

Computer Architecture

Assessment 1

May 4, 2023

Basic Logic Gates

Submission guidelines – Submit your answers in pdf format by renaming the file with your name and STD ID

Question 1

An aeroplane has a warning system that monitors the height of the aeroplane above the ground, whether the aeroplane is ascending or descending, and the speed of the aeroplane.

Input	Binary value	Condition
Height (H)	1	Height is less than 500 metres
	0	Height is greater than or equal to 500 metres
Ascending or Descending (A)	1	Aeroplane is ascending or in level flight
	0	Aeroplane is descending
Speed (S)	1	Speed is less than or equal to 470 knots
	0	Speed is greater than 470 knots

The warning system will produce an output of 1 that will sound an alarm (W) when either of these conditions apply:

Height is less than 500 metres and the aeroplane is descending

or

The aeroplane is descending and speed is greater than 470 knots

Draw a logic circuit to represent the warning system.

Construct the truth table for the above system.