



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR**  
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### QUESTION BANK

**Subject with Code :** Microprocessors and Microcontrollers(16EC423) **Course & Branch:** B.Tech – ECE

**Year & Sem:** III-B.Tech & II-Sem

**Regulation:** R16

### UNIT-I

- 1) a) Define microprocessor. Explain the brief history of evolution of  $\mu\text{P}$ . [L1][CO1][6M]  
b) List the major features of 8085 microprocessor. [L1][CO1][6M]
- 2) Explain the requirement of a program counter, stack pointer and status flags in the architecture of 8085 microprocessor. [L2][CO1][12M]
- 3) Illustrate neat block diagram of 8085 microprocessor and explain its internal architecture. [L2][CO1][12M]
- 4) Draw the pin diagram of 8085  $\mu\text{P}$  and explain the functionality of each pin. [L2][CO1][12M]
- 5) a) Draw and explain the flag register of 8085 microprocessor. [L2][CO1][6M]  
b) Describe how timing and control signals are generated in 8085  $\mu\text{P}$ . [L1][CO1][6M]
- 6) Illustrate the timing diagrams of the following 8085  $\mu\text{P}$  instruction and explain them in detail.  
a) MOV A, M [L2][CO1][6M]  
b) MVI B, 25H [L2][CO1][6M]
- 7) List the various addressing modes of 8085  $\mu\text{P}$  and explain each with suitable example. [L4][CO1][12M]
- 8) Explain the following instructions of 8085 microprocessor with an example.  
a) Data transfer instructions [L2][CO1][6M]  
b) Logical instructions [L2][CO1][6M]
- 9) Explain the following instructions of 8085 microprocessor with an example.  
a) Arithmetic instructions [L2][CO1][5M]  
b) Machine control instructions [L2][CO1][7M]
- 10) a) Define instruction. [L1][CO1][2M]  
b) Explain the instruction and data formats of 8085  $\mu\text{P}$ . [L2][CO1][10M]
- 11) Explain the Branch, Stack & I/O instructions of 8085  $\mu\text{P}$  with an example. [L2][CO1][12M]

### UNIT-II

- 1) a) List the salient features of 8086 microprocessor. [L1][CO2][6M]  
b) Draw and explain the flag register of 8086 microprocessor. [L2][CO2][6M]
- 2) With the help of neat block diagram, describe the functionality of Bus interface unit and Execution unit of 8086  $\mu\text{P}$ . [L2][CO2][12M]
- 3) With the help of neat block diagram, explain the internal architecture of 8086 microprocessor. [L2][CO2][12M]
- 4) Explain the functionality of pins used in the following modes of 8086  $\mu\text{P}$ .  
a) Minimum mode. [L2][CO2][6M]  
b) Maximum mode. [L2][CO2][6M]
- 5) List the registers present in 8086  $\mu\text{P}$  and discuss its functionality. [L1][CO2][12M]
- 6) Draw the pin diagram of 8086  $\mu\text{P}$  and explain its individual pin functionality. [L2][CO2][12M]
- 7) a) Mention the importance for memory segmentation. [L5][CO2][2M]

- b) Explain the memory segmentation of 8086  $\mu$ P. [L2][CO2][10M]
- 8) a) Write a short note on memory of 8086 microprocessor. [L1][CO2][2M]  
b) Explain the physical memory organization in an 8086  $\mu$ P. [L1][CO2][10M]
- 9) a) Mention the features of Pentium processor. [L2][CO2][6M]  
b) List the major features of the 80386 processor. [L1][CO2][6M]
- 10) a) List the features of 80286 processor. [L1][CO2][6M]  
b) Mention the differences between 8085 and 8086 microprocessors. [L4][CO2][6M]

