

MODERN BIOLOGY

Ch. 2:1 Chemistry

MATTER: Chemical changes in matter are essential to all life processes.

- **Matter:** Anything that occupies space and has mass.
- **Mass:** The quantity of matter an object has.

ELEMENTS AND ATOMS

- Elements are substances that cannot be broken down chemically into simpler kinds of matter.
- >90% of all kinds of living things are made of combinations of 4 elements:
 - OXYGEN (O₂)
 - CARBON (C)
 - HYDROGEN (H₂)
 - NITROGEN (N)
- Periodic Table of the Elements
 - Atomic number:
 - Chemical symbol:
 - Atomic mass:
- **Atom:** the simplest particle of an element that retains all of the properties of that element
- Protons:
- Neutrons:
- Electrons:
- Orbital:
- Ion:
- isotope:

COMPOUNDS

- The physical and chemical properties differ between the compounds and elements that compose them.
For example:
 - Sodium (Na) is a soft metal that explodes when placed in water.
 - Chlorine (Cl) is a green poisonous gas.
 - Sodium Chloride (NaCl) is table salt.
- All atoms are neutral.
- Most atoms are unstable. (Noble gases are stable as atoms. They do not react.)
- Atoms combine (react) to become stable.
- Atoms become stable when their outermost energy level is "full" of electrons. They will:
 - share electrons equally
 - share electrons unequally
 - transfer electrons completely with another atom (gain or loss but no sharing)
- **The number and arrangement of their electrons determine the way that elements combine.**
- Elements are arranged on the periodic table by the number of valence electrons and the number of energy levels that they have. Understand the periodic table so you can learn how compounds are made.
- **Covalent Bonds:** electrons are either shared equally or unequally (co-sharing; -valent; outermost electrons). Atoms in a molecule stay together to maintain stability.
- **Ionic Bonds:** electron(s), given up or accepted completely; elements in the compound ionize (ionic

bond). Atoms (ions) in a compound stay together because opposite charges attract.

Review Questions:

1. Carbon has an atomic number of 6. How many p⁺ and e⁻ does an atom of carbon have?
2. Sodium is in family I, therefore, it has 1 valence e⁻. What will Na⁺ do to become stable?

Challenge

3. If Aluminum gives up it's 3 valence e⁻ to chlorine atoms, what are the resulting charges on the ions of Al and each Cl (AlCl₃)?
4. Oxygen is in family VI. It has 6 valence e⁻ and needs 2 more to become stable. Draw an electron configuration diagram (dot diagram) and count out the e⁻ that make each atom stable. (#3, pg. 10 of study guide)
5. An acetylene torch gives off lots of energy. In fact, it is used to cut steel plate. The formula for acetylene is C₂H₂, and there is a triple bond between the carbon atoms. Draw in the e⁻ where the ? are located below. (C = Family IV; H = Family I)



MODERN BIOLOGY

Ch. 2:2 ENERGY

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Modern Biology Ch 31 Review

Truman Jesse Moon



Modern Biology Ch 31 Review:

