



KINGS



COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

Sub. Code : EC1257

Branch / Year / Sem : CSE / III / VI

Sub. Name : Microprocessors and Microcontrollers Batch

: 2011-2015

Staff Name : Mr.S.Rajarajan

Academic Year: 2012-2013(even)

UNIT 1 - THE 8085 AND 8086 MICROPROCESSORS

PART-A

1. What is Microprocessor? Give the power supply & clock frequency of 8085
2. What are the functions of an accumulator?
3. List the 16 – bit registers of 8085 microprocessor
4. List few applications of microprocessor-based system
5. List the allowed register pairs of 8085
6. Mention the purpose of SID and SOD lines
7. What is an Opcode?
8. What is the function of IO/M signal in the 8085?
9. What is an Operand?
10. How many operations are there in the instruction set of 8085?
11. List out the five categories of the 8085 instructions. Give examples of the instructions for each group?
12. Explain the difference between a JMP instruction and CALL instruction
13. Explain the purpose of the I/O instructions IN and OUT.
14. What is the difference between the shifts and rotate instructions?
15. How many address lines in a 4096 x 8 EPROM CHIP?
16. What are the control signals used for DMA operation
17. What is meant by Wait State?
18. List the four instructions which control the interrupt structure of the 8085 microprocessor.
19. What is meant by polling?
20. What is meant by interrupt?
21. Explain priority interrupts of 8085.
22. What is a microcomputer?
23. What is the signal classification of 8085?
24. What are operations performed on data in 8085
25. Steps involved fetching a byte in 8085

26. How many interrupts does 8085 have, mention them
27. Basic concepts in memory interfacing
28. Define instruction cycle, machine cycle and T-state
29. What is an instruction?
30. What is the use of ALE?
31. How many machine cycles does 8085 have, mention them
32. Explain the signals HOLD, READY and SID
33. Mention the categories of instructions and give two examples for each category
34. Explain LDA, STA and DAA instructions
35. Explain the different instruction formats with examples
36. What is the use of addressing modes, mention the different types?
37. What is the use of bi-directional buffers?
38. Give the register organization of 8085
39. Define stack and explain stack related instructions
40. Why do we use XRA A INSTRUCTION?
41. Compare CALL and PUSH instruction
42. What is Microcontroller and Microcomputer?
43. Define Flags
44. How does the microprocessor differentiate between data and instruction?
45. What is subroutine?
46. What are the difference between microcontroller and microprocessor?
47. What are the flags available in 8085 explain?
48. If the frequency of the crystal connected to 8085 is 6MHz calculate the time to fetch and execute NOP instruction?
49. What is a T-state?
50. Define instruction cycle and machine cycle?

PART-B

1. Explain the architecture of microprocessors 8085.
2. Explain the pin diagram of 8085.
3. Explain the requirement of a program counter, stack pointer and status flags in the architecture of 8085 microprocessor.
4. Explain the memory mapped i/o addressing scheme.
5. Draw and explain the timing diagram of memory read cycle.
6. Draw and explain the timing diagram of memory write cycle with example.
7. Draw and explain the timing diagram of opcode fetch cycle.
8. Explain the direct addressing modes and indirect addressing modes of 8085 with example.
9. Assume that the accumulator contains data bytes 88 and instruction MOV C, A 4FH is fetched. List the steps decoding and executing the instruction.
10. Draw the functional block diagram of 8085 microprocessor and explain.
11. Write a Program to Perform the following functions and verify the output steps: a. Load the number 5CH in register D b. Load the number 9E H in register C . Increment the Contents of register C by one. d. Add the contents of register C and D and Display the sum at output port1.
12. Write an assembly language program to find out the largest number from a given unordered array of 8 bit numbers, stored in the locations starting from a known address.

