Course Code: 20EC0416 **R20**

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: MICROPROCESSORS AND MICROCONTROLLERS (20EC0416) **Course & Branch**: : B.Tech – CSE & CSIT

Year & Sem: II-B.Tech& II-Sem **Regulation:** R20

UNIT –I

MICROPROCESSORS, MICROCOMPUTERS AND ASSEMBLY LANGUAGE

1	a) Define microprocessor. Explain the brief history of the evolution of the Microprocessor.	[L2] [CO1]	**[6M]**
	b) Draw the block diagram of the microcomputer and explain the function of each block.	[L2] [CO1]	**[6M]**
2	a) Define instruction and describe the different types of instructions supported by Microprocessor.	[L2] [CO4]	**[6M]**
	b) Define machine language. Explain with a neat sketch number of the address lines required for an 8 KB memory chip to interface to the Microprocessor.	[L2] [CO4]	**[6M]**
3	a) Describe the function of the input devices.	[L2] [CO2]	**[6M]**
	b) List and describe the different computer languages.	[L1] [CO4]	**[6M]**
4	Explain, how computers are classified from large computers to single-chip microcontrollers.	[L2] [CO1]	**[12M]**
5	a) Illustrate with a neat sketch, how the microprocessor can be used in Microprocessor Controlled Temperature System (MCTS).	[L3] [CO6]	**[8M]**
	b) Explain the importance of the input and output devices.	[L2] [CO2]	**[4M]**
6	a) Draw and explain the basic architecture of a microprocessor system.	[L2] [CO3]	**[8M]**
	b) Define the terms: i) BIT, ii) NIBBLE, iii) BYTE iv) WORD	[L1] [CO4]	**[4M]**
7	a) What is the need for memory? Classify different types of memory.	[L2] [CO2]	**[6M]**
	b) Compare RAM and ROM memories.	[L2] [CO2]	**[6M]**
8	a) Give examples of output devices and discuss the concept of output devices in detail.	[L2] [CO2]	**[6M]**
	b) Distinguish Static RAM and Dynamic RAM	[L4] [CO1]	**[6M]**
9	a) Sketch the functional block diagram of the microcomputer system and summarize the function of each block.	[L3] [CO1]	**[8M]**
	a) Distinguish Low level and high-level Languages.	[L4] [CO4]	**[4M]**
10	a) Differentiate the Microprocessor & the Microcontroller with a suitable diagram.	[L2] [CO1]	**[8M]**
	b) Explain the terms i) SSI ii) MSI iii) LSI iv) VLSI	[L2] [CO1]	**[4M]**

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UNIT –II

8085 MICROPROCESSOR ARCHITECTURE

1	a) Illustrate the timing and control signals generation in 8085 microprocessor.	[L3] [CO2]	**[6M]**
	b) Differentiate RLC and RRC instructions with suitable example	[L4] [CO4]	**[6M]**
2	a) Explain the functions of a program counter, stack pointer & ALU in 8085µP.	[L2] [CO2]	**[6M]**
	b) Draw the flag register of the 8085 microprocessor and explain each bit in detail.	[L1] [CO2]	**[6M]**
3	a) Draw the pin diagram of the 8085 microprocessor and categorize the pins based on function.	[L4] [CO2]	**[8M]**
	b) Outline the role of the following pins in the 8085 microprocessor i) READY ii) ALE iii) HOLD & HLDA.	[L2] [CO2]	**[4M]**
4	a) With a neat sketch explain, the De-multiplexing of the Bus AD7-AD0 in 8085.	[L2] [CO2]	**[6M]**
	b) Discuss the different types of registers used in the 8085 microprocessor.	[L2] [CO2]	**[6M]**
5	a) Explain the role of control & status signals in the 8085 microprocessor.	[L2] [CO2]	**[6M]**
	b) Define an interrupt and explain the different types of interrupts available in the 8085 microprocessor.	[L2] [CO2]	**[6M]**
6	Discuss how data flow from memory to Microprocessor with a timing diagram.	[L2] [CO2]	**[12M]**
7	a) List out the important features of 8085 microprocessor.	[L1] [CO2]	**[4M]**
	b) Sketch neat the block diagram of 8085 Architecture and explain the function of each block.	[L3] [CO3]	**[8M]**
8	a) Explain the Data transfer instructions of the 8085 microprocessor with an example.	[L2] [CO4]	**[6M]**
	b) Describe the Logical instructions of the 8085 microprocessor with an example.	[L2] [CO4]	**[6M]**
9	Explain the following instructions of 8085 microprocessor with an example. i) Arithmetic instructions ii) Stack control instructions.	[L2] [CO4]	**[12M]**
10	a) Determine the content of the 9002 memory location after executing the following program LDA 9000 MOV B, A LDA 9001 ADD B STA 9002 HLT if 9000 has 02H and 9001 has 07H.	[L3] [CO4]	**[6M]**
	b) Explain the instruction, data formats & data storage in 8085 microprocessor.	[L2] [CO4]	**[6M]**