### UNIT – III

- 1) With the help of neat diagrams, Describe the differences between microprocessors and microcontrollers. [L4][CO3][12M]
- 2) a) List the features of 8051 microcontroller. [L1][CO3][8M]  
b) Mention the applications of microcontrollers in everyday life. [L4][CO3][4M]
- 3) With the help of a neat block diagram, Explain the internal architecture of 8051 microcontroller in detail. [L2][CO3][12M]
- 4) a) Define register. Mention the need of registers in  $\mu$ P or  $\mu$ C. [L2][CO3][5M]  
b) Draw the flag register of 8051  $\mu$ C and describe the functionality of each flag in detail [L2][CO3][7M]
- 5) Mention the various registers present in 8051  $\mu$ C and explain their functionality in detail [L2][CO3][12M]
- 6) Draw the pin diagram of 8051  $\mu$ C and describe the functionality of each pin in detail. [L2][CO3][12M]
- 7) a) Mention the importance of I/O port in a  $\mu$ P or  $\mu$ C. [L4][CO3][2M]  
b) Describe the functionality of I/O ports present in 8051  $\mu$ C. [L4][CO3][10M]
- 8) a) Explain the importance of memory in a  $\mu$ P or  $\mu$ C. [L2][CO3][2M]  
b) Describe how the memory is organised in 8051  $\mu$ C in detail. [L4][CO3][10M]
- 9) a) Define addressing mode. [L1][CO3][2M]  
b) List various addressing modes of 8051 microcontroller and explain them with an example each. [L4][CO3][10M]
- 10) a) Define counter. Mention the applications of counter [L2][CO3][3M]  
b) Describe the operation of timers present in 8051  $\mu$ C. [L2][CO3][9M]
- 11) a) Compare serial communication and parallel communication. [L5][CO3][3M]  
b) Explain how the 8051  $\mu$ C transfers the data using serial port. [L2][CO3][9M]

### UNIT – IV

- 1) a) Write a short note on assembly language programming. [L1][CO4][3M]  
b) Explain the moving data instructions of 8051  $\mu$ C with an example. [L2][CO4][9M]
- 2) a) Write a short note on assembler. [L1][CO4][2M]  
b) Explain various assembler directives of 8051  $\mu$ C. [L2][CO4][10M]
- 3) a) Mention various logical operations performed in assembly language. [L2][CO4][2M]  
b) Explain the logical Instructions of 8051  $\mu$ C with an example. [L2][CO4][10M]
- 4) Explain the following operators of 8051  $\mu$ C with an example. [L2][CO4][12M]  
(i) Bit level (ii) Byte level
- 5) a) Mention the difference between Jump and Call operations. [L1][CO4][2M]  
b) Explain Jump and Call instructions of 8051  $\mu$ C with an example. [L2][CO4][10M]
- 6) a) Define interrupt. [L4][CO4][8M]  
b) Write a brief description of the interrupts present in 8051  $\mu$ C. [L2][CO4][10M]

- 7) Write an assembly program of 8051  $\mu\text{C}$  to multiply two 8-bit numbers and store the result in a memory location. [L4][CO4][12M]
- 8) a) Mention various arithmetic operations performed in assembly language. [L2][CO4][2M]  
b) Explain the arithmetic Instructions of 8051  $\mu\text{C}$  with an example. [L2][CO4][10M]
- 9) a) Describe the operation of return instruction in 8051  $\mu\text{C}$  with suitable example. [L2][CO4][3M]  
b) Explain how the 8051  $\mu\text{C}$  performs rotate and swap operations with an example. [L2][CO4][9M]
- 10) a) Define ISR, Interrupt vector. [L1][CO4][4M]  
b) Explain how the ISR is implemented with an example. [L2][CO4][8M]

### UNIT – V

- 1) With the help of a neat diagram to show the interfacing of a 4x4 matrix keypad with 8051  $\mu\text{C}$  and explain its operation. [L4][CO5][12M]
- 2) Describe key bouncing problem and de-bouncing solutions? [L6][CO5][12M]
- 3) a) Write a short note on 7-Segment display. [L3][CO5][3M]  
b) With the help of a neat diagram to show the interfacing of 7-segment display with 8051  $\mu\text{C}$  and explain its operation. [L4][CO5][9M]
- 4) a) Write a short note on serial data communication. [L2][CO5][3M]  
b) Explain the serial port data communication modes of 8051  $\mu\text{C}$  in detail. [L2][CO5][9M]
- 5) List instruction command codes for programming a LCD? [L1][CO5][12M]
- 6) a) Write a short note on Analog to Digital Converter. [L1][CO5][3M]  
b) With the help of a neat diagram to show the interfacing of ADC 0808 with 8051  $\mu\text{C}$  and explain its operation. [L2][CO5][9M]
- 7) a) Write a short note on Interrupt. [L1][CO5][3M]  
b) Explain multiple interrupts present in 8051 microcontroller. [L2][CO5][9M]
- 8) Draw the pin Diagram of 16x2 LCD? Describe the pin description of 16x2 LCD? [L2][CO5][12M]
- 9) Design and explain the implementation of water tank monitoring system using 8051 microcontroller. [L6][CO5][12M]
- 10) Design and explain the implementation of 4-way traffic light control system using 8051 microcontroller. [L6][CO5][12M]