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## PHYSICAL SCIENCES PAPER 1 (PHYSICS)

GRADE 12

### TERMS & DEFINITIONS, QUESTIONS & ANSWERS PER TOPIC

2021



#### TABLE OF CONTENTS



|                                                     |     |
|-----------------------------------------------------|-----|
| HOW TO USE THIS DOCUMENT .....                      | 2   |
| TERMS AND DEFINITIONS .....                         | 2   |
| QUESTIONS .....                                     | 7   |
| NEWTON'S LAWS .....                                 | 7   |
| VERTICAL PROJECTILE MOTION .....                    | 12  |
| MOMENTUM AND IMPULSE .....                          | 17  |
| WORK, ENERGY AND POWER .....                        | 23  |
| DOPPLER EFFECT .....                                | 29  |
| ELECTROSTATICS .....                                | 34  |
| ELECTRIC CIRCUITS .....                             | 41  |
| ELECTRICAL MACHINES .....                           | 51  |
| OPTICAL PHENOMENA AND PROPERTIES OF MATERIALS ..... | 56  |
| ANSWERS TO QUESTIONS .....                          | 63  |
| NEWTON'S LAWS .....                                 | 63  |
| VERTICAL PROJECTILE MOTION .....                    | 71  |
| MOMENTUM AND IMPULSE .....                          | 85  |
| WORK, ENERGY AND POWER .....                        | 90  |
| DOPPLER EFFECT .....                                | 99  |
| ELECTROSTATICS .....                                | 104 |
| ELECTRIC CIRCUITS .....                             | 115 |
| ELECTRICAL MACHINES .....                           | 125 |
| OPTICAL PHENOMENA AND PROPERTIES OF MATERIALS ..... | 132 |
| BIBLIOGRAPHY .....                                  | 139 |



# 2014 Paper 1 Physical Science Facilitator

**Mary Orr**



## 2014 Paper 1 Physical Science Facilitator:

**ICPMG2014 - Physical Modelling in Geotechnics** Christophe Gaudin, David White, 2019-01-08 The 8th International Conference on Physical Modelling in Geotechnics ICPMG2014 was organised by the Centre for Offshore Foundation Systems at the University of Western Australia under the auspices of the Technical Committee 104 for Physical Modelling in Geotechnics of the International Society of Soil Mechanics and Geotechnical Engineering This quadrennial conference is the traditional focal point for the physical modelling community of academics scientists and engineers to present and exchange the latest developments on a wide range of physical modelling aspects associated with geotechnical engineering These proceedings together with the seven previous proceedings dating from 1988 present an inestimable collection of the technical and scientific developments and breakthroughs established over the last 25 years These proceedings include 10 keynote lectures from scientific leaders within the physical modelling community and 160 peer reviewed papers from 26 countries They are organised in 14 themes presenting the latest developments in physical modelling technology modelling techniques and sensors through a wide range of soil structure interaction problems including shallow and deep foundations offshore geotechnics dams and embankments excavations and retaining structures and slope stability Fundamental aspects of earthquake engineering geohazards ground reinforcements and improvements and soil properties and behaviour are also covered demonstrating the increasing complexity of modelling arising from state of the art technological developments and increased understanding of similitude principles A special theme on education presents the latest developments in the use of physical modelling techniques for instructing undergraduate and postgraduate students in geotechnical engineering

*ECRM2014-Proceedings of the 13th European Conference on Research Methodology for Business and Management Studies* Dr Martin Rich, Dr Anne Brown, 2014-06-16      **Occupations of Federal White-collar Workers**, 1955      Sarah Bowdich Lee (1791-1856) and Pioneering Perspectives on Natural History Mary Orr, 2024-09-17 History from below uncovers overlooked protagonists contributing to international endeavour often against considerable odds Mrs T Edward Bowdich then Mrs R Lee 1791 1856 is indicative When women allegedly cannot participate in early nineteenth century scientific exploration discovery and publication Sarah s multiple specialist contributions to French and British natural history have attracted no book length study This first appraisal of Sarah s unbroken production of discipline changing scientific work over three decades in modern ichthyology in historical geography of West Africa and in the next generational dissemination of expert scientific knowledge does more than fill this gap The book also pivotally investigates the intercultural interdisciplinary and multi genre reach of Sarah s pioneering perspectives and contributions and how she could achieve her work independently in her own name s over three decades Sarah s larger significance is then to provide a very different narrative for women at work in expert nineteenth century natural history making By everywhere challenging the secondary minor and domestic frames for women s contributions of the period the pioneering perspectives of Sarah s story also provide alternative

paradigms to the leaky pipeline model still informing women's careers and work in STEM today