UNIT –III
THE 8051 ARCHITECTURE

1	Draw the internal architecture of 8051 microcontroller and explain the function of each block present in it.	[L2] [CO3]	**[12M]**
2	a) Describe the importance of the I/O port in the microcontroller.	[L2] [CO2]	**[2M]**
	b) Analyze the functionality of I/O ports present in 8051 microcontroller.	[L4] [CO5]	**[6M]**
	c) Explain the different types of directives used in microcontroller.	[L2] [CO4]	**[4M]**
3	a) Explain the importance of memory in microcontroller.	[L2] [CO2]	**[2M]**
	b) Describe how the RAM memory is organized in 8051 microcontroller.	[L2] [CO5]	**[6M]**
	c) Discuss different busses used to communicate by the processor to the I/O and memory	[L2] [CO5]	**[4M]**
4	a) List the applications of the timers and counters in 8051 microcontrollers.	[L1] [CO6]	**[4M]**
	b) Illustrate the operation of timers present in 8051 microcontroller.	[L3] [CO3]	**[8M]**
5	a) List the features of 8051 microcontroller.	[L1] [CO5]	**[6M]**
	b) Discuss the applications of microcontrollers in the industry.	[L2] [CO6]	**[6M]**
6	a) Describe the functions of various 16-bit registers in the 8051 microcontroller.	[L2] [CO2]	**[4M]**
	b) Draw the flag register of 8051 microcontroller and describe the functionality of each flag in detail.	[L2] [CO3]	**[4M]**
	c) Summarize the role of TMOD Register with a neat sketch.	[L2] [CO3]	**[4M]**
7	Draw the pin diagram of 8051 microcontroller and describe the functionality of each pin in detail.	[L2] [CO3]	**[12M]**
8	a) Compare serial communication and parallel communication.	[L4] [CO4]	**[4M]**
	b) Explain how the 8051 microcontroller transfers the serial data input and output using UART.	[L2] [CO5]	**[4M]**
	c) Explain SBUF register	[L2] [CO3]	**[4M]**
9	a) Distinguish the microprocessors and microcontrollers.	[L4] [CO1]	**[4M]**
	b) Explain the different types of interrupts in the 8051microcontroller.	[L2] [CO2]	**[4M]**
	c) Describe the vector address of interrupts in 8051microprocessor.	[L2] [CO2]	**[4M]**
10	a) Explain the modes of operation using SCON register in 8051μC	[L2] [CO3]	**[8M]**
	b) Define and draw the formats for IE, IP and TCON register.	[L1] [CO3]	**[4M]**

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UNIT –IV
PROGRAMMING THE 8051

