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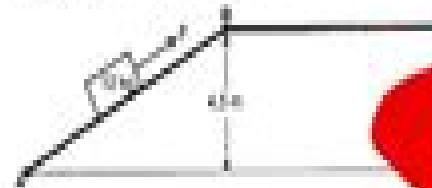
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FULL MEMORANDUM GRADE 12 PHYSICS 2022 FINAL

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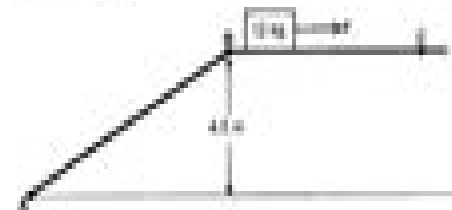
(QUESTION 6 (Start on a new page.)

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.



- 6.1 Define the term non-conservative force.
- 6.2 Draw a labelled free-body diagram for the block when it is pulled up the incline.
- 6.3 Calculate the total work done on the block by the NON-CONSERVATIVE forces when the block moves from point A to point B. (5)

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.

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

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Table of Contents Physical Science Grade 12 Dbe November 12 Memorandum

1. Understanding the eBook Physical Science Grade 12 Dbe November 12 Memorandum
 - The Rise of Digital Reading Physical Science Grade 12 Dbe November 12 Memorandum
 - Advantages of eBooks Over Traditional Books
2. Identifying Physical Science Grade 12 Dbe November 12 Memorandum
 - 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 Physical Science Grade 12 Dbe November 12 Memorandum
 - User-Friendly Interface
4. Exploring eBook Recommendations from Physical Science Grade 12 Dbe November 12 Memorandum
 - Personalized Recommendations
 - Physical Science Grade 12 Dbe November 12 Memorandum User Reviews and Ratings
 - Physical Science Grade 12 Dbe November 12 Memorandum and Bestseller Lists
5. Accessing Physical Science Grade 12 Dbe November 12 Memorandum Free and Paid eBooks

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