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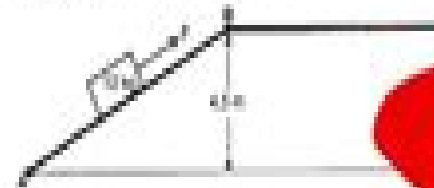
Department
Basic Education
REPUBLIC OF SOUTH AFRICA

FULL MEMORANDUM GRADE 12 PHYSICS 2022 FINAL

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

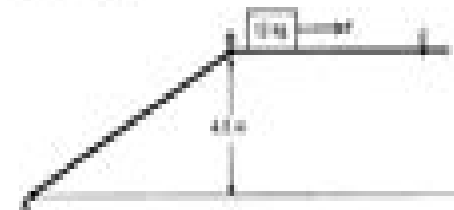
(QUESTION 5 (Start on a new page.)

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 3.00 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 plane.
- 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% greater than 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)

(14)

Grade Memorandum Physics 2012

JR Anderson



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Table of Contents Grade Memorandum Physics 2012

1. Understanding the eBook Grade Memorandum Physics 2012
 - The Rise of Digital Reading Grade Memorandum Physics 2012
 - Advantages of eBooks Over Traditional Books
2. Identifying Grade Memorandum Physics 2012
 - 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 Memorandum Physics 2012
 - User-Friendly Interface
4. Exploring eBook Recommendations from Grade Memorandum Physics 2012
 - Personalized Recommendations
 - Grade Memorandum Physics 2012 User Reviews and Ratings
 - Grade Memorandum Physics 2012 and Bestseller Lists

5. Accessing Grade Memorandum Physics 2012 Free and Paid eBooks
 - Grade Memorandum Physics 2012 Public Domain eBooks
 - Grade Memorandum Physics 2012 eBook Subscription Services
 - Grade Memorandum Physics 2012 Budget-Friendly Options
6. Navigating Grade Memorandum Physics 2012 eBook Formats
 - ePub, PDF, MOBI, and More
 - Grade Memorandum Physics 2012 Compatibility with Devices
 - Grade Memorandum Physics 2012 Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Grade Memorandum Physics 2012
 - Highlighting and Note-Taking Grade Memorandum Physics 2012
 - Interactive Elements Grade Memorandum Physics 2012
8. Staying Engaged with Grade Memorandum Physics 2012
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Grade Memorandum Physics 2012
9. Balancing eBooks and Physical Books Grade Memorandum Physics 2012
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Grade Memorandum Physics 2012
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Grade Memorandum Physics 2012
 - Setting Reading Goals Grade Memorandum Physics 2012
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Grade Memorandum Physics 2012
 - Fact-Checking eBook Content of Grade Memorandum Physics 2012
 - 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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