13. With suitable examples explain 8085 instruction set in detail.
14. With suitable examples explain 8085 addressing modes in detail.
15. Explain 8085 Stack in detail.
16. Write a 8085 ALP to generate a accurate time delay of 100ms.
17. Write 8085 assembly language program to SORT an array of 10 bytes in Descending order.
18. Explain 8085 stack in detail?
19. Write an 8085 ALP to perform 32 bit binary addition?
20. List out the maskable and non maskable interrupt available in 8085? (8)
21. Write an 8085 ALP to convert the hexadecimal value to decimal value? (8)

UNIT 2 - 8086 SOFTWARE ASPECTS

PART-A

1. How do 8086 interrupts occur?
2. What are the 8086 interrupt types
3. What is interrupt service routine?
4. Define BIOS
5. Explain PUBLIC
6. Explain DUP
7. Compare Procedure & Macro
8. What is the purpose of segment registers in 8086?
9. Define pipelining?
10. Discuss the function of instruction queue in 8086?
11. What is the maximum memory size that can be addressed by 8086?
12. What is the function of the signal in 8086?
13. What are the predefined interrupts in 8086?
14. What are the different flag available in status register of 8086?
15. List the various addressing modes present in 8086?
16. How single stepping can be done in 8086?
17. State the significance of LOCK signal in 8086?
18. What are the functions of bus interface unit (BIU) in 8086?
19. What is the clock frequency of 8086?
20. What are the two modes of operations present in 8086?
21. Explain the process control instructions
22. Explain REPEAT-UNTIL statements
23. What is multiprogramming?
24. Differentiate between absolute and linear select decoding?
25. What are the three classifications of 8086 interrupts?
26. What are the functions of status pins in 8086?
27. write briefly on LOCK and WAIT for 8086 processor?
28. Explain the function of Execution unit in 8086?
29. What do you mean by pipelining in 8086?
30. How the 20 bit effective address is calculated in 8086 processor?
31. What are the different flags in 8086?

PART-B

1. Describe Intel 8086 Microprocessor Architecture
2. Describe any five addressing modes of 8086 with suitable examples.
3. Write a 8086 ALP to convert an 8 bit binary number into equivalent gray code.
4. Explain the function of all the pins of 8086 Processor.
5. Write a 8086 ALP to sort an array of ten bytes in ascending order. Add comments to your Program.
6. Explain the function of various flags of 8086 microprocessor.
7. Explain the function of unsigned multiplication and Division instructions in 8086 with suitable examples.
8. Describe the functional units present and their functions in BIU and EU of 8086.
9. Write 8086 assembly language program to perform the following
 - a. To move a string of words from offset 1000h to offset 6000h. The Length of the string is 0Ch.
 - b. To add an array of bytes. The array contains 50bytes.
10. Write on 8086 ALP to reverse a String?
11. Define a Macro that produces code adding two binary N-byte operator and Storing the N-byte result beginning at an arbitrary location. N is be the name of a constant and is to appear as the fourth dumn parameter.
12. Explain the physical memory organization in an 8086 system.
13. Distinguish between the following pairs: NEAR and FAR procedures, macros and subroutines.

UNIT 3 - MULTIPROCESSOR CONFIGURATIONS

PART-A

1. What are the configurations used for physical interconnections?
2. What is Closely Coupled Configuration?
3. What is Loosely Coupled Configuration?
4. What is a data amplifier?
5. What are the different inter connection topologies?
6. Give the instruction set of 8087?
7. What are the different data types commonly used?
8. Write the advantages of loosely coupled system over tightly coupled systems?
9. Define Coprocessor.
10. Explain the different methods of data transfer possible between MPU and I/O.
11. What is the main use of I/O processor?
12. Difference between Loosely and Tightly Coupled Configurations
13. What is the need of Co-processors? Give an example.
14. What are the drawbacks of using tightly Coupled Configuration?
15. What are the major blocks available in 8089 architecture?
16. Explain how CPU communicates with IOP.
17. What are the advantages of using 8087 Numeric Data Processor?
18. State the function of MIN/MAX pin in 8086?

