Option C Energy Cambridge Resources For The Ib Diploma

Chemistry for the IB Diploma, Second edition, covers in full the requirements of the IB syllabus for Chemistry for first examination in 2016. This workbook is specifically for the IB Chemistry syllabus, for examination from 2016. The Chemistry for the IB Diploma Workbook contains straightforward chapters that build learning in a gradual way, first outlining key terms and then providing students with plenty of practice questions to apply their knowledge. Each chapter concludes with exam-style questions. This structured approach reinforces learning and actively builds students' confidence using key scientific skills - handling data, evaluating information and problem solving. This helps empower students to become confident and independent learners. Answers to all of the questions are on the CD-ROM.

IPCC Report on sources, capture, transport, and storage of CO2, for researchers, policy-makers and engineers.

A comprehensive account of how energy has shaped society throughout history, from pre-agricultural foraging societies through today's fossil fuel–driven civilization. "I wait for new Smil books the way some people wait for the next 'Star Wars' movie. In his latest book, Energy and Civilization: A History, he goes deep and broad to explain how innovations in humans' ability to turn energy into heat, light, and motion have been a driving force behind our cultural and economic progress over the past 10,000 years. —Bill Gates, Gates Notes, Best Books of the Year Energy is the only universal currency; it is necessary for getting anything done. The conversion of energy on Earth ranges from terra-forming forces of plate tectonics to cumulative erosive effects of raindrops. Life on Earth depends on the photosynthetic conversion of solar energy into plant biomass. Humans have come to rely on many more energy flows—ranging from fossil fuels to photovoltaic generation of electricity—for their civilized existence. In this monumental history, Vaclav Smil provides a comprehensive account of how energy has shaped society, from pre-agricultural foraging societies through today's fossil fuel–driven civilization. Humans are the only species that can systematically harness energies outside their bodies, using the power of their intellect and an enormous variety of artifacts—from the simplest tools to internal combustion engines and nuclear reactors. The epochal transition to fossil fuels affected everything: agriculture, industry, transportation, weapons, communication, economics, urbanization, quality of life, politics, and the environment. Smil describes humanity's energy eras in panoramic and interdisciplinary fashion, offering readers a magisterial overview. This book is an extensively updated and expanded version of Smil's Energy in World History (1994). Smil has incorporated an enormous amount of new material, reflecting the dramatic developments in energy studies over the last two decades and his own research over that time.

This volume presents six new papers on environmental/energy economics and policy. Robert Stavins evaluates carbon taxes versus a cap-and-trade mechanism for reducing greenhouse-gas emissions, arguing that specific design features of either instrument can be more consequential than the choice of instrument itself. Lucas Davis and James Sallee show that the exemption of electric vehicles from the gasoline tax is likely to be efficient as long as gasoline prices remain below social marginal costs, even though it results in lower tax revenue. Caroline Flammer analyzes the rapidly growing market for green bonds and highlights the importance of third-party certification to the financial and environmental performance of publically traded companies. Antonio Bento, Mark Jacobsen, Christopher Knittel, and Arthur van Benthem develop a general framework for evaluating the costs and benefits of fuel economy standards and use it to account for the differences between several recent studies of changes in these standards. Nicholas Muller estimates a measure of output in the U.S. economy over the last 60 years that accounts for air pollution damages, and shows that pollution effects are sizable, affect growth rates, and have diminished appreciably over time. Finally, Marc Hafstead and Roberton Williams illustrate methods of accounting for employment effects when evaluating the costs and benefits of environmental regulations.

This volume presents sixteen essays by comparative historical scholars who offer a survey of the new fiscal sociology.

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This book, based on lectures on natural and environmental resource economics, offers a nontechnical exposition of the modern theory of sustainability in the presence of resource scarcity. It applies an alternative take on environmental economics, focusing on the economics of the natural environment, including development, computation, and potential empirical importance of the concept of option value, as opposed to the standard treatment of the economics of pollution control. The approach throughout is primarily conceptual and theoretical, though empirical estimation and results are sometimes noted. Mathematics, ranging from elementary calculus to more formal dynamic optimization, is used, especially in the early chapters on the optimal management of exhaustible and renewable resources, but results are always given an economic interpretation. Diagrams and numerical examples are also used extensively. The first chapter introduces the classical economists as the first resource economists, in their discussion of the implications of a limited natural resource base (agricultural land) for the evolution of the wider economy. A later chapter returns to the same concerns, along with others stimulated by the energy and environmental “crises” of the 1970s and beyond. One section considers alternative measures of resource scarcity and empirical findings on their behavior over time. Another introduces the modern concept of sustainability with an intuitive development of the analytics. A chapter on the dynamics of environmental management motivates the concept of option value, shows how to compute it, then demonstrates its importance in an illustrative empirical example. The closing chapter, on climate change, first projects future changes and potential catastrophic impacts, then discusses the policy relevance of both option value and discounting for the very long run. This book is intended for resource and environmental economists and can be read by interested graduate and advanced undergraduate students in the field as well.

