

Klein, Organic Chemistry
Chapter 1

1. Chemical reactions occur as a result of _____
- A. the attraction between opposite charges.
 - B. the nucleus–nucleus interactions.
 - C. the motion of electrons.
 - D. like atoms interacting.
 - E. combining two chemicals.

Answer: C

Learning Objective: 1.1 Compare and contrast organic and inorganic compounds
Difficulty: Easy

2. From the following, identify the item which does not contain organic compounds.
- A. medicine
 - B. socks
 - C. a plant
 - D. a coin
 - E. a plastic cup

Answer: D

Learning Objective: 1.1 Compare and contrast organic and inorganic compounds
Difficulty: Easy

3. What is the difference between inorganic and organic compounds?
- A. organic compounds do not contain carbon
 - B. organic compounds contain carbon
 - C. organic compounds are without pesticides
 - D. inorganic compounds contain carbon
 - E. inorganic compounds are composed exclusively of transition metal elements

Answer: B

Learning Objective: 1.1 Compare and contrast organic and inorganic compounds
Difficulty: Easy

4. Constitutional isomers do not differ in _____.

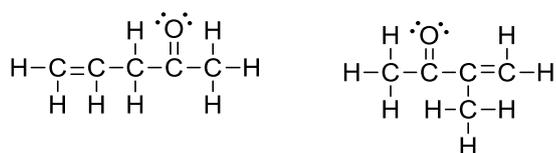
- A. physical properties
- B. atomic connectivity
- C. molecular formula
- D. name
- E. constitution

Answer: C

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Easy

5. What is the relationship between the following compounds?



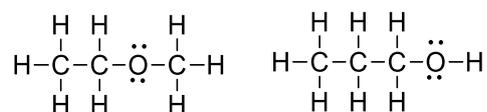
- A. isotopes
- B. constitutional isomers
- C. the same structure
- D. composed of different elements
- E. no relationship

Answer: B

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Easy

6. What is the relationship between the following compounds?



- A. resonance isomers
- B. constitutional isomers
- C. empirical isomers
- D. There is no relationship
- E. isotopes

Answer: B

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Easy

7. Carbon is considered to be _____.

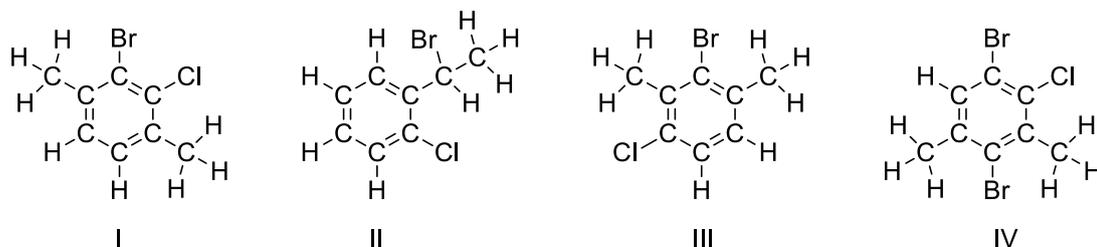
- A. tetravalent
- B. divalent
- C. trivalent
- D. monovalent
- E. pentavalent

Answer: A

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Easy

8. Which of the following compounds are constitutional isomers of each other?



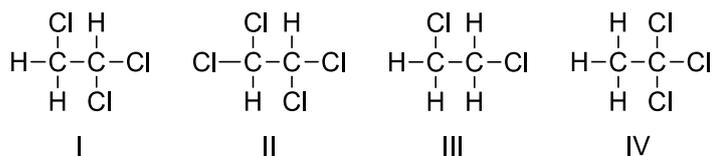
- A. I and II
- B. III and IV
- C. I, II and IV
- D. II, III and IV
- E. I, II, and III

Answer: E

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Medium

9. Which of the following compounds are constitutional isomers of each other?



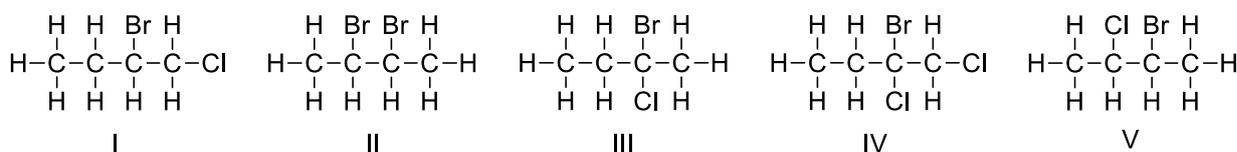
- A. I and II
- B. II and III
- C. III and IV
- D. I and IV
- E. II and III