PART-B

1. Explain in detail about the different types of coprocessor configurations.
2. Explain briefly about loosely Coupled Configuration.
3. Explain briefly about tightly coupled configuration.
4. Explain in detail with an example about the various data types.
5. Describe in detail about the Architecture of 8089 I/O Processor.
6. Describe the different techniques in which how CPU can communicate with IOP.
7. Explain the difference between data processor and IO processor.
8. What happens when 8086 is operated in Maximum mode? List the signals that are unique in this mode?
9. Discuss the architecture and working of 8253 timer?
10. Discuss about the multiprocessor configurations of 8086?
11. Assume that a loosely coupled multiply system consists of an 8086 with local memory in one module and in another module two 8089 with local input/output bus. Determine the major bus interface required each module.
12. Explain MIN/MAX mode operation of an 8086 processor?

UNIT 4 - I/O INTERFACING

PART-A

1. What is the use of 8251 chip?
2. What are the different types of methods used for data transmission?
3. What are the various programmed data transfer methods?
4. What is synchronous data transfer?
5. What is asynchronous data transfer?
6. What are the functional types used in control words of 8251
7. What are the basic modes of operation of 8255?
8. Write the features of mode 0 in 8255?
9. What are the features used mode 1 in 8255?
10. What are the signals used in input control signal & output control signal?
11. What are the features used mode 2 in 8255?
12. What are the different types of write operations used in 8253?
13. What are the modes of operations used in 8253?
14. Give the different types of command words used in 8259a?
15. Give the operating modes of 8259a?
16. Define scan counter?
17. What is the output modes used in 8279?
18. What are the modes used in keyboard modes?
19. What are the modes used in display modes?
20. What is the use of modem control unit in 8251?
21. Give the register organization of 8257?
22. What is the function of DMA address register?

23. What is the use of terminal count register?
24. What is the function of mode set register in 8257?
25. Distinguish between the memories mapped I/O peripheral I/O?
26. List the operation modes of 8255
27. What is a control word?
28. What is the purpose of control word written to control register in 8255?
29. What is the size of ports in 8255?
30. What is interfacing?
31. What is memory mapping?
32. What is I/O mapping?
33. What is an USART?
34. What is the use of 8251 chip?
35. List the major components of the keyboard/Display interface
36. What is Key bouncing?
37. Define HRQ?
38. What is the use of stepper motor?
39. What is TXD?
40. What is RXD?
41. Draw the status word format for 8254.
42. What is meant by key bouncing?
43. Write the function of crossbar switch?
44. Define PPI?
45. Specify the bit that differentiates between the BSR mode and IO mode in 8255?
46. What is Baud rate?
47. What is USART?
48. Differentiate between half duplex and full duplex transmission?
49. What is handshake port?
50. What are the functions performed by 8251?
51. What are the features of 8259 PIC?
52. What are the methods available for error correction during serial data transmission?
53. What is the difference between two key lockout and N-key rollover modes in 8279?

PART-B

1. With a neat block diagram, explain in detail the internal architecture of 8255 and its registers
2. Discuss how memory chips and I/O devices are interfaced to a microprocessor.
3. Explain the block diagram of the 8279 Keyboard/Display interface and its operations.
4. Draw a timing diagram to interface a 4K ROM and a 2K RAM consecutively with microprocessor 8085, starting with ROM interfacing at address 0000 H. Explain.
5. Discuss various Addressing modes of 8085 with suitable examples.
6. What are the various types of Data formats? Explain with examples.
7. Explain five interrupt inputs of 8085 with priority.
8. What are Hardware and Software Interrupts? What is ISS?
9. Draw a diagram to interface a 6K ROM and a 2K RAM consecutively with microprocessor 8085, starting with ROM interfacing at address 8000 H.
10. What is Interrupt? Explain enabling, disabling and masking of interrupts with examples. How to transfer data using interrupts.
11. Explain how to use an RST instruction to implement a software breakpoint.

