



basic education

Department
Basic Education
REPUBLIC OF SOUTH AFRICA

FULL MEMORANDUM GRADE 12 PHYSICS 2022 FINAL

This question paper consists of 18 pages and 3 data sheets.

(QUESTION 5 (Start on a new page.)

A 12 kg block is initially at rest at point A at the bottom of a ROUGH inclined plane. The block is pulled up the incline by a constant force F acting parallel to the incline. The block reaches point B, which is at a vertical height of 4.0 m above the horizontal, with a speed of 2.0 m/s. See the diagram below.



- 5.1 Define the term non-conservative force.
- 5.2 Draw a labelled free-body diagram for the block when it is pulled up the incline.
- 5.3 Calculate the total work done on the block by the NON-CONSERVATIVE forces when the block moves from point A to point B. (4)

The same constant force F now moves the block at a CONSTANT VELOCITY across a rough horizontal surface from point B to point C, as shown below. Force F acts parallel to the horizontal surface.



The magnitude of the constant frictional force acting on the block while moving from point B to point C is 40 N, 40% of the magnitude of the constant frictional force acting on the block when it moves from point A to point B.

- 5.4 Calculate the distance from point A to point B. (5)

(19)

Grade 12 2015 June Physics Memo

Robert E. Kohler

A red circular graphic with a gradient, appearing as a semi-circle or a partial circle, located to the right of the author's name.

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Philippine Public Schools ,1929 *Ghost Plane* Stephen Grey,2024-07-02 An explosive new book provides a rare glimpse into the full extent of the Agency's controversial terror renditions Time For the first time Stephen Grey tells the inside story of international prisons sanctioned by the U S government and used by the CIA to hold and torture people suspected of terrorism Using contacts deep inside the U S government Grey reveals how deeply the Bush administration is involved in the program and questions the truth of statements made by Secretary of State Condoleezza Rice He also shines a spotlight on the heads of European nations who turned a blind eye to the program when it showed up in their back yards Grey takes an unflinching look at a horrendous practice that scorns Geneva Convention rules and is powered by corruption at the highest levels of governments worldwide Through his unprecedented access to CIA flight records and dozens of sources at the senior levels of the current administration Grey has produced a story of flight plans extreme torture and the clash of religions and governmental posturing that goes on today Ghost Plane tells the stories of individuals abducted at airports around the world and transported for interrogation and torture on a fleet of leased planes manned by CIA operatives Grey paints a disturbing ethical picture of the war on terror and lays the responsibility for abduction and torture at the doorstep of Washington D C Powerful and damning Grey is a prodigious digger and more than a single minded muckraker His attention to detail can be chilling The Washington Post Subject Index to Unclassified ASTIA Documents Defense Documentation Center (U.S.),1960
Catalogue of British Official Publications Not Published by HMSO. ,1989 *Title Announcement Bulletin* ,1957
Monthly Catalogue, United States Public Documents ,1994 **Research in Education** ,1971 *The Spectator* ,1907
Energy Research Abstracts ,1987 **Partners in Science** Robert E. Kohler,1991-04-09 Robert Kohler shows exactly how entrepreneurial academic scientists became intimate partners in science with the officers of the large foundations created by John D Rockefeller and Andrew Carnegie and in so doing tells a fascinating story of how the modern system of grant getting and grant giving evolved and how this funding process has changed the way laboratory scientists make their careers and do their work This book is a rich historical tapestry of people institutions and scientific ideas It will stand for a long time as a source of precise and detailed information about an important aspect of the scientific enterprise It also contains many valuable lessons for the coming years John Ziman Times Higher Education Supplement *Thy Honored Name* Anthony J. Kuzniewski,1999 Opened only nine years after the Catholic academy in Boston was destroyed by nativists the College of the Holy Cross was a pet project of Boston's second bishop Benedict Fenwick a Jesuit college in the midst of Yankee New England At first an isolated exclusively Catholic operation offering a seven year humanities program the College failed to obtain a charter by the Massachusetts General Court until 1865 After 1900 Holy Cross became a four year college in the American pattern and advanced to its present level by integrating important principles of Jesuit liberal arts education with the academic traditions of the strongest educational region in the nation Utilizing the universal Jesuit Plan of Studies

