# Premier University

## Department of Computer Science & Engineering

## 5th Semester Final Examination, Spring2020

**Course Code: EEE 371** **Course Title: Microprocessors and Microcontrollers**

**Time:** **Full Marks:**

**Question Pattern (Special Retake)**

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| Q-1 | a. | Write the differences between 4004 and 8008 microprocessor. |
| | b. | Describe the main three parts of a microprocessor based computer memory system. |
| | c. | Draw the bus structure diagram of a microprocessor based computer system. |
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| Q-2 | a. | Define FLAG register? Draw the flag registers of 8086/8088/80186/80188 microprocessor. |
| | b. | Given,<br>SP=1000 H<br>MOV CX, 2210 H<br>MOV BX, 2A10 H<br>MOV AX, 1FF1 H<br>MOV DX, CX<br>PUSH DX<br>PUSH AX<br>POP AX<br>POP DX<br>PUSH BX<br>PUSH CX<br>Find the updated registers values. |
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| Q-3 | a. | Define all segment registers. |
| | b. | Given,<br>MOV BX, D0F1 H<br>MOV CX, EF00 H<br>MOV AX, CX<br>DEC AX<br>SUB AX, BX<br>NOT BX<br>AND BX, CX<br>Find the updated registers values. |
| | c. | MOV AL, 1E H<br>MOV DL, A2 H<br>MOV EL, DD H<br>SHL DL, 02<br>ADD AL, DL<br>SAR AL, 02<br>RCR EL, 02<br>Find the updated registers values. |
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| Q-4 | a. | What is DMA data transfer? Describe the modes of DMA data transfer. |
| | b. | Describe the interfacing of programmable DMA controller to a CPU, showing the proper diagram. |
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| Q-5 | a. | Define Macro Assembler and Meta Assembler. |
| | b. | Write down the function of below pins for 8259 interrupt controller.<br>i) $CAS_0$- $CAS_2$<br>ii) $\overline{SP}$ / $\overline{EN}$<br>iii) $IR_0$- $IR_7$<br>iv) $A_0$ |
| | c. | Write the differences between Computer and Microcontroller. |
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| Q-6 | a. | With proper block diagram, Describe ROM Interfacing using 74LS138 Decoder. |
| | b. | Describe the cascading of interrupt controller, by showing proper diagram. |
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| Q-7 | a. | What is Flags? Draw the FLAG register counts sequence for 8086 microprocessor. |
| | b. | Write the functions of following pins of 8086 microprocessor:<br>i) CLK<br>ii) $\overline{RD}$<br>iii) RESET |
| | c. | Describe and Draw the simplified Read and Write Bus timing diagram of 8086 microprocessor. |
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| Q-8 | a. | Discuss the advantages/disadvantages of One-pass and Two-pass assembler. |
| | b. | Describe the RAM address decoding, showing proper block diagram. |
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| Q-9 | a. | With proper explanation, draw the Write Bus timing diagram of 8086 microprocessor. |
| | b. | Calculate the processor's execution speed when 16MHz crystal oscillator is connected to 8284A clock generator. Let, Clock generator (8284A)'s PCLK pin is connected to microprocessor (8086)'s CLK pin. |
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| Q-10 | a. | Write the differences between Microcontroller and Microprocessor. |
| | b. | Discuss about classifications of embedded system. |
| | c. | Draw the internal block diagram of PIC16/Atmel AVR series microcontroller. |