**Science Teaching in Schools** Great Britain: Parliament: House of Lords: Science and Technology Committee, 2006-11-05 The Committee's report examines science and mathematics teaching in secondary schools in England focusing on the following issues the take up of science and mathematics at GCSE and A level the provision of careers advice to students problems in the recruitment and retention of teachers the quality of teaching methods and the role of continuing professional development The Committee finds that effective science teaching in schools is essential both in order to ensure a satisfactory general level of scientific literacy in society and to enable the next generation of scientists and engineers to progress into higher education and beyond It argues that the current examination system forces students to study an excessively narrow range of subjects at too early an age and it recommends that the Government should reconsider the Tomlinson proposals for a broader diploma based system for 14-19 year old students based on the International Baccalaureate This would ensure that students receive a more rounded education and are not made to over specialise before they are able to see the merits of studying science and mathematics Concerns are also raised about the shortage of science teachers particularly specialist physics and chemistry teachers the quality of careers advice in schools and the importance of practical science in schools

*Artificial Intelligence Learning Facilitators* Fadi Al-Turjman, 2025-10-28 Artificial Intelligence Learning Facilitators Creating Smart Education Systems delves into the various AI based techniques such as machine learning and natural language processing that can help in automating management tasks such as lecture preparation students performance evaluation and predictive performance assessment It highlights the importance of AI in handling the increasing learning complexities The book explores the use of AI based virtual assistants and chatbots in enhancing teaching services for students and instructors It also discusses the potential of AI in creating personalized and targeted learning experiences The centerpiece of the book is a presentation of the learning and teaching system AI Prof DUX The use cases cover such scenarios as Question generation for quizzes and exams The development and implementation of lecture scheduling The lecture notes generator Examination platform Lecture video link generation Classroom chat platform Courses management The book is an exploration of the crucial role of AI as a game changer in educational transformation It emphasizes how AI can positively impact various aspects of smart education systems

**Biology and Management of Invasive Quagga and Zebra Mussels in the Western United States** Wai Hing Wong, Shawn L. Gerstenberger, 2015-05-07 Biology and Management of Invasive Quagga and Zebra Mussels in the Western United States is a synthesis of the biology and management of invasive mussels from scientists and managers working on invasive quagga and zebra mussels in the western United States Invasive dreissenid mussels have spread throughout southwestern United States at unprecedented

*Collaborative Computing: Networking, Applications and Worksharing* Honghao Gao, Xinheng Wang, Yuyu Yin, Muddesar Iqbal, 2019-02-06 This book constitutes the thoroughly refereed proceedings of the 14th International Conference on Collaborative Computing Networking Applications and

Worksharing CollaborateCom 2018 held in Shanghai China in December 2018 The 43 full and 19 short papers presented were carefully reviewed and selected from 106 submissions The papers reflect the conference sessions as follows vehicular networks social networks information processing data detection and retrieval collaborative computing social networks vehicular networks networks and sensors information processing and collaborative computing mobility and software testing and formal verification web services and image information processing web services and remote sensing **Cloud**

**Computing** Victor C.M. Leung,Roy Xiaorong Lai,Min Chen,Jiafu Wan,2015-03-07 This book constitutes the thoroughly refereed post conference proceedings of the 5th International Conference on Cloud Computing CloudComp 2014 held in Guilin China in October 2014 The 25 revised full papers were carefully reviewed and selected from 72 submissions and cover topics such as mobile cloud computing services applications IoT on cloud architectures and big data cloud assisted pervasive computing and services management and virtualization for cloud cloud security Information and Communications

Security Lucas C. K. Hui,S. H. Qing,Elaine Shi,S. M. Yiu,2015-08-01 This book constitutes the thoroughly refereed post conference proceedings of the 16th International Conference on Information and Communications Security ICISC 2014 held in Hong Kong China in December 2014 The 22 revised full papers including two invited talks presented were carefully selected from 90 submissions The papers provide the latest results in research development and applications in the field of information security and cryptology **Science and Sensibility** Michael Vincent McGinnis,2016-03-22 If humans are to understand and discover ways of addressing complex social and ecological problems we first need to find intimacy with our particular places and communities Cultivating a relationship to place often includes a negotiating process that involves both science and sensibility While science is one key part of an adaptive and resilient society the cultivation of a renewed sense of place and community is essential as well Science and Sensibility argues for the need for ecology to engage with philosophical values and economic motivations in a political process of negotiation with the goal of shaping humans treatment of the natural world Michael Vincent McGinnis aims to reframe ecology so it might have greater trans scientific awareness of the roles and interactions among multiple stakeholders in socioecological systems and he also maintains that deep ecological knowledge of specific places will be crucial to supporting a sustainable society He uses numerous specific case studies from watershed coastal and marine habitats to illustrate how place based ecological negotiation can occur and how reframing our negotiation process can influence conservation restoration and environmental policy in effective ways **POGIL** Shawn R.