A best-seller now available in full colour, covering the entire IB syllabus.

Companies lie at the heart of the climate crisis and are both culpable for, and vulnerable to, its impacts. Rising social and investor concern about the escalating risks of climate change are changing public and investor expectations of businesses and, as a result, corporate approaches to climate change. Dominant corporate norms that put shareholders (and their wealth maximization) at the heart of company law are viewed by many as outdated and in need of reform. Companies and Climate Change analyzes these developments by assessing the regulation and pressures that impact energy companies in the UK, with lessons that apply worldwide. In this work, Lisa Benjamin shows how the Paris Agreement, climate and energy law in the EU and the UK, and transnational human rights and climate litigation, are regulatory and normative developments that illustrate how company law can and should act as a bridge to progressive corporate climate action.

This book, first published in 1988, provides an overview of the diverse work that was being done in applied and theoretical environmental and resource economics. Some essays reflect upon the background of the work of John Krutilla, one of the founders of Resources for the Future and a leading scholar of environmental economics, and the development of the field to date. Other essays examine and convey findings on particular resource problems and theoretical issues and resource policies and the practice of applied welfare economics. This title will be of interest to students of economics and environmental studies.

Climate Change, Human Systems and Policy is a component of Encyclopedia of Natural Resources Policy and Management in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. The Theme on Climate Change, Human Systems and Policy presented in three volumes, deals with the interaction between climate and human systems for policy development. These volumes discuss History, Status, and Prediction of Global Climate Change; Potential Large-scale Effects of Global Warming; Public Perceptions Toward Global Climate Change; Effects of Potential Sea-Level Rises; Economics of Potential Climate Change; Response Strategies for Stabilization of Atmospheric Composition; Policy Framework and Systems Management of Global Climate Change. These three volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

Sustainable development and environmental improvement are often regarded as intrinsically valuable a priori. As a result, the policies by which these goals are to be attained is often inadequately scrutinised. In this book, ecological economics addresses the institutional and policymaking aspects of environmental problems, thus covering a broad socioeconomic research agenda, in contradistinction to mainstream economic approaches. The approach advocated here is open to differing viewpoints on the same issue, sees conflict resolution as a social process, and accepts the need for research into political-economic issues, according a prominent position to the aims of society itself. An in-depth analysis of the policy process is followed in order to understand the pitfalls and barriers that will confront society on the road to sustainable development. Readership: The broad approach advocated will appeal to all involved in environmental problems - decision makers, NGO members, and academic scholars.

Choosing the optimal management option requires environmental risk managers and decision makers to evaluate diverse, and not always congruent, needs and interests of multiple stakeholders. Understanding the trade-offs of different options as well as their legal, economic, scientific, and technological implications is critical to performing accurate assessments and making sound decisions. Valuation of Ecological Resources: Integration of Ecology and Socioeconomics in Environmental Decision Making examines various alternatives for determining the “value” of complex ecological resources. The book discusses how ecology, sociology, and economics influence environmental management decisions. The book further explores the scientific underpinnings of ecological valuation and the roles of regulatory and legislative bodies in the decision-making process. A series of case studies demonstrates the utility of various information sets, tools, and analytical frameworks. Summarizes the conclusions reached by the Ecological Risk Assessment Advisory Group during special workshops conducted by the Society of Environmental Toxicology and Chemistry (SETAC) Written by leading experts from industry, academia, and environmental regulatory agencies, this new text is an excellent resource for self-study as well as for courses in industrial ecology, environmental management, ecological risk assessment, environmental policy, and strategies for sustainability and corporate responsibility.

This paper demonstrates a comprehensive methodology for assessing the viability of an environmental management plan that has long-run economic and ecological impacts. The case study under consideration is the implementation of a water resource management plan in a water-scarce region of the world, namely Cyprus. Specifically, this plan proposes to replenish a depleting aquifer with treated wastewater. The proposed methodology first identifies the key stakeholder groups (farmers and the general public) who are hypothesized to derive economic values (benefits) from implementation of this plan, and then uses stated-preference methods to capture the total economic value of these benefits. Benefits are aggregated over the relevant populations of these stakeholder groups and weighed against the total costs of implementing the plan in a long-run cost-benefit analysis (CBA). An econometrically estimated time-declining trajectory of discount rates is used for the CBA in order to assess the long-run sustainability of the plan. The results reveal that the net benefit trajectory estimated with the time-declining discount rate takes one and a half to three times as long to come to a plateau compared to the constant discount rates of 3.5 and 6 percent, emphasizing the importance of using declining discount rates and capturing the entirety of the benefits generated by such plans. This methodology is particularly recommended for providing much needed information to support the implementation of the EU Water Framework Directive, which advocates the use of CBA with consideration of the notion of sustainability for achieving the "good water status" for all European waters.

