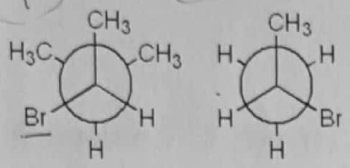
Question 3 (1 points)

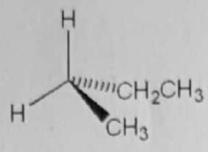
Which of the following compounds is/are chiral?











1 — achiral ~~achiral~~ chiral

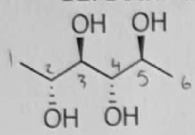
2 — achiral

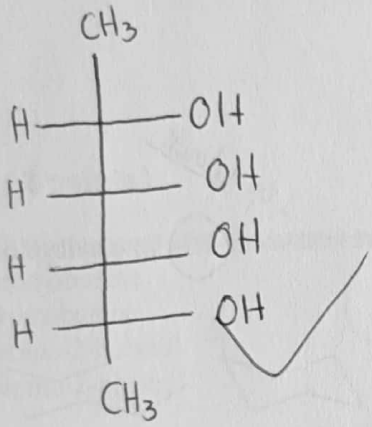
3 — achiral

Only (1) is chiral.

Question 4 (2 points)

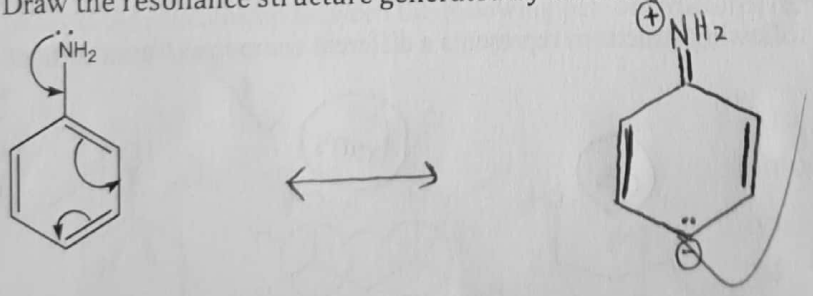
12. Draw the Fischer projection of the following compound.





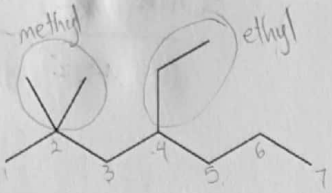
Question 5 (1 point)

Draw the resonance structure generated by the curved arrows.



Question 6 (1 point)

What is the IUPAC name of the following compound?

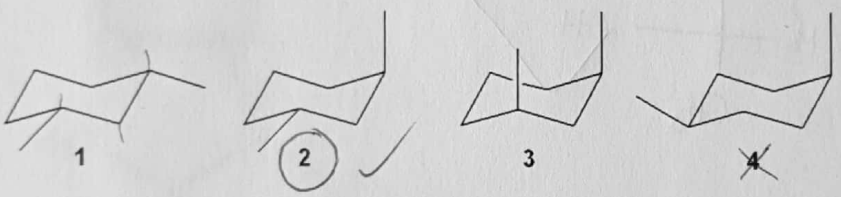


4-ethyl-2,2-dimethylheptane.

Question 7 (1 point)

1 up, 1 down

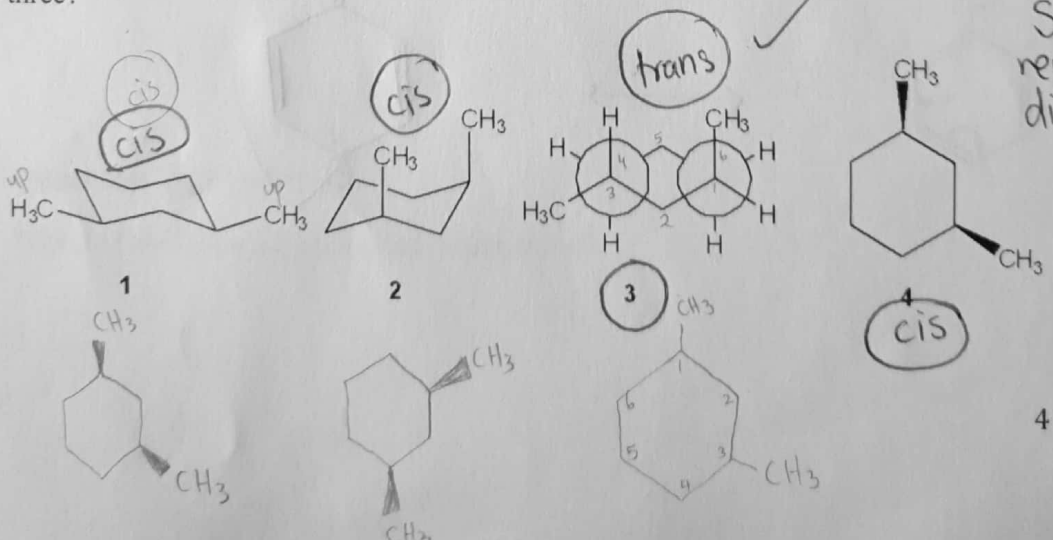
Which of the following structures represents *trans*-1,3-dimethylcyclohexane?