Simonson,2023-07-03 Process Oriented Guided Inquiry Learning POGIL is a pedagogy that is based on research on how people learn and has been shown to lead to better student outcomes in many contexts and in a variety of academic disciplines Beyond facilitating students mastery of a discipline it promotes vital educational outcomes such as communication skills and critical thinking Its active international community of practitioners provides accessible educational development and support for anyone developing related courses Having started as a process developed by a group of chemistry professors focused on

helping their students better grasp the concepts of general chemistry The POGIL Project has grown into a dynamic organization of committed instructors who help each other transform classrooms and improve student success develop curricular materials to assist this process conduct research expanding what is known about learning and teaching and provide professional development and collegiality from elementary teachers to college professors As a pedagogy it has been shown to be effective in a variety of content areas and at different educational levels This is an introduction to the process and the community Every POGIL classroom is different and is a reflection of the uniqueness of the particular context the institution department physical space student body and instructor but follows a common structure in which students work cooperatively in self managed small groups of three or four The group work is focused on activities that are carefully designed and scaffolded to enable students to develop important concepts or to deepen and refine their understanding of those ideas or concepts for themselves based entirely on data provided in class not on prior reading of the textbook or other introduction to the topic The learning environment is structured to support the development of process skills such as teamwork effective communication information processing problem solving and critical thinking The instructor s role is to facilitate the development of student concepts and process skills not to simply deliver content to the students The first part of this book introduces the theoretical and philosophical foundations of POGIL pedagogy and summarizes the literature demonstrating its efficacy The second part of the book focusses on implementing POGIL covering the formation and effective management of student teams offering guidance on the selection and writing of POGIL activities as well as on facilitation teaching large classes and assessment The book concludes with examples of implementation in STEM and non STEM disciplines as well as guidance on how to get started Appendices provide additional resources and information about The POGIL Project

*Life-Cycle Decisions for Biomedical Data* National Academies of Sciences, Engineering, and Medicine, Policy and Global Affairs, Division on Earth and Life Studies, Division on Engineering and Physical Sciences, Board on Research Data and Information, Board on Life Sciences, Computer Science and Telecommunications Board, Committee on Applied and Theoretical Statistics, Board on Mathematical Sciences and Analytics, Committee on Forecasting Costs for Preserving and Promoting Access to Biomedical Data, 2020-10-04 Biomedical research results in the collection and storage of increasingly large and complex data sets Preserving those data so that they are discoverable accessible and interpretable accelerates scientific discovery and improves health outcomes but requires that researchers data curators and data archivists consider the long term disposition of data and the costs of preserving archiving and promoting access to them Life Cycle Decisions for Biomedical Data examines and assesses approaches and considerations for forecasting costs for preserving archiving and promoting access to biomedical research data This report provides a comprehensive conceptual framework for cost effective decision making that encourages data accessibility and reuse for researchers data managers data archivists data scientists and institutions that support platforms that enable biomedical research data preservation discoverability and

use **Evaluating Climate Change Action for Sustainable Development** Juha I. Uitto, Jyotsna Puri, Rob D. van den Berg, 2017-01-11 This book is open access under a Creative Commons license This authoritative book presents the ever progressing state of the art in evaluating climate change strategies and action It builds upon a selection of relevant and practical papers and presentations given at the 2nd International Conference on Evaluating Climate Change and Development held in Washington DC in 2014 and includes perspectives from independent evaluations of the major international organisations supporting climate action in developing countries such as the Global Environment Facility The first section of the book sets the stage and provides an overview of independent evaluations carried out by multilateral development banks and development organisations Important topics include how policies and organisations aim to achieve impact and how this is measured whether climate change is mainstreamed into other development programs and whether operations are meeting the urgency of climate change challenges The following sections focus on evaluation of climate change projects and policies as they link to development from the perspective of international organisations NGO s multilateral and bilateral aid agencies and academia The authors share methodologies or approaches used to better understand problems and assess interventions strategies and policies They also share challenges encountered what was done to solve these and lessons learned from evaluations Collectively the authors illustrate the importance of evaluation in providing evidence to guide policy change to informed decision making *Geoethics* G. Di Capua, P.T. Bobrowsky, S.W. Kieffer, C. Palinkas, 2021-06-08 This is the second volume focused on geoethics published by the Geological Society of London This is a significant step forward in which authors address the maturation of geoethics The field of geoethics is now ready to be introduced outside the geoscience community as a logical platform for global ethics that addresses anthropogenic changes Geoethics has a distinction in the geoscientific community for discussing ethical social and cultural implications of geoscience knowledge research practice education and communication This provides a common ground for confronting ideas experiences and proposals on how geosciences can supply additional service to society in order to improve the way humans interact responsibly with the Earth system This book provides new messages to geoscientists social scientists intellectuals law and decision makers and laypeople Motivations and actions for facing global anthropogenic changes and their intense impacts on the planet need to be governed by an ethical framework capable of merging a solid conceptual structure with pragmatic approaches based on geoscientific knowledge This philosophy defines geoethics Accelerating technical change through ICTs: Evidence from a video-mediated extension experiment in Ethiopia Abate, Gashaw Tadesse, Bernard, Tanguy, Makhija, Simrin, Spielman, David J., 2021-12-28 The use of information and communications technologies ICTs to address a wide array of development issues has gained considerable attention among governments practitioners and researchers in recent years Lwoga and Sangeda 2019 While early studies focused on mobile phones and text messaging attention is quickly shifting to other media including video Many studies on the use of video as a medium explore how

