



UNIVERSITY OF MORATUWA
Faculty of Information Technology

B.Sc. in Information Technology
Level 1 – Semester 2 Examination
IT 1202 – Computer Organization

Time Allowed: 3 hours

10, June 2009

INSTRUCTIONS TO CANDIDATES

1. This paper contains 5 questions on 3 Pages (including this page) and consists of two parts namely Part I and Part II
2. The total marks obtainable for this examination is 100. The marks assigned for each question & sections there of are included in square brackets.
3. This examination accounts for 70% of the module assessment.
4. This is a closed book examination.
5. Answer ALL questions in Part I and Part II.
6. Answers for the Part II should be written in the space provided in the question paper itself and should be attached to the answer book used for Part I.
7. Write your registration number clearly in both answer book and page 3 of the question paper.

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Part I [Total Marks allocated: 80 Marks]**Answer All Questions.**

1. a) Briefly explain the fetch-execute cycle of a typical computer. [5 Marks]
- b) Clearly, discuss the methods by which the performance of the PC has been improved from time to time by reducing the fetch time and the execute time of the CPU. [10 Marks]
- c) Explain why, a 16 MHz processor does not require a cache memory when accessing 60 ns DRAMs. [5 Marks]
2. a) Using a suitable diagram, explain how a 4-bit MAR (Memory Address Register) reads data from a 16x8 ROM. [8 Marks]
- b) Explain how, a 16x8 ROM is used to carry out "OR", "AND" and "NOR" logical operation. Discuss the feasibility of using a ROM to carry out logical operations in a computer. [12 Marks]
3. a) What are the benefits of using 3-bus architecture when compared to single bus architecture? [4 Marks]
- b) What is a wait state? Explain two conditions that can cause the execution unit of Intel 8088 processor to enter a wait state. [6 Marks]
- c) A 16-bit processor with a 16-bit data bus is driven by an 8 MHz clock. If the minimum duration of the processor bus cycle is 4, find the data transfer rate across the bus? [10 Marks]
4. a) With the aid of a block diagram, explain the major functional units of a Pentium processor. [8 Marks]
- b) Write in one sentence the purpose of each of the following registers of Intel 8088 processor.
 - i) AX
 - ii) CX
 - III) DX
 - iv) CS
 - v) SP
 [5 Marks]
- c) Write an assembly language routine to display the English alphabet. [7 Marks]

End of Part I

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