1. Give an overview of the TomAL microprocessor system design using simplified diagrams to indicate its design features i.e. input/output, memory and bus architecture etc.

2  Explain what address data multiplexing and bus buffering are.

3  Show with the aid of a diagram, how the interrupt auto-vectoring system works on the TomAL target board.

4  Using simple diagrams, give an overview of the kind of hardware configuration that is required to implement a serial data interface (USART) such as the one on the TomAL target system.

5  Examine the type and frequency of the clock source for the USART such that the serial interface can operate at the standard baud rate speeds.

6  Determine the reasoning behind the use of a baud rate factor.

7  Briefly discuss the modem control handshaking ie. CTS, RTS, DTR, DSR. Indicate with a diagram how these signals are connected to the modem. You may refer to the internet in your own words.

8  What is the difference between XON/XOFF data flow control and signal (hardware) based handshaking?

9  Show with the aid of a simple diagram, the implementation of an interrupt based serial interface (USART) and indicate the type or kind of signals that can be used for the generation of interrupt based serial inputs and outputs.

10  What are the advantages of using interrupts over a polled mechanism for serial I/O.

Note: The report should be limited to about 5/8 pages and **all diagrams are to be hand drawn** and your Name & ID must be on the document you submit and be clearly visible on the front page at the top. Your submission to me must be on or before Wednesday the 5th of April as a Word .doc or PDF attachment and using the following mail-subject and e-mail address details.

**E-mail:**     t.lenihan@cs.ucc.ie
**Subject:**    <your name & ID> CS2507 report for 5th of April 2017