increased access and consumption of information can lead to behavior changes that ultimately result in welfare improving outcomes This study explores whether video mediated extension leads to the increased sustained uptake of productivity enhancing agricultural technologies and practices by small scale farmers Over the two year period of 2017 2018 the Government of Ethiopia and Digital Green conducted the large scale rollout of a video mediated extension approach We examine the impact of this rollout on a range of outcome indicators including whether targeting the video mediated approach to both spouses of a household was more effective than targeting the typically male household head alone Our main outcomes of interest include farmer uptake of the subject technologies and the yield gains resulting from these technologies Our study provides insights into the mechanisms behind the observed effects and an analysis of the approach s cost effectiveness Our results demonstrate that the video mediated extension approach led to increases in farmer uptake of improved agricultural technologies and practices In the first year of the experiment we find an overall 6 percentage point increase in technology uptake which translates into a 10 percent increase over the mean of the control group An analysis of uptake by type of technology shows that the video mediated approach resulted in an increase of 13 20 and 15 percent over control group means for row planting precise seeding rate and urea top side dressing respectively These results endure in the second year of the experiment pointing to farmers effective uptake of the technology beyond a mere trial in one production season Upon exploring the mechanisms that explain these adoption effects we find that the video mediated extension approach led to an increase in extension reach with a 35 percent increase in farmers attendance at extension sessions likely due to interest in the video medium Among farmers assigned to the video mediated extension approach we also find a higher level of technical understanding of focal agricultural technologies and practices While our results suggest greater participation and knowledge gains among typically female spouses who also participated in the video mediated extension approach we do not find clear evidence that targeting both spouses led to higher rates of technology uptake

**Centering Humanism in STEM Education** Bryan Dewsbury,Susannah McGowan,Sheila S. Jaswal ,Desiree Forsythe,2024-09-24 Research demonstrates that STEM disciplines perpetuate a history of exclusion particularly for students with marginalized identities This poses problems particularly when science permeates every aspect of contemporary American life Institutions repeated failures to disrupt systemic oppression in STEM has led to a mostly white cisgender and male scientific workforce replete with implicit and or explicit biases Education holds one pathway to disrupt systemic linkages of STEM oppression from society to the classroom Maintaining views on science as inherently objective isolates it from the world in which it is performed STEM education must move beyond the transactional approaches to transformative environments manifesting respect for students social and educational capital We must create a STEM environment in which students with marginalized identities feel respected listened to and valued We must assist students in understanding how their positionality privilege and power both historically and currently impacts their meaning making and understanding of

