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Surname	Other names
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<h1 style="margin: 0;">Physics</h1> <h2 style="margin: 0;">Advanced Subsidiary</h2> <h3 style="margin: 0;">Unit 2: Physics at Work</h3>	
Monday 12 January 2015 – Morning Time: 1 hour 30 minutes	Paper Reference <b>WPH02/01</b>
You do not need any other materials.	Total Marks

#### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

#### Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed  
– *you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression, on these questions.*
- The list of data, formulae and relationships is printed at the end of this booklet.
- Candidates may use a scientific calculator.

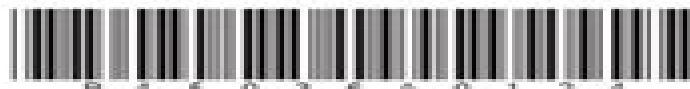
#### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ➤

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7th January 2015 Ial Physics

**Jagadesh Kumar Mamidala,Rajat  
Vishnoi,Pratyush Pandey**



## 7th January 2015 Ial Physics:

*The Art of Uncertainty* David Spiegelhalter, 2025-03-04 Named a Best Book of the Year by Forbes and The Economist From our greatest living statistical communicator Tim Harford comes an invaluable data driven guide for understanding and learning to embrace risk and uncertainty in our daily lives How dangerous is our diet How much of sports falls into the realm of luck When authorities categorize a given event as highly likely how likely is that really Whether we re trying to decide if the benefits of a new medication are worth the chance of side effects or if artificial intelligence truly threatens humanity our lives are riddled with uncertainties both everyday and existential yet it can be difficult to know how to properly weigh all those unknowns Luckily for us renowned statistician David Spiegelhalter has spent his career dissecting data to resolve the apparently random and decode the many decisions we face with imperfect information In *The Art of Uncertainty* he shows how we can become better at dealing with what we don t know to make smarter choices in a world so full of puzzling variables In lucid lively prose Spiegelhalter guides us through the principles of probability illustrating how they can help us think more analytically about everything from medical advice to sports to climate change forecasts He demonstrates how taking a mathematical approach to phenomena we might otherwise attribute to fate or luck can help us sort hidden patterns from mere coincidences better evaluate cause and effect and predict what s likely to happen in the future Along the way we learn how a misinterpretation of a probability contributed to the infamous Bay of Pigs fiasco why a ship twice the size of the Titanic sank without a trace and why we can be so confident that no two properly shuffled decks of cards have ever been in the same order Sparkling with wit and fascinating real world examples this is an essential guide to navigating uncertainty while also retaining the humility to admit what we don t or simply cannot know [Holistic Approach to Quantum](#)

[Cryptography in Cyber Security](#) Shashi Bhushan, Manoj Kumar, Pramod Kumar, Renjith V. Ravi, Anuj Kumar Singh, 2022-08-09 This new book discusses the concepts while also highlighting the challenges in the field of quantum cryptography and also covering cryptographic techniques and cyber security techniques in a single volume It comprehensively covers important topics in the field of quantum cryptography with applications including quantum key distribution position based quantum cryptography quantum teleportation quantum e commerce quantum cloning cyber security techniques architectures and design cyber security techniques management software defined networks and cyber security techniques for 5G communication The text also discusses the security of practical quantum key distribution systems applications and algorithms developed for quantum cryptography as well as cyber security through quantum computing and quantum cryptography The text will be beneficial for graduate students academic researchers and professionals working in the fields of electrical engineering electronics and communications engineering computer science and information technology **Cone**

**Penetration Testing 2022** Guido Gottardi, Laura Tonni, 2022-06-23 This volume contains the proceedings of the 5th International Symposium on Cone Penetration Testing CPT 22 held in Bologna Italy 8 10 June 2022 More than 500 authors

academics researchers practitioners and manufacturers contributed to the peer reviewed papers included in this book which includes three keynote lectures four invited lectures and 169 technical papers The contributions provide a full picture of the current knowledge and major trends in CPT research and development with respect to innovations in instrumentation latest advances in data interpretation and emerging fields of CPT application The paper topics encompass three well established topic categories typically addressed in CPT events Equipment and Procedures Data Interpretation Applications Emphasis is placed on the use of statistical approaches and innovative numerical strategies for CPT data interpretation liquefaction studies application of CPT to offshore engineering comparative studies between CPT and other in situ tests Cone Penetration Testing 2022 contains a wealth of information that could be useful for researchers practitioners and all those working in the broad and dynamic field of cone penetration testing

Yearbook of International Organizations 2014-2015 (Volume 3) Union Of International Associations, Union of International Associations, 2014-08-20 The Yearbook of International Organizations provides the most extensive coverage of non profit international organizations currently available Detailed profiles of international non governmental and intergovernmental organizations IGO collected and documented by the Union of International Associations can be found here In addition to the history aims and activities of international organizations with their events publications and contact details the volumes of the Yearbook include networks between associations biographies of key people involved and extensive statistical data Volume 3 allows readers to locate organizations by subjects or by fields of activity and specialization and includes an index to Volumes 1 through 3

*Journal of Atmospheric and Solar-terrestrial Physics*, 2008

**Tunnel Field-effect Transistors (TFET)** Jagadesh Kumar Mamidala, Rajat Vishnoi, Pratyush Pandey, 2016-11-30 Research into Tunneling Field Effect Transistors TFETs has developed significantly in recent times indicating their significance in low power integrated circuits This book describes the qualitative and quantitative fundamental concepts of TFET functioning the essential components of the problem of modelling the TFET and outlines the most commonly used mathematical approaches for the same in a lucid language Divided into eight chapters the topics covered include Quantum Mechanics Basics of Tunneling The Tunnel FET Drain current modelling of Tunnel FET The task and its challenges Modeling the Surface Potential in TFETs Modelling the Drain Current and Device simulation using Technology Computer Aided Design TCAD The information is well organized describing different phenomena in the TFETs using simple and logical explanations Key features Enables readers to understand the basic concepts of TFET functioning and modelling in order to read understand and critically analyse current research on the topic with ease Includes state of the art work on TFETs attempting to cover all the recent research articles published on the subject Discusses the basic physics behind tunneling as well as the device physics of the TFETs Provides detailed discussion on device simulations along with device physics so as to enable researchers to carry forward their study on TFETs Primarily targeted at new and practicing researchers and post graduate students the book would particularly be useful for researchers who are working in the area of

compact and analytical modelling of semiconductor devices      **Journal of the Physical Society of Japan** ,2015      Cooper  
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