12. Explain an interrupt process and the difference between a maskable and non-maskable interrupt by using examples.
13. Interface a 10 or 12-bit D/A converter with an 8-bit microprocessor.
14. Design a circuit to interface an 8-bit D/A converter with an 8-bit microprocessor and verify the analog output for a digital signal.
15. Explain the block diagram of the 8155 I/O section and timer.
16. Explain the function of Handshake signals. What is the difference between setting the 8155 I/O ports in ALT 1 and ALT 3.
17. Design a five-minute clock using the 8254 and the interrupt technique. Display minutes and seconds.
18. Explain how the 8237 DMA controller transfers 64K bytes of data per channel with eight address lines.
19. Specify handshaking signals and their functions if port A of 8255 is set-up as input port in mode 1. 20. Explain mode 0 and mode 1 of 8253.
21. Explain terms synchronous, baud rate, parity, half and full duplex transmission.
22. Explain how data bits are transmitted in the asynchronous format, and calculate the delay required between two successive bits for a given baud.
23. Explain the block diagram and the functions of each block of the 8251 USART (Programmable Communication Interface).
24. Write a short note on the following: a) machine cycle b) instruction cycle c) execute cycle d) Vectored interrupt
25. Interface a 8K RAM consecutively with microprocessor 8085, starting with ROM interfacing at address 8000 H.
26. Define Addressing modes, Data formats with examples.
27. Describe a scheme to demultiplex the multiplexed AD0-AD7 bus of 8085CPU.
28. Set up the 8255 I/O ports in the simple I/O and Bit Set/Reset(BSR) mode
29. Explain the process of the Direct Memory Access(DMA) and the functions of various elements of the 8237.
30. Explain the procedure of interfacing the temperature monitoring system with 8085.

UNIT 5 MICROCONTROLLERS

PART-A

1. What is mean by microcontroller?
2. Explain DJNZ instructions of intel 8051 microcontroller?
3. State the function of RS1 and RS0 bits in the flag register of intel 8051 microcontroller?
4. Write a program using 8051 assembly language to change the date 55H stored in the lower byte of the data pointer register to AAH using rotate instruction.
5. Give the alternate functions for the port pins of port3?
6. Specify the single instruction, which clears the most significant bit of B
7. Explain the function of the pins PSEN and EA of 8051
8. Explain the 16-bit registers DPTR and SP of 8051
9. Name the special functions registers available in 8051.
10. Explain the register IE format of 8051
11. Compare Microprocessor and Microcontroller
12. Name the five interrupt sources of 8051?

13. List the features of 8051 microcontroller.
14. Name any four additional hardware features available in microcontrollers when compared to microprocessors.
15. List out the Hardware Resources available in 8051.
16. When 8051 is reset, all interrupts are disabled. How to enable these interrupts?
17. What is nested interrupts?
18. How will you double the baud rate in 8051?
19. Explain software and hardware methods to start and stop timers in 8051.
20. Give steps to program 8051 for serial data transfer.
21. Write short notes on interrupt priority.
22. Write the vector address and priority sequence of 8051 interrupts
23. Write a delay routine for 1 millisecond using timer 0 of 8051 for 12 MHz crystal frequency.
24. Compare microprocessors and microcontrollers?
25. List the addressing modes of 8051?
26. Differentiate RRA and RRCA instruction in 8051 microcontroller.

PART-B

1. Describe the architecture of 8051 with neat diagram. (16)
2. Discuss the peripheral interface of 8051. (8)
3. Explain the interrupt structure of 8051 microcontroller
4. Explain how interrupts are prioritized. (8)
5. What is the difference between the Microprocessors and Microcontrollers? (8)
6. Explain the I/O port structure of 8051. (8)
7. Explain the different serial communication modes in 8051. (8)
8. Explain the memory structure of 8051. (8)
9. States various modes available for timer in 8051. (16)
10. Explain the functional pin diagram of 8051 Microcontroller. (16)
11. With the help of a functional block diagram explain any one application of 8051 microcontroller.(16)
12. Give the PIN detail of an 8051 microcontroller and explain (16)
13. Discuss in detail about 8501 based stepper motor control along with necessary hardware and software (16)
14. Discuss the register set of 8051 and also discuss how memory a input / output addressing is done in 8085? (8)