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ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

CHEMISTRY

PAPER 2 Theory

4024/2

NOVEMBER 2022 SESSION

2 hours

Additional materials:

Mathematical tables/ Electronic calculator (optional)

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page and on all separate answer paper used.

Section A

Answer all questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer any four questions.

Write your answers on the separate answer paper provided.

At the end of the examination, fasten any separate answer paper used securely to the question paper.

Enter the numbers of Section B questions you have answered in the grid.

All essential working must be shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.

A copy of the Periodic Table is printed on page 14.

FOR EXAMINER'S USE

Section A

Section B

TOTAL

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Chemistry Paper 2 November 2013

**Jonathan Coulson, Paul
Roberts, Isabelle Taylor**



Chemistry Paper 2 November 2013:

Production Chemicals for the Oil and Gas Industry, Second Edition Malcolm A. Kelland, 2014-03-13 Production chemistry issues result from changes in well stream fluids both liquid and gaseous during processing Since crude oil production is characterized by variable production rates and unpredictable changes to the nature of the produced fluids it is essential for production chemists to have a range of chemical additives available for rectifying issues that would not otherwise be fully resolved Modern production methods the need to upgrade crude oils of variable quality and environmental constraints demand chemical solutions Thus oilfield production chemicals are necessary to overcome or minimize the effects of the production chemistry problems Production Chemicals for the Oil and Gas Industry Second Edition discusses a wide variety of production chemicals used by the oil and gas industry for down hole and topside applications both onshore and offshore Incorporating the large amount of research and applications since the first edition this new edition reviews all past and present classes of production chemicals providing numerous difficult to obtain references especially SPE papers and patents Unlike other texts that focus on how products perform in the field this book focuses on the specific structures of chemicals that are known to deliver the required or desired performance information that is very useful for research and development Each updated chapter begins by introducing a problem such as scale or corrosion for which there is a production chemical The author then briefly discusses all chemical and nonchemical methods to treat the problem and provides in depth descriptions of the structural classes of relevant production chemicals He also mentions when available the environmental properties of chemicals and whether the chemical or technique has been successfully used in the field This edition includes two new chapters and nearly 50 percent more references [Chemistry for the IB Diploma Second Edition](#) Richard Harwood, Christopher Coates, Christopher Talbot, 2015-07-31 Provide clear guidance to the 2014 changes and ensure in depth study with accessible content directly mapped to the new syllabus and approach to learning This second edition of the highly regarded first edition contains all SL and HL content which is clearly identified throughout Options are available free online along with appendices and data and statistics Improve exam performance with exam style questions including from past papers Integrate Theory of Knowledge into your lessons and provide opportunities for cross curriculum study Stretch more able students with extension activities The shift to concept based approach to learning Nature of Science is covered by providing a framework for the course with points for discussion Key skills and experiments included Full digital package offered in a variety of formats so that you can deliver the course just how you like *The Selected Papers of Sir John Meurig Thomas* John Meurig Thomas, 2017-07-07 John Meurig Thomas is a former Director of the Royal Institution of Great Britain a former head of the Department of Physical Chemistry and former Master of Peterhouse University of Cambridge A world renowned solid state materials and surface chemist he has been an educator researcher academic administrator author of university texts government advisor industrial consultant and trustee of national museums in a career