Structure 2

Question 8 (2 points)

Which one of the following structures represents a different compound from the other three?

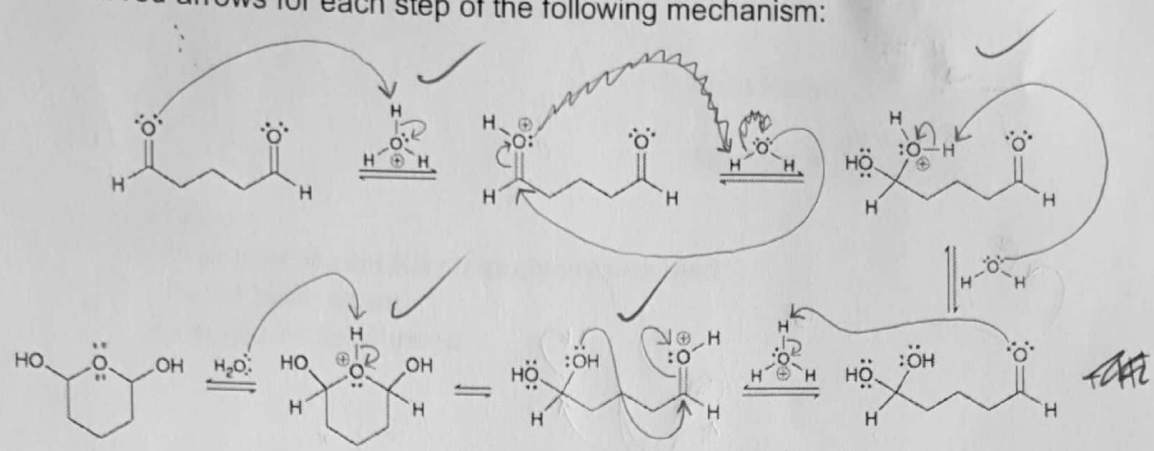


Structure 3 represents a different compound.

5/5

Question 9 (5 points)

Draw curved arrows for each step of the following mechanism:

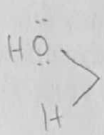


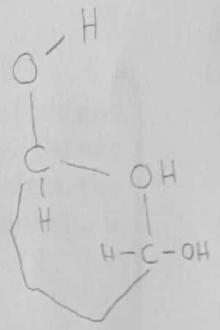
Question 10 (2 points)

Which of the following compounds is a meso compound?

a. (2*R*,3*R*)-dibromobutane
b. (2*R*,3*S*)-dibromobutane
c. (2*R*,3*S*)-3-bromo-2-butanol
d. (2*R*,3*R*)-3-bromo-2-butanol

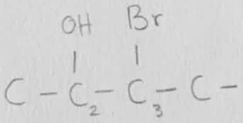
B



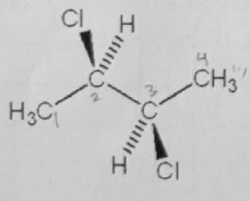


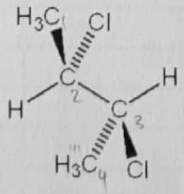
2/2

Question 11 (2 points)



What is the relationship between the following pair of structures (e.g. enantiomers? diasteromers? etc.)?





They are not mirror images of each other, nor are they superimposable so they are diastereomers.

2/2

$C_4H_8Cl_2$

$C_4H_8Cl_2$