Neap

DTT 2019

Year 11 Physics HSC

Sample Questions

This is NOT a complete sample examination paper.
This document shows the layout of the 2019 Year 11 Physics HSC Diagnostic Topic Tests and provides some sample questions from the tests.

TEST 2 SAMPLE QUESTIONS

Refer to the following information to answer Questions 1 and 2.

A solar car drives 64 km South from *B* to *C* in 3 hours, then 140 km East to *D* in the next 5 hours.

Question 1
What is the average speed over the journey for the solar car?

A. 5 m s^{-1}
B. 6 m s^{-1}
C. 7 m s^{-1}
D. 19 m s^{-1}

Question 2
What is the solar car's final displacement?

A. 145 km S35°E
B. 145 km N35°W
C. 154 km S65°E
D. 154 km N65°W

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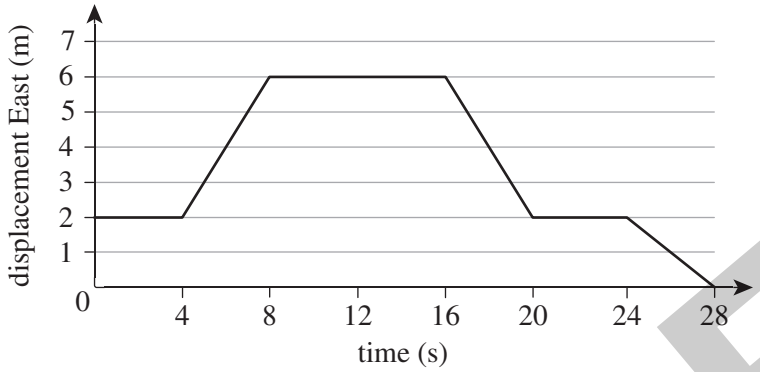
Question 3 (5 marks)

A group of Physics students graphed the movement of a toy train along a track. The graph is shown below.



a. Complete the table using the data presented in the graph. 3 marks

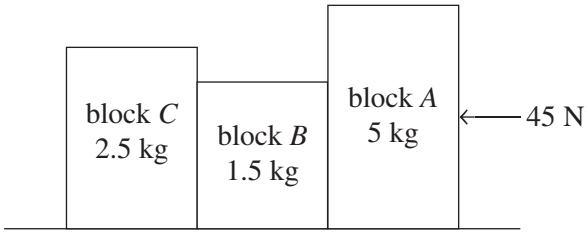
Time (s)	8	14	28
Displacement East (m)			

b. Calculate the velocity of the car after 18 s. Give your answer correct to two significant figures. 2 marks

TEST 4 SAMPLE QUESTIONS

Question 1

The diagram below shows three blocks in contact on a frictionless laboratory desk. A 45 N force acts on block *A*.



What is the magnitude of the acceleration of each block?

A. 0 m s^{-2}

B. 5 m s^{-2}

C. 9 m s^{-2}

D. 405 m s^{-2}

Question 2 (3 marks)
A solar car of mass 235 kg, moving initially at 4 m s^{-1} East, hits a wombat and stops in 2.4 seconds.

a. What impulse is applied to the solar car? 1 mark

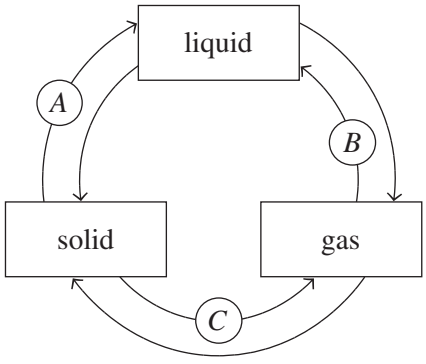
b. What is the deceleration of the solar car? 2 marks

TEST 6 SAMPLE QUESTIONS

Question 1
A 140 g block of metal with a specific heat of 390 J kg^{-1} °C^{-1} is heated from 20°C to 95°C.
How much heat energy is absorbed by the block of metal?

A. 4.095 J
B. 4.095 kJ
C. 14.095 kJ
D. 4095 kJ

Question 2
Consider the diagram shown below.

