**North SouthUniversity**

Department of Computer Science and Engineering

Quiz-1, Section – 3, Summer’17

Course No: **CSE 332** Course Title: **Computer Organization and Design**

Time: 20 min Full Marks: 15

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| 1. | Write down the equation of power consumption by a transistor during switching | 2 |
| 2. | Write two differences between Response time and Throughput. How the clockrate and power is related? | 2+1 |
| 3. | Suppose we have developed new versions of a processor with the following characteristics.  **Version Voltage Clock Rate**  Version 1 1.1 V 3 GHz  Version 2 0.8 V 4 GHz  How much has the dynamic power been reduced if the capacitive load does not change? | 3 |
| 3. | Consider two different implementations of the same instruction set architecture.  There are four classes of instructions, A, B, C, and D. The clock rate and CPI of each  Implementation are given in the following table.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Clock Rate** | **CPI Class A** | **CPI Class B** | **CPI Class C** | **CPI Class D** | | P1 | 2.5 GHz | 2 | 1.5 | 2 | 1 | | P2 | 3 GHz | 1 | 2 | 1 | 1 |   Given a program with 106 instructions divided into classes asfollows: 10% class A, 20% class B, 50% class C, and 20% class D,  a. Which implementationis faster?  b. What is the CPI for each implementation?  c. If the number of Class B instructions can be reduced by one half, what is the CPI? | 3+2+2 |
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