SET A

SRM Institute of Science and Technology

College of Engineering and Technology

School of Computing

DEPARTMENT OF COMPUTING TECHNOLOGIES

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2022-2023

**Test: CLAT-1 Date: 12.09.2022**

**Course Code & Title: 18CSC203J: Computer Organization and Architecture Duration: 1 Period**

**Year & Sem: II & III Max. Marks: 25 Marks**

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| Course Outcomes (CO): | | | | | | *The learners will be able to:* | | | | | | | | | |
| CO-1 : | | *Identify the computer hardware and how software interacts with computer hardware* | | | | | | | | | | | | | |
| Program Outcomes (PO) | | | | | | | | | | | | |  | | |
| 1 | 2 | 3 | 4 | 5 | 6 | | 7 | 8 | 9 | 10 | 11 | 12 | PSO | | |
| Engineering Knowledge | Problem Analysis | Design & Development | Analysis, Design, Research | Modern Tool Usage | Society & Culture | | Environment & Sustainability | Ethics | Individual & Team Work | Communication | Project Mgt. & Finance | Life Long Learning | PSO - 1 | PSO - 2 | PSO – 3 |
| *3* | *3* |  |  |  |  | |  |  | *2* | *1* |  | *2* |  |  | |

3-High, 2- Medium, 1-low

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Part - A**  **(15 x 1 = 15 Marks) Instructions: Answer all** | | | | | |
| Question | Marks | BL | CO | PO | PI Code |
| Solve this instruction X=(M+N\*O)/(P\*Q) and find the number of one-address instructions required to evaluate it.   * 4 * 6 * **8** * 12 | **1** | **3** | **1** | **2** | **2.5.2** |
| A computer has 1 MB (megabytes) of memory. How many bits are needed to address any single byte in memory?   * 16 address lines * **20 address lines** * 4 address lines * 12 address lines | **1** | **3** | **1** | **1** | **1.3.1** |
| Which one of the following is not a valid instruction?   * **MOV 7, AX** * MOV CX, [BP+DI] +4 * MOV CX, AX * ADD R1, [1001] | **1** | **2** | **1** | **4** | **1.3.1** |
| Load [1000]  Identify the type of addressing mode in the above instruction.   * **Direct Addressing** * Relative Addressing * Register Indirect Addressing * Indexed and Relative Addressing | **1** | **2** | **1** | **2** | **2.8.1** |
| Find the output of the following instruction SHL CL,2 where CL=23H (after performing two rounds of shift left)   * **8C** * 9C * 3C * 2C | **1** | **3** | **1** | **2** | **1.3.1** |
| Calculate the Physical address for the following?  Code Segment=1000, Stack pointer =0003, Instruction pointer=0002   * **10002** * 10003 * 10005 * 10000 | **1** | **3** | **1** | **2** | **2.8.1** |
| Find the output of the following instruction SHR AL, 2 where AL =13H what will be the value in AL after the instruction is executed?   * 13H * **04H** * 02H * 01H | **1** | **3** | **1** | **2** | **2.8.1** |
| Which of the Register initialized first during program execution?   * Memory Address Register * Memory Data Register * **Program Counter** * Instruction Execution | **1** | **1** | **1** | **1** | **1.6.1** |
| Choose the corrective statement from the following related to the relative addressing mode   * **EA= Content of PC + Address part of the instruction** * EA= Content of IR + Address part of the instruction * EA= Content of BR + Address part of the instruction * EA= Content of BR+IR+PC + Address of the instruction | **1** | **1** | **2** | **1** | **1.7.1** |
| How many one-address instructions are needed for evaluating (X+Y) \* (S+R)?   * 3 * 4 * 10 * **8** | **1** | **3** | **1** | **2** | **2.8.1** |
| Solve the problem A=7, and B=4 using the Bitwise XOR operator and find the result of this operation.   * 1111 * 0101 * **0011** * 1100 | **1** | **3** | **1** | **2** | **2.5.2** |
| How many general-purpose registers does ARM possess?   * **30** * 20 * 40 * 10 | **1** | **1** | **1** | **1** | **1.6.1** |
| Choose the correct statement related to Intel 8086 Microprocessor   * 8 bit microprocessor, 8 address lines, 8 data lines and provides 1KB memory. * 16 bit microprocessor, 16 address lines, 16 data lines and provides 1KB memory. * 16 bit microprocessor, 16 address lines, 16 data lines and provides 1MB memory. * **16 bit microprocessor, 20 address lines, 16 data lines and provides 1MB memory.** | **1** | **1** | **1** | **1** | **1.6.1** |
| Match the following.   |  |  | | --- | --- | | A. CF | (i) Carry Flag  (ii)Conditional Flag | | B. SF | (iii)Service Flag  (iv)Sign Flag | | C. OF | (v) Overflow Flag  (vi) Over Flag | | D. IF | (vii) Initial Flag  (viii) Interrupt Flag |  * **A - (i), B - (iv), C - (v), D - (viii)** * A - (ii), B - (iv), C - (vi), D - (vii) * A - (i), B - (iii), C - (v), D - (vii) * A - (ii), B - (iii), C - (vi), D - (viii) | **1** | **3** | **1** | **1** | **1.4.1** |
| If the data “0010” is to be stored in a little-endian machine, it will be stored as   * 0010 * **0100** * 1000 * 0001 | **1** | **3** | **1** | **2** | **2.8.1** |