



KINGS

COLLEGE OF ENGINEERING



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

SUBJECT CODE & NAME : EC 1362-MICROPROCESSORS AND MICROCONTROLLER

YEAR / SEM : III / IV

UNIT-I

8085 PROCESSOR

PART-A

1. What is the need for ALE signal in 8085 microprocessor? (2)
2. How many machine cycles are needed to execute STA 1800? (2)
3. What is the need for interfacing? (2)
4. Compare memory mapped I/O and peripheral mapped I/O. (2)
5. State the disadvantages of memory mapped I/O scheme. (2)
6. What are the requirements to be met while interfacing I/O devices to microprocessor/microcontroller? (2)
7. Define interfacing. (2)
8. Show the common anode seven segments LED Configuration. How to switch it on and off? (2)
9. Differentiate between software and hardware interrupts. (2)
10. What is interrupt? (2)
11. Name the vectored and non vectored interrupt of 8085 system. (2)
12. What do you mean by timing diagram? (2)
13. Define i) Instruction cycle (1)
ii) Machine cycle (1)
14. Define T-state and In which T-cycle the ALE signal is activated? (2)
15. What do you mean by masking the interrupt? How it is activated in 8085? (2)

PART-B

1. Describe the functional pin diagram of 8085. (16)
2. Describe the functional block diagram of 8085. (16)
3. Explain the 8085 interrupt system in detail. (16)
4. Explain various machine cycles supported by 8085. (16)
5. a) With suitable examples explain how I/O devices are connected using memory mapped I/O and peripheral I/O. (10)
b) Design a microprocessor system to interface an $8K \times 8$ EPROM and $8K \times 8$ RAM. (6)
6. Draw timing diagrams for the following instruction with appropriate control and status signal. Explain in brief. CALL 2000 (16)

UNIT-II

PROGRAMMING OF 8085 PROCESSOR

PART-A

1. Show the different instruction formats used in 8085. (2)
2. What is the type of stack used in 8085? (2)
3. What are the different addressing modes of 8085? (2)
4. Define addressing modes. How many addressing modes are available in 8085? (2)
5. The last executable instruction in a procedure must be (2)
6. Explain the following instruction:
 - i) LHLD 8020 (1)
 - ii) XTHL (1)
7. What do you mean by Looping, Counting and Indexing? (2)
8. What is the subroutine? How it is useful? (2)
9. Explain the need of software timers. (2)
10. If the CALL and RET instructions are not provided in the 8085, could it be possible to write subroutines for this microprocessor? If so how will you call and return from the subroutine? (2)
11. Differentiate cascade stack and memory stack? (2)
12. What is the significance of 'XCHG' and 'SPHL' instructions? (2)

PART-B

1. Explain the addressing modes of 8085 with example. (16)
2. Explain the Different types of instruction in 8085. (16)
3. i) Write a program to arrange /n numbers in ascending order. (8)
ii) Write a program to unpack a two digit BCD number stored at memory location 1C00H. (8)
4. Explain the BCD to Decimal code conversion technique and write 8085 assembly language program for the same. (16)
5. Explain the BCD to Seven Segment code conversion technique and write 8085 assembly language program for the same. (16)
6. i) Write a program to calculate the factorial of a number between 0 to 8. (8)
ii) Write a program to find the number of negative, zero and positive numbers. (8)

UNIT-III

PERIPHERAL INTERFACING

PART-A

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1. Write down the function of OBF in 8255. (2)
 2. Define PPI. (2)
 3. Bring about the features of 8259. (2)
 4. Explain the advantages of PIC chips in microprocessor based systems. (2)
 5. Explain the working of receiver part of USART. (2)
 6. What is key debouncing? (2)
 7. How much current is needed to drive an LED? Draw a typical driver circuit for it? (2)
 8. What is the count value needed to program the 8254 to generate a delay of 1 ms? (2)
 9. Draw and explain the operation of a sample and hold circuit. (2)
 10. Name any two type of ADCS. (2)
 11. For a A/D converter circuit why V_{ref} should be stabilized supply. (2)
 12. Which is the fastest ADC and why? (2)
 13. What do you mean by Quantization error? (2)
 14. What is the difference between A/D and D/A converters? (2)
 15. Define the following terms for D/A converters: (2)
 - i) Resolution
 - ii) Accuracy
 - iii) Monotonicity
 - iv) Conversion time
 16. What is the necessity of the programmable interval timer? (2)
 17. List the features of 8279. (2)
 18. Compare parallel and serial type of data transfer. (2)