In the 1990s shareholder value was applied to all aspects of corporate strategy and management decisions as a result of intense competition, globalization, advances in technology, deregulation and the financial markets. As we enter the twentyfirst century the business environment is

one of increasing creative destruction, where competitive advantage is much harder to sustain. Real Options , a type of advanced financial analysis, applies financial option theory to real assets and offers a strategic framework that recognizes the need for management flexibility and to leverage risk in this corporate environment.

This book shows how promoting clean energy technologies - from solar panels to electric cars - can end human-induced climate change. This Intergovernmental Panel on Climate Change Special Report (IPCC-SRREN) assesses the potential role of renewable energy in the mitigation of climate change. It covers the six most important renewable energy sources - bioenergy, solar, geothermal, hydropower, ocean and wind energy - as well as their integration into present and future energy systems. It considers the environmental and social consequences associated with the deployment of these technologies and presents strategies to overcome technical as well as non-technical obstacles to their application and diffusion. SRREN brings a broad spectrum of technology-specific experts together with scientists studying energy systems as a whole. Prepared following strict IPCC procedures, it presents an impartial assessment of the current state of knowledge: it is policy relevant but not policy prescriptive. SRREN is an invaluable assessment of the potential role of renewable energy for the mitigation of climate change for policymakers, the private sector and academic researchers.

Every decision about energy involves its price and cost. The price of gasoline and the cost of buying from foreign producers; the price of nuclear and hydroelectricity and the costs to our ecosystems; the price of electricity from coal-fired plants and the cost to the atmosphere. Giving life to inventions, lifestyle changes, geopolitical shifts, and things in-between, energy economics is of high interest to Academia, Corporations and Governments. For economists, energy economics is one of three subdisciplines which, taken together, compose an economic approach to the exploitation and preservation of natural resources: energy economics, which focuses on energy-related subjects such as renewable energy, hydropower, nuclear power, and the political economy of energy resource economics, which covers subjects in land and water use, such as mining, fisheries, agriculture, and forests environmental economics, which takes a broader view of natural resources through economic concepts such as risk, valuation, regulation, and distribution Although the three are closely related, they are not often presented as an integrated whole. This Encyclopedia has done just that by unifying these fields into a high-quality and unique overview. The only reference work that codifies the relationships among the three subdisciplines: energy economics, resource economics and environmental economics. Understanding these relationships just became simpler! Nobel Prize Winning Editor-in-Chief (joint recipient 2007 Peace Prize), Jason Shogren, has demonstrated excellent team work again, by coordinating and steering his Editorial Board to produce a cohesive work that guides the user seamlessly through the diverse topics This work contains in equal parts information from and about business, academic, and government perspectives and is intended to serve as a tool for unifying and systematizing research and analysis in business, universities, and government

A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

Updated edition of a comprehensive introduction to the economics of water management, with self-contained treatment of all necessary economic concepts. Economics brings powerful insights to water management, but most water professionals receive limited training in it. The second edition of this text offers a comprehensive development of water resource economics that is accessible to engineers and natural scientists as well as to economists. The goal is to build a practical platform for understanding and performing economic analysis using both theoretical and empirical tools. Familiarity with microeconomics or natural resource economics is helpful, but all the economics needed is presented and developed progressively in the text. The book focuses on the scarcity of water quantity (rather than on water quality). The author presents the economic theory of resource allocation, recognizing the peculiarities imposed by water, and then goes on to treat a range of subjects including conservation, groundwater depletion, water law, policy analysis, cost–benefit analysis, water marketing, privatization, and demand and supply estimation. Added features of this updated edition include a new chapter on water scarcity risk (with climate change and necessary risk tools introduced progressively) and new risk-attentive material elsewhere in the text; sharper treatment of block rates and pricing doctrine; expanded attention to contemporary literature and issues; and new appendixes on input–output analysis, water footprinting and virtual water, and cost allocation. Each chapter ends with a summary and exercises.