1	a) Describe the different types of addressing mode supported by 8051with suitable examples.	[L2] [CO4]	**[8M]**
	b) Explain the moving data instructions of 8051 microcontroller with an example.	[L2] [CO4]	**[4M]**
2	a) Describe the DJNZ reg, label instruction with an example.	[L2] [CO4]	**[4M]**
	b) Explain the function of DAA and PUSH instruction with an example.	[L2] [CO4]	**[4M]**
	c) Explain the different types of directives used in microcontroller.	[L2] [CO4]	**[4M]**
3	a) Describe how instruction MOVC A,@A+DPTR can be used in reading data from a table.	[L2] [CO4]	**[6M]**
	b) Discuss the logical operations Instructions of 8051 microcontroller with an example.	[L2] [CO4]	**[6M]**
4	a) List various arithmetic operations performed in 8051 microcontroller.	[L1] [CO4]	**[6M]**
	b) Explain any three arithmetic operations Instructions of 8051 microcontroller with an example.	[L2] [CO4]	**[6M]**
5	a) Discuss the following instructions of 8051 microcontroller with an example. (i) Bit-level instructions (ii) Byte level instructions	[L2] [CO4]	**[8M]**
	b) Explain, how the stack can be used in the subroutine process in 8051 microcontroller.	[L2] [CO4]	**[4M]**
6	a) Differentiate between Jump and Call instructions.	[L4] [CO4]	**[6M]**
	b) Explain Jump and Call instructions of 8051 microcontroller with an example.	[L2] [CO4]	**[6M]**
7	a) Develop and write an assembly program of 8051 microcontroller to multiply two 8-bit numbers and store the result in a memory location	[L3] [CO6]	**[6M]**
	b) Compare CALL and PUSH instructions	[L4] [CO4]	**[6M]**
8	a) Explain how the 8051 microcontroller performs rotate and swap operations with an example.	[L2] [CO4]	**[8M]**
	b) Describe the operation of return instruction in 8051 microcontroller with a suitable example.	[L2] [CO4]	**[4M]**
9	a) Develop and write an assembly program of 8051 microcontroller to divide two 8-bit numbers and store the result in a memory location.	[L3] [CO6]	**[6M]**
	b) Develop an assembly program of 8051 microcontroller to subtract two 8-bit numbers and store the result in a memory location.	[L3] [CO6]	**[6M]**
10	a) Develop and write an assembly program of 8051 microcontroller to logically AND two 8-bit numbers and store the result in a memory location.	[L3] [CO6]	**[6M]**
	b) Develop and write an assembly program of 8051 microcontroller to find the largest number among given 10 numbers and store the result in a memory location.	[L3] [CO6]	**[6M]**

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UNIT –V
APPLICATIONS

1	a) With a neat sketch, show the interfacing of a 4x4 matrix keypad with an 8051 microcontroller.	[L3] [CO5]	**[6M]**
	b) Describe the key bouncing problem and de-bouncing solutions.	[L2] [CO5]	**[6M]**
2	Describe with a schematic, the scanning of the 4x4 matrix keyboard in an 8051 based system and discover the key pressed.	[L4] [CO5]	**[12M]**
3	a) With the help of a neat sketch, show the interfacing of LCD Display with 8051 microcontroller and explain its operation.	[L3] [CO5]	**[8M]**
	b) Explain the operation of the LCD Display with a suitable diagram.	[L2] [CO5]	**[4M]**
4	a) List instruction command codes for programming an LCD.	[L1] [CO4]	**[8M]**
	b) Distinguish LED and LCD display devices.	[L4] [CO5]	**[4M]**
5	a) Explain the commands used before sending data to 16x2 LCD display.	[L2] [CO4]	**[6M]**
	b) Draw and explain the pin Diagram of 16x2 LCD.	[L2] [CO5]	**[6M]**
6	a) With the help of a neat sketch, show the interfacing of 7- segment display with an 8051 microcontroller and explain its operation.	[L3] [CO5]	**[8M]**
	b) Explain the operation of the 7-Segment display with a suitable diagram.	[L2] [CO5]	**[4M]**
7	a) With the help of a neat sketch, show the interfacing of ADC 0808 with 8051 microcontroller and explain its operation.	[L3] [CO5]	**[8M]**
	b) Describe the working principle of Analog to Digital Converter with a suitable diagram.	[L2] [CO6]	**[4M]**
8	a) With the help of a neat sketch, show the interfacing of DAC 1408 with an 8051 microcontroller and explain its operation.	[L3] [CO5]	**[8M]**
	b) Describe the working principle of the Digital to Analog Converter with a suitable diagram.	[L2] [CO6]	**[4M]**
9	Design and explain the real-time application using 8051 Microcontroller with suitable block diagram.	[L3] [CO6]	**[12M]**
10	a) Define Interrupt and classify the interrupts.	[L2] [CO2]	**[6M]**
	b) Explain multiple interrupts present in 8051 microcontroller.	[L2] [CO2]	**[6M]**

PREPARED BY:Dr.E.Kosalendra,V.Nisha priyadharsini