

Pioneers of Organic Chemistry

Organic Chemistry · Answer Key · 18 Questions

1. Who is credited with the first successful synthesis of an organic compound from inorganic precursors, specifically urea from ammonium cyanate in 1828?

- A) August Kekulé
- B) Friedrich Wöhler**
- C) Louis Pasteur
- D) Jacob Berzelius

2. Which chemist, in 1861, proposed the concept of tetravalency of carbon and the ability of carbon atoms to form chains, laying the groundwork for structural theory?

- A) Dmitri Mendeleev
- B) August Kekulé**
- C) Svante Arrhenius
- D) William Perkin

3. The discovery of vulcanization, a process that makes rubber more durable, is attributed to whom in 1839?

- A) Michael Faraday
- B) Charles Goodyear**
- C) John Dalton
- D) Robert Boyle

4. Who is often called the 'father of organic chemistry' for his extensive work and coining the term 'organic chemistry'?

- A) Friedrich Wöhler
- B) August Kekulé
- C) Jacob Berzelius**
- D) Louis Pasteur

5. The development of the first synthetic dye, mauveine, in 1856, was a landmark discovery by which chemist?

- A) Dmitri Mendeleev
- B) August Kekulé
- C) William Perkin**
- D) John Dalton

6. Who demonstrated that fermentation was a biological process caused by microorganisms, debunking the theory of spontaneous generation for organic matter?

- A) Louis Pasteur**
- B) Charles Darwin
- C) Gregor Mendel
- D) Robert Koch

7. The elucidation of the structure of benzene as a six-membered ring with alternating double bonds is credited to which chemist in 1865?

- A) Jacob Berzelius
- B) Friedrich Wöhler
- C) August Kekulé**
- D) Dmitri Mendeleev

8. The concept of stereoisomers, specifically optical activity, was pioneered by which French chemist in the early 19th century?

- A) Louis Pasteur**
- B) Antoine Lavoisier
- C) Joseph Proust
- D) Amedeo Avogadro

9. Who developed the first effective anesthetic, ether, for surgical procedures in the mid-19th century?

- A) William Morton**
- B) Crawford Long
- C) Horace Wells
- D) Joseph Lister

10. The isolation of the element phosphorus from urine in 1769 was a significant early step in the study of compounds that would later be classified as organic. This was achieved by:

- A) Carl Wilhelm Scheele**
- B) Joseph Priestley
- C) Henry Cavendish
- D) Antoine Lavoisier

11. The discovery of polymers and the concept of macromolecules, which revolutionized materials science, is largely attributed to which chemist in the early 20th century?

- A) Alfred Nobel
- B) Leo Baekeland
- C) Hermann Staudinger**
- D) Wallace Carothers

12. Who is credited with the synthesis of aspirin (acetylsalicylic acid) in a pure, stable form in 1897, making it a widely used medication?

- A) John Pemberton
- B) Felix Hoffmann**
- C) Paul Ehrlich
- D) Gerhard Domagk

13. The first laboratory synthesis of a biologically important molecule, cholesterol, was achieved by which chemist in the early 20th century?

- A) Robert Robinson**
- B) Linus Pauling
- C) Otto Diels
- D) Kurt Alder

14. The development of the Diels-Alder reaction in 1928, a crucial method for synthesizing cyclic compounds, is named after which two chemists?

- A) Otto Diels and Kurt Alder**
- B) Alfred Nobel and Ascanio Sobrero
- C) Svante Arrhenius and Wilhelm Ostwald
- D) Fritz Haber and Carl Bosch

15. Who coined the term 'catalysis' and investigated the phenomenon of chemical reactions being accelerated by the presence of certain substances?

- A) John Dalton
- B) Jöns Jacob Berzelius**
- C) Michael Faraday
- D) Thomas Graham

16. The discovery of the structure of DNA, a fundamental molecule in organic chemistry and biology, involved crucial contributions from Rosalind Franklin and was famously elucidated by Watson and Crick in 1953. However, the initial experimental evidence for DNA's helical structure came from X-ray diffraction images. Whose images were critical?

- A) Dorothy Hodgkin
- B) Rosalind Franklin**
- C) Marie Curie
- D) Lise Meitner

17. The first industrial process for the large-scale synthesis of ammonia, the Haber-Bosch process, developed in the early 20th century, is a cornerstone of modern organic chemistry for fertilizer production. It was named after which two chemists?

A) Carl Bosch and Fritz Haber

B) Alfred Nobel and Gustaf Dalén

C) Wilhelm Ostwald and Walther Hermann Nernst

D) Otto Hahn and Lise Meitner

18. The Nobel Prize in Chemistry in 1962 was awarded for discoveries concerning the structure of nucleic acids. Who received this award for their work on the structure of RNA, building upon the DNA structure discovery?

A) James Watson, Francis Crick, and Maurice Wilkins

B) Linus Pauling

C) Robert Holley, Har Gobind Khorana, and Robert W. Holley

D) Dorothy Hodgkin