Higher
Coursework
Assessment Task

Higher Engineering Science Assignment

Worksheets - Motor racing team

Valid for session 2024-25 only.

This is given to centres in strictest confidence. You must keep it in a secure place until it is used.

This edition: January 2025 (version 1.0)

Introduction

This document contains worksheets for candidates to use for the current Higher Engineering Science assignment. They must be used in conjunction with the assignment document.

Instructions for candidates

This document contains the worksheets that you need for the current assignment. The assignment document tells you when you need to use a worksheet. The worksheets must be completed single-sided, with nothing written on the back.

Anything you handwrite or draw must be in blue or black permanent ink only.

Task 1b — worksheet 1b

Planned test	Expected result	Actual result	Amendments made
Connect/turn on main air, and press reset button.	Nothing happens – the system is static. Both cylinders are in the instroke position.		
Press the reset button. Actuate the solenoid.	Both cylinders start from instroke position, and outstroke when actuated.		
Press the reset button. Ensure the throttle on unidirectional restrictor A is fully open. Actuate valve 1. Adjust this throttle each time valve 1 is actuated. Repeat this test three times.	The time delay for the cylinder outstroke should change each time.		
Press the reset button. Ensure the throttle on unidirectional restrictor B is fully open. Adjust this throttle each time valve 1 is actuated. Repeat this test three times.	When outstroked, both double acting cylinders will instroke more slowly each time.		

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Task 1e — worksheet 1e

Planned test	Expected result

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Task 2 — worksheet 2

desired
speed

actual
speed

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Task 3a — worksheet 3a

Specification point	Comparison
Specification i — strength	
Specification ii — elasticity	
Specification iii — energy absorption	
Specification iv — weight	

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Task 3b — worksheet 3b

Material choice	Justification
Material:	

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Task 5c — worksheet 5c

Specification	Test	Amendments
Specification ii If the reading from the light sensor is under 70 at the start of a new lap, the track lighting turns on (and turns off again if the reading rises to 70 or more).	Start the program.	
Specification iv When the race starts, a red LED flashes five times before turning off, and a green LED turns on.	Start the program again.	
Specification v The race controller's start switch is checked once each lap, and if it is open the green LED turns off and the red LED turns on until this switch is closed again to resume racing.	Start the program again. Close the race controller's start switch.	
Specification vi As the leading car completes each lap, a lap counter switch is pressed to record each lap up to twenty laps.	Start the program again. Close the race controller's start switch. Close the lap counter switch to simulate the leading car finishing a lap.	

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Administrative information

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History of changes

Version	Description of change	Date

Security and confidentiality

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