Answer: D

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Medium

10. Identify three constitutional isomers having the molecular formula C_4H_8BrCl



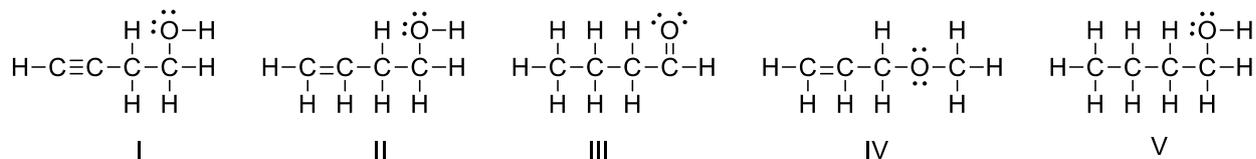
- A. I, II, and III
- B. II, III, and IV
- C. III, IV, and V
- D. I, III, and IV
- E. II, III, and V

Answer: D

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Medium

11. Identify three constitutional isomers having the molecular formula C_4H_8O .



- A. I, II, and III
- B. II, III, and IV
- C. III, IV, and V
- D. I, II, and IV
- E. II, III, and V

Answer: B

Learning Objective: 1.2 Describe structural theory of matter, molecular formula and structural formula

Difficulty: Medium

12. What force is NOT considered in the formation of a covalent bond?
- A. repulsion between two positively charged nuclei
 - B. force of attraction between positively charged nuclei and negatively charged electrons
 - C. repulsion between negatively charged electrons
 - D. repulsion between positively charged nuclei and negatively charged electrons
 - E. the distance between the atoms' nuclei

Answer: D

Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Easy

13. What is the correct Lewis dot structure for the sulfur atom, S?



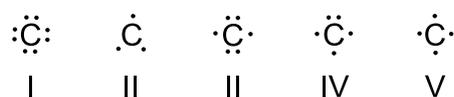
- A. I
- B. II
- C. III
- D. IV
- E. V

Answer: C

Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Easy

14. What is the correct Lewis dot structure for the carbon atom, C?



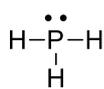
- A. I
- B. II
- C. III
- D. IV
- E. V

Answer: E

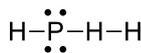
Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Easy

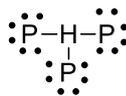
15. What is the correct Lewis structure for the molecule shown in the box below?



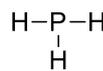
I



II



III



IV



V

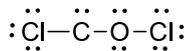
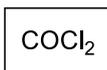
- A. I
- B. II
- C. III
- D. IV
- E. V

Answer: A

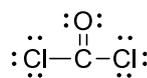
Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Easy

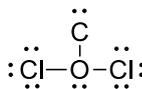
16. What is the correct Lewis structure for the molecule shown in the box below?



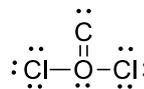
I



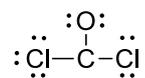
II



III



IV



V

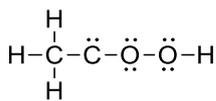
- A. I
- B. II
- C. III
- D. IV
- E. V

Answer: B

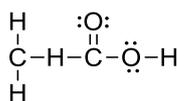
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Difficulty: Medium

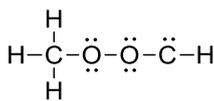
17. What is the correct Lewis structure for the molecule shown in the box below?



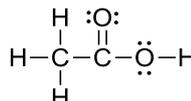
I



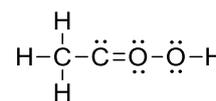
II



III



IV



V

- A. I
- B. II
- C. III
- D. IV
- E. V

Answer: D

Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Medium

18. Which of the following compounds has two lone pairs on the central atom?

- A. CO_2
- B. SCl_2
- C. NF_3
- D. CS_2
- E. SO_3

Answer: B

Learning Objective: 1.3 Define covalent bond, valence electrons, octet rule, and lone pair

Difficulty: Medium

19. What is the formal charge on oxygen in the following structure?

