BRAC University

Department of Computer Science and Engineering

CSE340: Computer Architecture

Midterm Examination, Fall 2015

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Section: \_\_\_\_\_\_\_

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| Instructions   * Answer all the questions * You should answer within the space provided in the question paper * You can use the provided exam script to do your rough work * Return both your question and answer script after your exam * **Please do not turnover the page until you are asked to do so** | |  |  |  | | --- | --- | --- | | **Total**  **Marks** | | **Marks Obtain** | | **30** | |  | | **Time** | **1 hour** | | |

Good Luck

1. Compare **Harvard architecture** and **von Neumann** architecture with necessary diagram? **[5]**
2. Design an **ALU** and explain its operation. **[5]**
3. Encode the following **MIPS** instructions and identify their types? **[5]**
   1. **slt $8,$9,$10**
   2. **lw $s0,40($s1)**
   3. **bgt $12,$13,Exit**
4. Apply booth’s method to multiply -**5** and **4**. **[5]**
5. The following problem deal with translating from C to MIPS. Assume that the variables **f** and **g** are assigned to registers **$s0** and **$s1**, respectively. Assume that the base address of the arrays **A** and **B** are registers **$s6** and **$s7**, respectively. **[4]**
   1. **If (f==g) A[10]=A[5]+B[6]**
6. Explain role of a computer Architect**? [4]**
7. Define sign extension and zero extension. **[2]**