

| Guru Nanak Dev Engineering College, Ludhiana | | | |
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| Department of Information Technology | | | |
| Program | B.Tech. (IT) | Semester | 4 th |
| Subject Code | PCIT-108 | Subject Title | Computer Architecture & Microprocessors |
| MSE No. | 1 | Course Coordinator(s) | Er. Gitanjali |
| Max. Marks | 24 | Time Duration | 1 hour 30 minutes |
| Date of MSE | 12 th Feb 2024 | Roll Number | |
| Note: 1. Attempt all the questions in serial order. | | | |
| Q. No. | Question | COs, RBT level | Marks |
| Q1 | Describe the main purpose of assembly language? What are the advantages of assembly language over machine language? | CO3, L2 | 2 |
| Q2 | A computer register T of 8-bits is having hexadecimal CB as its initial value. What will be the value of status bits CY, S, Z, P and AC after adding the immediate operand hexadecimal E9 to T. | CO1, L4 | 2 |
| Q3 | With the help of flowchart, Illustrate the different phases of instruction cycle. | CO2, L2 | 4 |
| Q4 | An instruction is stored at location 300 with its address field at location 301. The address field has the value 400. A processor register R1 contains the number 200. Evaluate the effective address and operand that must be loaded into accumulator if the addressing mode of the instruction is: (a) Direct (b) Immediate (c) Relative (d) Register Indirect (e) Index with R1 as the Index register <i>what are different addressing mode.</i> | CO2, L3 | 4 |
| Q5 | Suppose we have input 1 st as 84 Hexadecimal number and input 2 nd as 75 Hexadecimal number. Using these inputs, write an assembly language program that performs addition operation on the given inputs and show the output generated is a 16-bit number. Also provide the complete representation of the hexadecimal inputs into binary form. | CO5, L6 | 4 |
| Q6 | Sketch out the architecture of the 8085 microprocessor. Elucidate the following (a) General purpose and Specific purpose registers, Register pairs (b) Address Buffer, Address/Data Buffer (c) Instruction Decoder (d) Increment/Decrement Address latch (e) Timing and Control Circuitry and its pins (f) ALU (g) Status Flags (h) Interrupt Control and its pins | CO1, L6 | 8 |
| Course Outcomes (CO) Students will be able to: | | | |
| 1 | Identify computer systems, memory organization, Microprocessor and assembly language programming | | |
| 2 | Clarify instruction formats, RISC and CISC architecture and different addressing modes | | |
| 3 | Solve basic binary math operations by using the instructions of microprocessor | | |
| 4 | Compare between pipelining and parallelism | | |
| 5 | Design structured, well commented, understandable assembly language programs to provide solutions to real world problems | | |
| 6 | Classify the trends and developments of microprocessor technology | | |