the college's leaders at first stressed connections with other Jesuit institutions in a program that emphasized classical languages philosophy history mathematics and natural sciences About 1900 a second era began when the curriculum was altered to bring Holy Cross into conformity with the modern educational pattern college offerings were amplified and the prep school was dropped During the 1960s a third era opened It was characterized by coeducation a more open curriculum growing involvement of non Jesuit faculty and administrators the transition to a board of lay trustees and rising academic standards as Holy Cross took its place as the foremost Jesuit school among four year liberal arts colleges Thy Honored Name highlights the confluence of two strong educational traditions Puritan and Jesuit and the growing appreciation of their compatibility It is also an account of efforts to promote academic excellence without losing an authentically Jesuit identity in a region where many formerly religious schools have become secular The book will hold interest for persons who study educational and religious history for individuals interested in the development of New England and Worcester and for friends of Holy Cross Anthony J Kuzniewski S J is professor of history and rector of the Jesuit Community at the College of the Holy Cross Anthony Kuzniewski SJ professor of history in the College of Holy Cross can tell a good story Others have written histories of Holy Cross but none has matched his literary skill and historical acumen This is genuine history not a celebratory essay The author's thoroughness and attention to detail persuade one that no relevant document illuminating the college's history has been overlooked It is a handsome almost flawless volume that scholars and others interested in American higher education are sure to welcome Catholic Historical Review Kuzniewski has ultimately crafted an ample widely encompassing institutional biography that is balanced fair and interesting And in so doing he reminds us that an academic institution can achieve excellence and relevance even as it remains proud of its antique beginnings

Connection [Resources in Education](#),1990 *Monthly Catalog of United States Government Publications*,1994 [Flight](#),1923 [Nuclear Science Abstracts](#),1960 *Electrical World*,1896 [The Electrical World](#),1896 **No Truth Except in the Details** A.J. Kox,D.M. Siegel,1995-06-30 Beginning with a couple of essays dealing with the experimental and mathematical foundations of physics in the work of Henry Cavendish and Joseph Fourier the volume goes on to consider the broad areas of investigation that constituted the central foci of the development of the physics discipline in the nineteenth century electricity and magnetism including especially the work of Michael Faraday William Thomson and James Clerk Maxwell and thermodynamics and matter theory including the theoretical work and legacy of Josiah Willard Gibbs some experimental work relating to thermodynamics and kinetic theory of Heinrich Hertz and the work of Felix Seyler Hoppe on hemoglobin in the neighboring field of biophysics biochemistry Moving on to the beginning of the twentieth century a set of three articles on Albert Einstein deal with his early career and various influences on his work Finally a set of historiographical issues important for the history of physics are discussed and the chronological conclusion of the volume is an article on the Solvay Conference of 1933 For physicists interested in the history of their discipline historians and philosophers of science and graduate students in these

and related disciplines *Engineering* ,1924 **The Invisible Harry Gold** Allen M. Hornblum,2010-09-28 A gripping account of the man who gave the USSR the plans for the atom bomb The subject of the most intensive public manhunt in the history of the FBI Gold was arrested in May 1950 His confession revealed scores of contacts and his testimony in the trial of the Rosenbergs proved pivotal

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Table of Contents Grade 12 2015 June Physics Memo

1. Understanding the eBook Grade 12 2015 June Physics Memo
 - The Rise of Digital Reading Grade 12 2015 June Physics Memo
 - Advantages of eBooks Over Traditional Books
2. Identifying Grade 12 2015 June Physics Memo
 - 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 Grade 12 2015 June Physics Memo
 - User-Friendly Interface
4. Exploring eBook Recommendations from Grade 12 2015 June Physics Memo
 - Personalized Recommendations
 - Grade 12 2015 June Physics Memo User Reviews and Ratings
 - Grade 12 2015 June Physics Memo and Bestseller Lists
5. Accessing Grade 12 2015 June Physics Memo Free and Paid eBooks
 - Grade 12 2015 June Physics Memo Public Domain eBooks
 - Grade 12 2015 June Physics Memo eBook Subscription Services
 - Grade 12 2015 June Physics Memo Budget-Friendly Options

6. Navigating Grade 12 2015 June Physics Memo eBook Formats
 - ePub, PDF, MOBI, and More
 - Grade 12 2015 June Physics Memo Compatibility with Devices
 - Grade 12 2015 June Physics Memo Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Grade 12 2015 June Physics Memo
 - Highlighting and Note-Taking Grade 12 2015 June Physics Memo
 - Interactive Elements Grade 12 2015 June Physics Memo
8. Staying Engaged with Grade 12 2015 June Physics Memo
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Grade 12 2015 June Physics Memo
9. Balancing eBooks and Physical Books Grade 12 2015 June Physics Memo
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Grade 12 2015 June Physics Memo
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Grade 12 2015 June Physics Memo
 - Setting Reading Goals Grade 12 2015 June Physics Memo
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Grade 12 2015 June Physics Memo
 - Fact-Checking eBook Content of Grade 12 2015 June Physics Memo
 - 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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