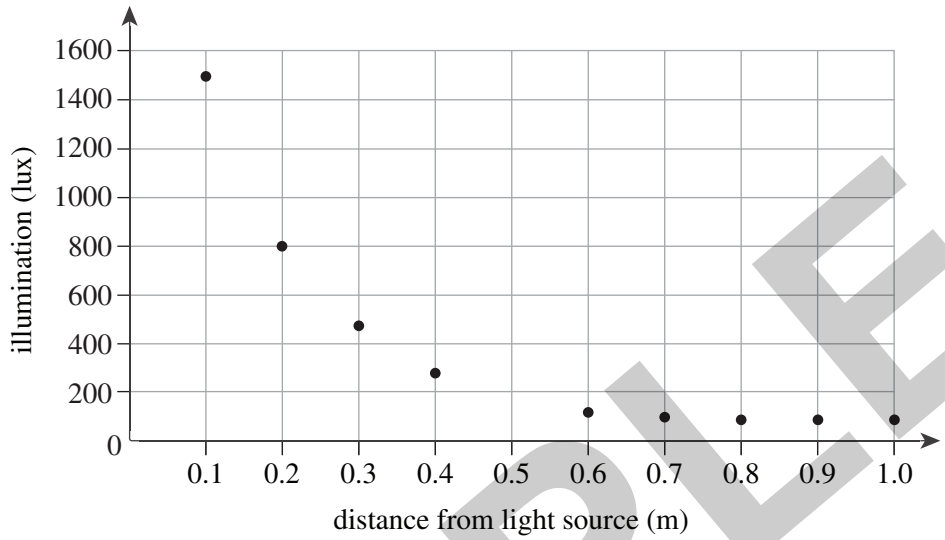


Which row of the table provides the correct labels for the diagram?

	A	*B*	*C*
A.	melting	condensation	deposition
B.	melting	condensation	sublimation
C.	melting	condensation	evaporation
D.	melting	evaporation	sublimation

Question 3 (4 marks)

A group of students tested the intensity of light emitted from a table lamp by collecting lux meter results from different distances away from the lamp. They graphed the results of their experiments. The graph is shown below.



a. Predict the value for 0.5 m away from the light source. 1 mark

b. Students found that the light source falls onto a desk 0.4 m away from the lamp at a rate of 225 W m^{-2}.

Calculate the intensity of light falling on the desk if the lamp was moved to be 1.25 m away from the light source. 3 marks

TEST 8 SAMPLE QUESTIONS

Question 1

A 45 cm long solenoid has 3750 turns of wire. The current passing through it is 1.67 A.

What is the magnetic field produced by the solenoid?

A. 0.0001 T

B. 0.0175 T

C. 0.1749 T

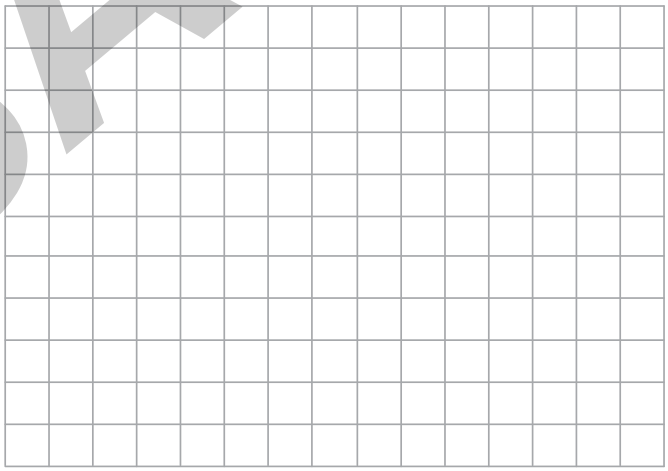
D. 3.8863 T

Question 2 (6 marks)

A student conducted an experiment to demonstrate how varying the number of turns on a solenoid changes the magnetic field produced. The student collected their data in the following table.

Number of turns on the solenoid	Magnetic field strength (T)
100	0.49
200	1.03
350	1.72
400	2.06
500	2.51
600	2.99
700	3.54

a. Graph the data on the grid provided and draw a line of best fit. 4 marks



b. What are the independent and dependent variables for this experiment? 2 marks

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END OF SAMPLE QUESTIONS