



# PHILIPPINE COLLEGE OF TECHNOLOGY

Bajada Campus: Dr. Gahol Drive, Garden Park Village, Bajada, Davao City.  
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**COURSE TITLE:** GENERAL CHEMISTRY (ORGANIC)

## FINAL EXAM

**Name:** \_\_\_\_\_

### Part 1. Multiple-Choice Questions

**Instruction:** Place the letter of choice before the number.

- Which of the following is not a characteristic of organic compounds?
  - They usually have low melting points.
  - They usually are only slightly soluble or insoluble in water.
  - If water soluble they seldom conduct an electric current.
  - Bonds which bind the atoms together are nearly always ionic.
- The element least likely to be found in an organic compound is
  - oxygen
  - sulfur
  - nitrogen
  - silicon
- One of the major sources of organic compounds is
  - Natural gas
  - Fermentation
  - Sea water
  - Atmosphere
- Catenation is a property of the carbon atom which describes its ability to
  - bond with other carbon atoms
  - form double and triple bonds
  - exist in plant and animal form
  - form bonds in its ground state
- In stable organic compounds, carbon will always form
  - 2 bonds
  - 4 bonds
  - 3 bonds
  - 5 bonds
- Carbon-carbon double bonds consist of:
  - one  $\sigma$  bond, one  $\pi$  bond
  - two  $\sigma$  bonds, one  $\pi$  bond
  - one  $\sigma$  bond, two  $\pi$  bonds



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(d) two  $\sigma$  bonds, two  $\pi$  bonds

7. Acetylene has a total of:

- (a) one  $\sigma$  bond, two  $\pi$  bonds
- (b) two  $\sigma$  bonds, four  $\pi$  bonds
- (c) three  $\sigma$  bonds, two  $\pi$  bonds
- (d) one  $\sigma$  bond, four  $\pi$  bonds

8. In propene, there are

- (a) eight  $\sigma$  bonds and one  $\pi$  bond
- (b) seven  $\sigma$  bonds and two  $\pi$  bonds
- (c) six  $\sigma$  bonds and three  $\pi$  bonds
- (d) nine  $\sigma$  bonds

9. In propyne, there are

- (a) six  $\sigma$  bonds and two  $\pi$  bonds
- (b) seven  $\sigma$  bonds and one  $\pi$  bond
- (c) six  $\sigma$  bonds and one  $\pi$  bond
- (d) eight  $\sigma$  bonds

10. 1-Buten-3-yne has

- (a) six  $\sigma$  and four  $\pi$  bonds
- (b) seven  $\sigma$  and three  $\pi$  bonds
- (c) eight  $\sigma$  and two  $\pi$  bonds
- (d) nine  $\sigma$  and one  $\pi$  bond

## Part 2. Essay

**Instructions:** Provide the following questions with a brief answer. If the question is in essay form, limit your answer into four to five sentences.

1. Explain why some organic compounds have different colors based on compound structure and our perception of light.

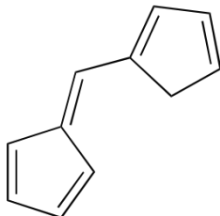


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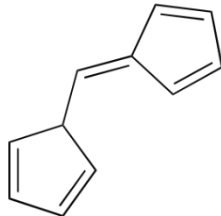
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2. Which of the following molecules would you expect absorb at a longer wavelength in the UV region of the electromagnetic spectrum? Explain your answer.



A



B

3. Discuss the principles of NMR spectroscopy.



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4. What functional groups give the following signals in an IR spectrum? Explain how did you arrive with your answer.

A)  $1700\text{ cm}^{-1}$

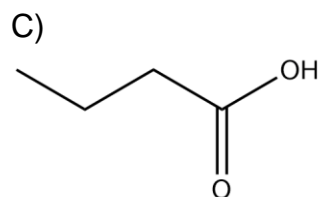
B)  $1550\text{ cm}^{-1}$

C)  $1700\text{ cm}^{-1}$  and  $2510\text{-}3000\text{ cm}^{-1}$

5. How can you distinguish the following pairs of compounds through IR analysis?

A)  $\text{CH}_3\text{OH}$  (Methanol) and  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  (Diethylether)

B) Cyclopentane and 1-pentene.



and

