EE213 Computer Organization and Assembly Language

Quiz I (GR1 | GR2) – Spring 2018

**Paper-A Solution**

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**Answer the following questions.**

1. Briefly describe the DECODE step of Instruction Execution Cycle (1 mark)

**Answer**: *in the decode step instruction is translated into its binary pattern to be understood by microprocessor*.

1. Given the code snippet below, assuming the data is stored in contiguous slots and the data segment starts at 0000h, and the code segment starts at 0500h, answer the following questions:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | .data |  |
|  |  |  | arr1 SBYTE 3 DUP(0Ch) , 2 , 2 DUP (90) |
|  |  |  | arr2 DWORD $, ?, 19 |
|  |  |  | arr3 BYTE 2 DUP ("COAL"),0 |
|  |  | .code |  |
|  | 0500h |  | MOV AL, 0Ch |
|  | 0501h |  | MOV BL, 0Dh |
|  | 0502h |  | MOV CL, 20 |
|  | 0503h |  | SUB AL, BL |
|  | 0504h |  | SUB CL, BL |
|  | 0505h |  | DEC AL |
|  | 0506h |  | INC BL |
|  | 0507h |  | INC CL |

1. Draw byte by byte memory lookup (with contents and offset addresses) of arr2. (1 mark)

|  |  |  |  |
| --- | --- | --- | --- |
| 0006 | 06 | 000E | 13 h |
| 0007 | 00 | 000F | 00 |
| 0008 | 00 | 0010 | 00 |
| 0009 | 00 | 0011 | 00 |
| 000A |  |  |  |
| 000B |  |  |  |
| 000C |  |  |  |
| 000D |  |  |  |

1. To execute instruction at *line 11* which two registers’ combination will be used and what will be their values? (1 mark)

**Answer**: ECS and EDS will be used to access the instruction where ECS will hold 0500h and EIP will hold 0505h.

1. What will be the status of each of the following flags after instruction at line 9 is executed? (1 mark)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CF** | **ZF** | **SF** | **OF** | **PF** |
| **1** | **0** | **1** | **0** | **1** |

1. Elaborate the purpose of CLOCK in a microprocessor. (1 mark)

**Answer**: CLOCK synchronizes CPU operations.