(a) Caches have become fundamental to the performance of computer system	ıs.
i. Explain why memory access time is considered to have become a po	
bottleneck in computer systems.	[2]
ii. Explain the role of caches in the memory heirarchy. Your answer should explain	
how caches exploit spatial locality and temporal locality.	[6
(b) Explain how parity codes enable the detection of errors in the transmission	n of binary
messages, giving a simple example that uses odd parity.	[6]
(c) Microprocessors consist of a set of components that interact to provide fu	nction.
i. Explain what is meant by the term von Neumann architecture.	[2]
ii. Explain the roles of the arithmetic logic unit (ALU), program counted	er (PC) and
instruction register (IR) in program execution.	[5
iii. Explain how a control unit can be implemented using a hardwired	approach
giving the advantages and disadvantages of the approach.	[4]