20th Century Chemistry Milestones

Chemistry · Practice Test · 12 Questions

1. Which 20th-century scientist is credited with developing the Bohr model of the atom, proposing that electrons orbit the nucleus in specific energy levels?

A) Albert Einstein
B) Niels Bohr
C) Max Planck
D) Marie Curie

2. The discovery of the structure of DNA, a pivotal moment in 20th-century biochemistry, was primarily attributed to the work of which pair of scientists?

A) Rosalind Franklin and Maurice Wilkins
B) James Watson and Francis Crick
C) Linus Pauling and Robert Corey
D) Gregor Mendel and Thomas Morgan

3. What fundamental concept in quantum mechanics, proposed by Werner Heisenberg in the 1920s, states that it's impossible to simultaneously know both the exact position and the exact momentum of a particle?

A) The Photoelectric Effect
B) Wave-Particle Duality
C) The Uncertainty Principle
D) Electron Spin

4. The development of synthetic polymers, revolutionising materials science in the 20th century, saw the pioneering work of which chemist in creating Bakelite, the first fully synthetic plastic?

A) Wallace Carothers
B) Hermann Staudinger
C) Leo Baekeland
D) Karl Ziegler

5. The understanding of radioactivity advanced significantly in the 20th century. Which phenomenon, observed by Ernest Rutherford, involves the transmutation of one element into another?

A) Nuclear Fission
B) Alpha Decay
C) Beta Decay
D) Artificial Transmutation

6. The concept of 'chemical bonding' was greatly expanded upon in the 20th century. What type of covalent bond involves the sharing of three pairs of electrons between two atoms?

A) Single Bond
B) Double Bond
C) Triple Bond
D) Coordinate Covalent Bond

7. The Nobel Prize in Chemistry in 1915 was awarded to Richard Willstätter for his research on plant pigments, particularly which important molecule essential for photosynthesis?

A) Carotenoids
B) Anthocyanins
C) Chlorophyll
D) Flavonoids

8. What major breakthrough in 20th-century organic chemistry, described by the VSEPR theory, helps predict the 3D geometry of molecules based on electron pair repulsion?

A) Valence Bond Theory
B) Molecular Orbital Theory
C) VSEPR Theory
D) Hückel's Rule

9. The Manhattan Project, a landmark effort in the mid-20th century, focused on the development of what type of weapon utilizing nuclear reactions?

A) Chemical Weapon
B) Biological Weapon
C) Atomic Bomb
D) Napalm

10. Linus Pauling's work in the mid-20th century on the nature of the chemical bond led to the development of which concept, which quantifies the tendency of an atom to attract electrons in a bond?

A) Ionization Energy
B) Electron Affinity
C) Electronegativity
D) Polarity

11. The development of antibiotics, a critical advancement in 20th-century medicinal chemistry, began with the discovery of penicillin by which scientist?

A) Albert Sabin
B) Jonas Salk
C) Alexander Fleming
D) Gertrude B. Elion

12. Which of the following is a key characteristic of nuclear fission reactions, a process extensively studied and utilised in the 20th century?

A) A heavy nucleus splits into lighter nuclei, releasing energy.
B) Light nuclei combine to form a heavier nucleus, releasing energy.
C) Electrons are emitted from the nucleus.
D) Neutrons are absorbed by the nucleus, making it unstable.