spanning over 50 years Recipient of many international awards including the Linus Pauling Willard Gibbs Kapitza Natta Stokes Davy and Faraday medals he is also a fellow of the Royal Society 1977 of the American Philosophical Society 1993 and of ten other national academies He is best known for his fundamental work in heterogeneous catalysis chemical electron microscopy and in the popularisation of science for which in conjunction with his services to chemistry he was knighted 1991 He is also founding editor of three scientific journals and editor or co editor of some 30 monographs A new mineral meurigite was named in his honour 1995 Most recently in 2016 Sir John was awarded the Royal Medal for Physical Sciences by the Royal Society Drawn from over 1200 publications this volume contains a summarised account of Sir John s work with a selection of the new techniques pioneered and discovered by him and his colleagues Also included are popular science articles and various illustrations of techniques which have enhanced our knowledge of many facets of condensed matter science Contributions from 80 peers colleagues former co workers students and friends worldwide who have interacted with or been influenced by him are a tribute to the professional and personal life of Sir John making this book a unique reflective summary of the work of one of the greatest achievers in modern British physical science *The Nano-Micro Interface* Marcel Van de Voorde,Matthias Werner,Hans-Jörg Fecht,2015-01-12 Controlling the properties of materials by modifying their composition and by manipulating the arrangement of atoms and molecules is a dream that can be achieved by nanotechnology As one of the fastest developing and innovative as well as well funded fields in science nanotechnology has already significantly changed the research landscape in chemistry materials science and physics with numerous applications in consumer products such as sunscreens and water repellent clothes It is also thanks to this multidisciplinary field that flat panel displays highly efficient solar cells and new biological imaging techniques have become reality This second enlarged edition has been fully updated to address the rapid progress made within this field in recent years Internationally recognized experts provide comprehensive first hand information resulting in an overview of the entire nano micro world In so doing they cover aspects of funding and commercialization the manufacture and future applications of nanomaterials the fundamentals of nanostructures leading to macroscale objects as well as the ongoing miniaturization toward the nanoscale domain Along the way the authors explain the effects occurring at the nanoscale and the nanotechnological characterization techniques An additional topic on the role of nanotechnology in energy and mobility covers the challenge of developing materials and devices such as electrodes and membrane materials for fuel cells and catalysts for sustainable transportation Also new to this edition are the latest figures for funding investments and commercialization prospects as well as recent research programs and organizations **Thom H. Dunning, Jr.** Angela K. Wilson,Kirk A. Peterson,David E. Woon,2015-05-04 In this Festschrift celebrating the career of Thom H Dunning Jr selected researchers in theoretical chemistry present research highlights on major developments in the field Originally published in the journal Theoretical Chemistry Accounts these outstanding contributions are now available in a hardcover print format as well as a special

electronic edition This volume provides valuable content for all researchers in theoretical chemistry and will especially benefit those research groups and libraries with limited access to the journal

Neuropsychopharmacology of Psychosis: Relation of Brain Signals, Cognition and Chemistry André Schmidt, Stefan Borgwardt, 2015-04-22 Nothing provided

Practical Food Safety Rajeev Bhat, Vicente M. Gómez-López, 2014-06-23 The past few years have witnessed an upsurge in incidences relating to food safety issues which are all attributed to different factors Today with the increase in knowledge and available databases on food safety issues the world is witnessing tremendous efforts towards the development of new economical and environmentally friendly techniques for maintaining the quality of perishable foods and agro based commodities The intensification of food safety concerns reflects a major global awareness of foods in world trade Several recommendations have been put forward by various world governing bodies and committees to solve food safety issues which are all mainly targeted at benefiting consumers In addition economic losses and instability to a particular nation or region caused by food safety issues can be huge Various non dependent risk factors can be involved with regard to food safety in a wide range of food commodities such as fresh fruits vegetables seafood poultry meat and meat products Additionally food safety issues involves a wide array of issues including processed foods packaging post harvest preservation microbial growth and spoilage food poisoning handling at the manufacturing units food additives presence of banned chemicals and drugs and more Rapid change in climatic conditions is also playing a pivotal role with regard to food safety issues and increasing the anxiety about our ability to feed the world safely Practical Food Safety Contemporary Issues and Future Directions takes a multi faceted approach to the subject of food safety covering various aspects ranging from microbiological to chemical issues and from basic knowledge to future perspectives This is a book exclusively designed to simultaneously encourage consideration of the present knowledge and future possibilities of food safety This book also covers the classic topics required for all books on food safety and encompasses the most recent updates in the field Leading researchers have addressed new issues and have put forth novel research findings that will affect the world in the future and suggesting how these should be faced This book will be useful for researchers engaged in the field of food science and food safety food industry personnel engaged in safety aspects and governmental and non governmental agencies involved in establishing guidelines towards establishing safety measures for food and agricultural commodities

University Trends Jonathan Coulson, Paul Roberts, Isabelle Taylor, 2014-09-15 A university campus is a place with special resonance conjuring images of cloistered quadrangles and wood panelled libraries often echoing centuries of scholarly tradition And yet it is also a place of cutting edge science interactive learning youth vibrancy and energy It is this dual nature which makes the physical environment of a university so dynamic as well as a highly challenging landscape to design and manage successfully Today the scale of the pressures and the rate of change facing higher education institutions are greater than ever Squeezed public spending rising tuition fees and the growing education ambitions of developing nations are set against a backdrop of rapid

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