STEM     *Introducing Teachers and Administrators to the NGSS* Eric Brunsell, Deb M. Kneser, Kevin J. Niemi, 2014-05-01 If you're charged with helping educators achieve the vision of the new science standards this is the professional development resource you need. This book is chock full of activities and useful advice for guiding teachers and administrators as they put the standards into practice in the classroom. Written by three experts in professional development for science teachers. *Introducing Teachers and Administrators to the NGSS* Introduces the vocabulary, structure, and conceptual shifts of the NGSS. Explores the three dimensions of the Framework: science and engineering practices, crosscutting concepts, and disciplinary core ideas, and how they're integrated in the NGSS. Provides classroom case studies of instructional approaches for students challenged by traditional science teaching. Covers curricular decisions involving course mapping, designing essential questions, and performance assessments, and using the NGSS to plan units of instruction. Examines the connections between the NGSS and the Common Core State Standards. Offers advice for getting past common professional development sticking points and finding further resources. Given the widespread changes in today's education landscape, teachers and administrators may feel overwhelmed by the prospect of putting the new standards into practice. If you're a science specialist, curriculum coordinator, or instructional coach who provides professional development, you will find this collection immensely helpful for heading off initiative fatigue, whether in an individual school or throughout a district.     *Contemporary Australian Primary Science Teacher Education* Angela Fitzgerald, Kimberley Pressick-Kilborn, Reece Mills, Linda Pfeiffer, James Deehan, 2024-09-06 This book provides an evidence-based response to how classroom readiness translates into the preparation of future teachers of science. It juxtaposes contemporary understanding of programming and practices in initial teacher education in an Australian context against international narratives. Through this, this book shifts the understanding of primary science education from a deficit model to one that critically examines challenges and contest what is happening in this space and why. It proposes problems of practice in primary science teacher education and then draws on these provocations to provide insights into possible solutions.     **Atlas of Knowledge** Katy Borner, 2015-03-20 The power of mapping principles for visualizing knowledge illustrated by many stunning large-scale full-color maps. Maps of physical spaces locate us in the world and help us navigate unfamiliar routes. Maps of topical spaces help us visualize the extent and structure of our collective knowledge; they reveal bursts of activity, pathways of ideas, and borders that beg to be crossed. This book from the author of *Atlas of Science* describes the power of topical maps, providing readers with principles for visualizing knowledge and offering as examples forty large-scale and more than 100 small-scale full-color maps. Today, data literacy is becoming as important as language literacy. Well-designed visualizations can rescue us from a sea of data, helping us to make sense of information, connect ideas, and make better decisions in real time. In *Atlas of Knowledge*, leading visualization expert Katy Borner makes the case for a systems science approach to science and technology studies and explains different types and levels of analysis. Drawing on fifteen years of teaching and tool development, she introduces a theoretical framework

meant to guide readers through user and task analysis data preparation analysis and visualization visualization deployment and the interpretation of science maps To exemplify the framework the Atlas features striking and enlightening new maps from the popular Places Spaces Mapping Science exhibit that range from Key Events in the Development of the Video Tape Recorder to Mobile Landscapes Location Data from Cell Phones for Urban Analysis to Literary Empires Mapping Temporal and Spatial Settings of Victorian Poetry to Seeing Standards A Visualization of the Metadata Universe She also discusses the possible effect of science maps on the practice of science

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## **Table of Contents 2014 Paper 1 Physical Science Facilitator**

1. Understanding the eBook 2014 Paper 1 Physical Science Facilitator
  - The Rise of Digital Reading 2014 Paper 1 Physical Science Facilitator
  - Advantages of eBooks Over Traditional Books
2. Identifying 2014 Paper 1 Physical Science Facilitator
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an 2014 Paper 1 Physical Science Facilitator
  - User-Friendly Interface
4. Exploring eBook Recommendations from 2014 Paper 1 Physical Science Facilitator
  - Personalized Recommendations
  - 2014 Paper 1 Physical Science Facilitator User Reviews and Ratings
  - 2014 Paper 1 Physical Science Facilitator and Bestseller Lists
5. Accessing 2014 Paper 1 Physical Science Facilitator Free and Paid eBooks
  - 2014 Paper 1 Physical Science Facilitator Public Domain eBooks

- 2014 Paper 1 Physical Science Facilitator eBook Subscription Services
- 2014 Paper 1 Physical Science Facilitator Budget-Friendly Options
- 6. Navigating 2014 Paper 1 Physical Science Facilitator eBook Formats
  - ePub, PDF, MOBI, and More
  - 2014 Paper 1 Physical Science Facilitator Compatibility with Devices
  - 2014 Paper 1 Physical Science Facilitator Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of 2014 Paper 1 Physical Science Facilitator
  - Highlighting and Note-Taking 2014 Paper 1 Physical Science Facilitator
  - Interactive Elements 2014 Paper 1 Physical Science Facilitator
- 8. Staying Engaged with 2014 Paper 1 Physical Science Facilitator
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers 2014 Paper 1 Physical Science Facilitator
- 9. Balancing eBooks and Physical Books 2014 Paper 1 Physical Science Facilitator
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection 2014 Paper 1 Physical Science Facilitator
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine 2014 Paper 1 Physical Science Facilitator
  - Setting Reading Goals 2014 Paper 1 Physical Science Facilitator
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of 2014 Paper 1 Physical Science Facilitator
  - Fact-Checking eBook Content of 2014 Paper 1 Physical Science Facilitator
  - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development
  - Exploring Educational eBooks

#### 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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