ALBERTA DISTANCE LEARNING CENTRE

Science 10 Online

SCN1270

Unit C: Section 3

Assignment C3: Part B

Student's Questions and Comments

FOR STUDENT USE ONLY

Student ID: _____

FOR ADLC USE ONLY

Assigned to: _____

Marked by: _____

Date received: _____

	Total	Total Possible
Lesson 10		15
TOTAL		**15**

Teacher's Comments:

_____

Teacher's Signature

NEW September 2018

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Unit C: Section 3: Lessons 9 to 11

Energy Flow in Technological Systems

Assignment C3: Part B

Instructions:

Complete the following assignment. This assignment will count toward your final mark in this course, and you will be allowed to submit this assignment only once. Make sure you answer all the questions. Blank or incomplete assignments will not be accepted for marks.

Remember, the number of marks each question is worth gives you a hint about how detailed you need to make your answers. Calculation questions require you to show all your work. This includes formula, substitution, and answer with correct significant digits and units.

Your online course will provide you with instructions on how to submit this assignment when it is time to submit it.

Total 15

Lesson 10: Efficiency Calculations

(3)

1. A Bluetooth speaker used 573 J of energy while playing music. If it produces 356 J of sound energy, what is the efficiency of the speaker in transforming electrical energy into sound energy? Show all your work.

Wireless Bluetooth speaker

(3)

2. A 150 W driveway light produces 9.3×10^4 J of light energy over a 4.0 h period. If the light uses 2.06×10^6 J of energy in the 4.0 h, then what is its efficiency? Show all your work.

Electric driveway light

4

3. A toy uses a spring to shoot an arrow with a suction cup on the end. The toy shoots a 34.2 g arrow and gives it a speed of 5.50 m/s. If the efficiency of the toy is 69.0%, how much elastic potential energy was stored in the spring? Show all your work.

Arrow with suction cup

(5)

4. A cyclist is standing still at the top of a hill and then begins to coast down the hill. The mass of the cyclist and bicycle is 64 kg total. The cyclist's gravitational potential energy is converted into kinetic energy with an efficiency of 52%. What is her speed when she reaches a point that is a vertical distance of 10 m lower than the point at which she started? Show all your work.

Young girl riding bicycle on hill

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