



4.1.1 Processor Performance & Pipelining

1 (a) A computer system contains a CPU .

(i) State **two** factors that affect the performance of a CPU.

[2 marks]

2 The processors in the company's powerful computers have fast clock speeds and large amounts of cache memory. Describe how each of these improves the processor's performance:

(a) fast clock speed

[2 marks]

(b) large cache memory

[2 marks]

3 "The Megahertz Myth" is the name given to the argument that clock speed alone is an insufficient method to compare the performance of processors.

Discuss the extent to which you agree with this argument. You should include any other factors that might affect a processor's performance.

[9 marks]





4 A CPU uses pipelining to improve efficiency.

(a) Explain what is meant by the term 'pipelining'.

[3 marks]

(b) Explain **one** benefit of using a processor that allows pipelining.

[2 marks]

5 A Little Man Computer (LMC) assembly language program is stored in memory as shown in Fig 1.

Fig 1

0	LDA &7
1	ADD #4
2	OUT
3	HALT
4	6
5	2
6	10
7	15
8	16
9	17

In this variant of LMC the symbols & and # are used to denote different modes of addressing.

Explain how pipelining would help a CPU execute the code in Fig 1 more quickly.

[3 marks]