This book develops the theory of durable choice and utilization. The basic assumption is that the demand for energy is a derived demand arising through the production of household services. Durable choice is associated with the choice of a particular technology for providing the household service. Econometric systems are derived which capture both the discrete choice nature of appliance selection and the determination of continuous conditional demand. Using the National Interim Energy Consumption Survey (NIECS) from 1978, a nested logit model of room air-conditioning, central air-conditioning, space-heating and water heating is estimated. The estimated probability choice model is used to forecast the impacts of proposed building standards for newly constructed single family detached residences. A network thermal model provides unit energy consumptions for alternative heating and cooling systems across time. Monthly billing data matched to NIECS is analyzed permitting seasonal estimation of the demand for electricity and natural gas by households. The theory of price specification for demand subject to a declining rate structure is reviewed and tested. Finally, consistent estimation procedures are used in the presence of possible correlation between dummy variables indicating appliance ownership and the equation error. The hypothesis of simultaneity in the demand system is tested. Conditional moments in the generalized extreme value family are derived to extend discrete continuous econometric systems in which discrete choice is assumed logistic. An efficiency comparison of various two-stage consistent estimation techniques applied to a single equation of a dummy endogenous simultaneous equation system is undertaken and asymptotic distributions are derived for each estimation method.

The Second Edition of Family Resource Management unlocks the complexity of family decision making for students, enabling them to grasp both the concepts and the underlying explanations of family behavior. Authors Tami James Moore and Sylvia M. Asay have provided a strong theoretical base to facilitate both understanding and retention and have organized the text to parallel the decision-making process employed by professionals. As a result, it includes sections on introduction to the study of family resource management, identification of family needs, understanding resources available to families in differing socioeconomic circumstances, evaluating alternatives and making choices, and implementing and evaluating decisions.

The most comprehensive match to the new 2014 Chemistry syllabus, this completely revised edition gives you unrivalled support for the new concept-based approach, the Nature of science. The only DP Chemistry resource that includes support directly from the IB, focused exam practice, TOK links and real-life applications drive achievement.

Provides the first scholarly and comprehensive book on the national renewable energy laws of every country that has them (113 countries).

Chemistry for the IB Diploma Coursebook with Free Online MaterialCambridge University Press

In the United States, some populations suffer from far greater disparities in health than others. Those disparities are caused not only by fundamental differences in health status across segments of the population, but also because of inequities in factors that impact health status, so-called determinants of health. Only part of an individual's health status

depends on his or her behavior and choice; community-wide problems like poverty, unemployment, poor education, inadequate housing, poor public transportation, interpersonal violence, and decaying neighborhoods also contribute to health inequities, as well as the historic and ongoing interplay of structures, policies, and norms that shape lives. When these factors are not optimal in a community, it does not mean they are intractable: such inequities can be mitigated by social policies that can shape health in powerful ways. Communities in Action: Pathways to Health Equity seeks to delineate the causes of and the solutions to health inequities in the United States. This report focuses on what communities can do to promote health equity, what actions are needed by the many and varied stakeholders that are part of communities or support them, as well as the root causes and structural barriers that need to be overcome.

The Skeptical Environmentalist challenges widely held beliefs that the environmental situation is getting worse and worse. The author, himself a former member of Greenpeace, is critical of the way in which many environmental organisations make selective and misleading use of the scientific evidence. Using the best available statistical information from internationally recognised research institutes, Bjørn Lomborg systematically examines a range of major environmental problems that feature prominently in headline news across the world. His arguments are presented in non-technical, accessible language and are carefully backed up by over 2500 footnotes allowing readers to check sources for themselves. Concluding that there are more reasons for optimism than pessimism, Bjørn Lomborg stresses the need for clear-headed prioritisation of resources to tackle real, not imagined problems. The Skeptical Environmentalist offers readers a non-partisan stocktaking exercise that serves as a useful corrective to the more alarmist accounts favoured by campaign groups and the media.

This book provides an analytic framework from which the foundation of ideological perspectives, administrative structures, and substantive issues are explored. Departing from traditional approaches that emphasize a single discipline or perspective, it offers an interdisciplinary framework with which to think through ecological, political, economic, and social issues. It also provides a multi-stage analysis of policy making from agenda setting through the evaluation process. The integration of social science perspectives and the combination of theoretical and empirical work make this innovative book one of the most comprehensive analyses of Canadian natural resource and environmental policy to date.

The Handbook of Natural Resource and Energy Economics examines the current theory and sample current application methods for natural resource and energy economics. This third volume deals primarily with non-renewable resources. It analyzes the economics of energy and minerals, and includes chapters on the economics of environmental policy. The Handbook provides a source, reference and teaching supplement for use by professional researchers and advanced graduate students. The surveys summarize not only received results but also newer developments from recent journal articles and discussion papers.

