

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-V Semester (ECE/Minor ECE)

COURSE CODE (CREDITS): 18B11EC512 (3)

MAX. MARKS: 25

COURSE NAME: Microprocessor and Interfacing

COURSE INSTRUCTORS: Dr. Shweta Pandit

MAX. TIME: 1 Hour 30 Minutes

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

- Q1. a)** ASCII-coded data for numbers 0 to 9 is stored in a table located at a memory location starting from 1000:002H. Write a short program that uses the XLAT instruction to convert the unpacked BCD number 9 into ASCII-coded number. Store the ASCII-coded data at the memory location 2000:2000H. Write proper comments for instructions in the program. [3] [CO-2, CO-3]
- b)** A student has obtained total 550 marks in his seven subjects where each subject maximum marks are 100. Write a set of instructions in assembly language that finds the percentage of his total marks obtained in these seven subjects. Give the proper comments for the instructions and mention where the result is stored for the program. [2][CO-2]
- Q2. a)** Develop a sequence of instructions that adds the 8-digit BCD number in AX and BX to the 8-digit BCD number in CX and DX. (AX and CX are the most significant registers. The result must be found in CX and DX after the addition.) Write proper comments for instructions. [3] [CO-2]
- b)** What is the purpose of direction flag bit? [1] [CO-1]
- c)** Which instructions are used with BCD arithmetic operations? Elaborate about these instructions. [1] [CO-2]
- Q3. a)** Take a word placed in DI and perform only logical operations on that word so that it equals 0F0FH no matter what the starting value in DI register was. Afterwards place the same DI register contents into physical memory location 60FFFH using direct addressing. [3] [CO-2]
- b)** Add together the numbers F123 H, F456 H, and ABCD H using assembly language. Store the higher order word of sum in register BX and lower order word of sum in register DX. [2] [CO-2]
- Q4. a)** Compare the byte in AL to the byte in memory location 1000:1234 H. Jump to label BIG if the contents of AL are equal to or larger than the contents of memory location 1000:1234 H. Jump to label SMALL if the contents of AL are smaller than the contents 1000:1234H. [2] [CO-2]
- b)** Take whatever random number is placed in register CL and move all the even numbered bits (bit 0, 2, 4, 6) into same bit position of register DL. The odd bits of DX (bit 1, 3, 5, 7) has to be zero. [2] [CO-2]
- c)** Explain the difference between the SUB and CMP instruction. [1][CO-2]
- Q5. a)** Subtract the lower nibble of register AL from higher nibble of AL. The result of subtraction should be placed in register CH. [2][CO-2]
- b)** Swap the bytes in register SP such that the least significant byte of SP becomes the most significant and reverse. [1][CO-2]
- c)** What action does the microprocessor perform for IN AL,12H and OUT DX,AL instructions? [2][CO-3]