Advances in the Biology and Management of Modern Bed Bugs Stephen L. Doggett, Dini M. Miller, Chow-Yang Lee, 2018-04-16 The first comprehensive scholarly treatment of bed bugs since 1966 This book updates and expands on existing material on bed bugs with an emphasis on the worldwide resurgence of both the common bed bug *Cimex lectularius* L and the tropical bed bug *Cimex hemipterus* F It incorporates extensive new data from a wide range of basic and applied research as well as the recently observed medical legal and regulatory impacts of bed bugs *Advances in the Biology and Management of Modern Bed Bugs* offers new information on the basic science and advice on using applied management strategies and bed bug bioassay techniques It also presents cutting edge information on the major impacts that bed bugs have had on the medical legal housing and hotel industries across the world as well as their impacts on public health *Advances in the Biology and Management of Modern Bed Bugs* offers chapters that cover the history of bed bugs their global resurgence their impact on society their basic biology how to manage them the future of these pests and more Provides up to date information for the professional pest manager on bed bug biology and management Features contributions from 60 highly experienced and widely recognized experts with 48 unique chapters A one stop source that includes historic technical and practical information Serves as a reference book for academic researchers and students alike *Advances in the Biology and Management of Modern Bed Bugs* is an essential reference for anyone who is impacted by bed bugs or engaged in managing bed bugs be it in an academic basic or applied scientific setting or in a public outreach or pest management role worldwide Modern Biology James Howard Otto, 1985 **Modern Biology** Albert Towle, 1989 **Modern Biology** Truman Jesse Moon, 1958 The Saturday Review of Politics, Literature, Science and Art, 1923 *The Saturday Review of Politics, Literature, Science, Art, and Finance*, 1923 **THE ROLE OF SCIENCE AND TECHNOLOGY IN MODERN NURSING PRACTICES** DR. MANOJ BANDIL, DR. MEGHA LAHANE, MR. NITIN DIXIT, 2020-06-17 Advanced Practice Nursing APN encompasses several roles that extend beyond traditional nursing responsibilities providing comprehensive care in diverse healthcare settings This paper explores the various advanced practice nursing roles including Nurse Practitioners NPs Clinical Nurse Specialists CNSs Nurse Anesthetists CRNAs and Nurse Midwives CNMs By examining the scope of practice responsibilities and impact on patient care for each role this study aims to provide a comparative analysis of advanced practice nursing roles highlighting their contributions to the healthcare system Advanced Practice Nursing Nurse Practitioners Clinical Nurse Specialists Nurse Anesthetists Nurse Midwives Comparative Analysis Advanced Practice Nursing APN includes roles that build upon the foundational knowledge and skills of registered nurses enabling them to provide a higher level of patient care APNs are trained to perform complex assessments make clinical decisions and manage patient care in various settings The four primary APN roles Nurse Practitioners NPs Clinical Nurse Specialists CNSs Nurse Anesthetists CRNAs and Nurse Midwives CNMs each have unique responsibilities and scopes of practice This paper provides

an overview of these advanced practice nursing roles examining their distinct functions educational requirements and contributions to patient care **The Graduate Journal** ,1962 Fish Catching Methods of the World Otto Gabriel,Klaus Lange,Erdmann Dahm,Thomas Wendt,2008-04-15 In the sixteen years since the last edition of Von Brant s classic work was published fishing and fisheries have undergone vast changes Not only has there been great progress in the development of new tools materials and techniques but the industry has seen an increasing need to address controversial issues such as declining fish stocks enormous quantities of bycatch and discard and the impact of towed fishing gear on the environment Fully revised and updated to reflect such changes the fourth edition of this widely read and popular book offers A unique comprehensive survey of the evolution of fishing methods throughout the world Approximately 750 illustrations showing the extensive range of methods techniques and equipment used in fishing across the globe Fishing gear classified according to the FAO system Additional chapters Fishing Effects on Fish Stocks and Environment and Fishery and Gear Research All researchers fisheries scientists fisheries students administrators and libraries in universities and research establishments where fish and fisheries are studied and taught will find this book a valuable addition to their shelves Commercial and sports fishermen will also find Fish Catching Methods of the World a fascinating and vital reference **Holt Biology** Rob DeSalle,Holt Rinehart and Winston,2008 Holt Biology Student Edition 2008 **Modern Infectious Disease Epidemiology** Alexander Krämer,Mirjam Kretzschmar,Klaus Krickeberg,2010-01-23 Hardly a day goes by without news headlines concerning infectious disease threats Currently the spectre of a pandemic of influenza A H1N1 is raising its head and heated debates are taking place about the pro s and con s of vaccinating young girls against human papilloma virus For an evidence based and responsible communication of infectious disease topics to avoid misunderstandings and overreaction of the public we need solid scientific knowledge and an understanding of all aspects of infectious diseases and their control The aim of our book is to present the reader with the general picture and the main ideas of the subject The book introduces the reader to methodological aspects of epidemiology that are specific for infectious diseases and provides insight into the epidemiology of some classes of infectious diseases characterized by their main modes of transmission This choice of topics bridges the gap between scientific research on the clinical biological mathematical social and economic aspects of infectious diseases and their applications in public health The book will help the reader to understand the impact of infectious diseases on modern society and the instruments that policy makers have at their disposal to deal with these challenges It is written for students of the health sciences both of curative medicine and public health and for experts that are active in these and related domains and it may be of interest for the educated layman since the technical level is kept relatively low Saturday Review of Literature ,1971 Modern Soft Tissue Pathology Markku Miettinen,2010-06-14 This book comprehensively covers modern soft tissue pathology and includes both tumors and non neoplastic entities All methods of diagnosis are covered here with an emphasis on the newest diagnostic tools The organization allows the reader to compare didactic comprehensive

panels of illustrations to formulate a complete understanding of the most common and more unusual diseases

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