Chemistry for the IB Diploma, Second edition, covers in full the requirements of the IB syllabus for Chemistry for first examination in 2016. This digital version of Chemistry for the IB Diploma Coursebook, Second edition, comprehensively covers all the knowledge and skills students need during the Chemistry IB Diploma course, for first examination in 2016, in a reflowable format, adapting to any screen size or device. Written by renowned experts in Chemistry teaching, the text is written in an accessible style with international learners in mind. Self-assessment questions allow learners to track their progress, and exam-style questions help learners to prepare thoroughly for their examinations. Answers to all the questions from within the Coursebook are provided.

Dynamic data assimilation is the assessment, combination and synthesis of observational data, scientific laws and mathematical models to determine the state of a complex physical system, for instance as a preliminary step in making predictions about the system's behaviour. The topic has assumed increasing importance in fields such as numerical weather prediction where conscientious efforts are being made to extend the term of reliable weather forecasts beyond the few days that are presently feasible. This book is designed to be a basic one-stop reference for graduate students and researchers. It is based on graduate courses taught over a decade to mathematicians, scientists, and engineers, and its modular structure accommodates the various audience requirements. Thus Part I is a broad introduction to the history, development and philosophy of data assimilation, illustrated by examples; Part II considers the classical, static approaches, both linear and nonlinear; and Part III describes computational techniques. Parts IV to VII are concerned with how statistical and dynamic ideas can be incorporated into the classical framework. Key themes covered here include estimation theory, stochastic and dynamic models, and sequential filtering. The final part addresses the predictability of dynamical systems. Chapters end with a section that provides pointers to the literature, and a set of exercises with instructive hints.

This book attempts to provide a theoretical framework for answering difficult questions evoked by the concept of technology choice primarily by conducting a review of the Appropriate Technology movement and its ideas and experiments.

Derived from the renowned multi-volume International Encyclopaedia of Laws, this book provides a systematic approach to legislation and legal practice concerning energy resources and production in Australia. The book describes the administrative organization, regulatory framework, and relevant case law pertaining to the development, application, and use of such forms of energy as electricity, gas, petroleum, and coal, with attention as needed to the pervasive legal effects of competition law, environmental law, and tax law. A general introduction covers the geography of energy resources, sources and basic principles of energy law, and the relevant governmental institutions. Then follows a detailed description of specific legislation and regulation affecting such factors as documentation, undertakings, facilities, storage, pricing, procurement and sales, transportation, transmission, distribution, and supply of each form of energy. Case law, intergovernmental cooperation agreements, and interactions with environmental, tax, and competition law are explained. Its succinct yet scholarly nature, as well as the practical quality of the information it provides, make this book a valuable

resource for energy sector policymakers and energy firm counsel handling cases affecting Australia. It will also be welcomed by researchers and academics for its contribution to the study of a complex field that today stands at the foreground of comparative law.

More and more people believe we must quickly wean ourselves from fossil fuels - oil, natural gas and coal - to save the planet from environmental catastrophe, wars and economic collapse. In this 2006 book, Professor Jaccard argues that this view is misguided. We have the technological capability to use fossil fuels without emitting climate-threatening greenhouse gases or other pollutants. The transition from conventional oil and gas to their unconventional sources including coal for producing electricity, hydrogen and cleaner-burning fuels will decrease energy dependence on politically unstable regions. In addition, our vast fossil fuel resources will be the cheapest source of clean energy for the next century and perhaps longer, which is critical for the economic and social development of the world's poorer countries. By buying time for increasing energy efficiency, developing renewable energy technologies and making nuclear power more attractive, fossil fuels will play a key role in humanity's quest for a sustainable energy system.

A balanced introduction to tomorrow's energy sources Over the course of the next fifty years, there will be a shift in the quest for sustainble energy, including a major change in transportation from internal combustion engines burning petroleum-derived fuels to newer technology engines using new transportation fuels. Alternative Energy Reources examines our options for energy sources with a focus on hydrogen as a large-scale, secondary energy vector parallel to electricity. As the price of petroleum products increases, the world is scrambling to find a suitable replacement energy source. In this comprehensive primer, Professor Paul Kruger examines energy use throughout history and the exponential expansion of our energy use beginning with the Industrial Revolution through the present day. The book then analyzes the various alternative energy sources available, including renewable energy (hydroelectric, solar, wind, biomass, and geothermal), nuclear, and hydrogen. He addresses each energy source's pros and cons based on our needs, availability, and environmental impact aspects. Finally, Dr. Kruger proposes the use of hydrogen as a fuel to sustain our energy supply produced by appropriate technology mixtures of renewable and nuclear energy.