

## Position Paper 2 (part 2) Guidance

There are two Sections, the first is worth 60%

### Section 1 (60%)

Based on Worksheets 1 and 2. To be able to get a top grade:

**Three** pieces of work chosen from the worksheet activities as follows.

|          |            |   |           |  |
|----------|------------|---|-----------|--|
| <b>1</b> |            | Worksheet 1: The or-gate (Activity 2)     | <b>OR</b> | Worksheet 1: 'Logic and Language' problem (Activity 3) |
| <b>2</b> | <b>AND</b> | Worksheet 2: The D flip-flop (Activity 1) |           |  |
| <b>3</b> | <b>AND</b> | Worksheet 2: The Car Alarm (Activity 2)   | <b>OR</b> | Worksheet 2: The 4-button PIN lock.                    |

### Section 2 (40%) Option 1

Follow the guidance in Worksheet\_CPU2S. There are two parts

1. For each component, **MUX, Registers, output, ALU, RAM**

- Include your .vhd code
- Include your testbench waveform, and explain how it shows your component is working correctly.

2. You should explain how the given program works using an analysis of the testbench waveform.

### Section 2 (40%) Option 2

1. You could research the difference between CISC and RISC CPU architectures. Why were these two different architectures developed? Which are being used today and in which devices.

2. You could research the development of Intel processors starting from the 4004, through the 8085 and 8086 all the way to the Pentium. You should include some processors (especially RISC) that did not make it to market. Some did and are used in niche devices.