PART-B

1. Explain any one of the modes of 8255 in detail. (16)
2. With neat block diagram explain PPI. (16)
3. i) Using model, write a program to communicate between two microprocessors using 8255. (10)
ii) Show the control word format of 8255 and explain how each bit is programmed. (6)
4. With neat block diagram explain the functions of 8259. (16)
5. i) Bring about the features of 8251. (6)
ii) Discuss how 8251 is used for serial communication of data. (6)
iii) Explain the advantages of using the USART chips in microprocessor based systems. (4)
6. Design an interface circuit needed to connect DIP switch as an input device and display the value of the key pressed using a 7 segment LED display. Using 8085 system, write a program to implement the same. (16)
7. Explain the 7 segment LED interface with microprocessor. (16)
8. i) Explain the advantages of using the keyboard and display controller chips in microprocessor based system. (6)
ii) Write a program using RST 5.5 interrupt to get an input from keyboard and display it on the display system. (6)
iii) Use RST 5.5 instead of RST 7.5 and change mask pattern accordingly. (4)
9. i) Explain the working of 8254 timer and write a program using it to generate a square waveform of period 3 msec. (10)
ii) Describe with any one of the mode configurations of 8254 timer in detail. (6)
10. Explain how to convert an analog signal into digital signal. (16)

UNIT-IV

MICRO CONTROLLER 8051

PART-A

1. What is Microcontroller? (2)
2. List the features of 8051 microcontroller. (2)
3. Name any four additional hardware features available in microcontrollers when compared to microprocessors. (2)
4. List out the Hardware Resources available in 8051. (2)
5. When 8051 is reset, all interrupts are disabled. How to enable these interrupts? (2)
6. What is nested interrupts? (2)
7. How will you double the baud rate in 8051? (2)
8. Explain software and hardware methods to start and stop timers in 8051.(2)
9. Give steps to program 8051 for serial data transfer. (2)
10. Write short notes on interrupt priority. (2)
11. Write the vector address and priority sequence of 8051 interrupts (2)
12. Write a delay routine for 1 millisecond using timer 0 of 8051 for 12 MHz crystal frequency. (2)

PART-B

1. Describe the architecture of 8051 with neat diagram. (16)
2. i) Discuss the peripheral interface of 8051. (8)
ii) Explain the interrupt structure of 8051 microcontroller Explain how interrupts are prioritized. (8)
i) What is the difference between the Microprocessors and Microcontrollers?(8)
ii) Explain the I/O port structure of 8051. (8)
3. i) Explain the different serial communication modes in 8051. (8)
ii) Explain the memory structure of 8051. (8)
4. States various modes available for timer in 8051. (16)
5. Explain the functional pin diagram of 8051 Microcontroller. (16)

UNIT-V

MICRO CONTROLLER PROGRAMMING & APPLICATIONS

PART-A

1. What is the time taken to execute MUL instruction in 8051? (2)
2. What is the jump range? (2)
3. Explain the addressing modes of 8051. (2)
4. Identify the addressing mode used by each of the following instruction. (2)
 - i) MOV A, R₄
 - ii) MOVC A, @A+DPTR
 - iii) SWAP A
 - iv) MOV A, #30H
5. Explain PUSH and POP instructions in 8051. (2)
6. What are the instructions used to access external RAM. (2)
7. What is key bounce? How it is achieved? (2)
8. Explain DAA instruction of 8051. (2)
9. Explain rotate instructions of 8051. (2)
10. Give the PSW setting for masking register bank 2 as default register bank in 8051 Microcontroller? (2)

PART-B

1. i) Write 8051 ALP to read data from port I when negative edge triggered at INTO and supply the data to port 2 by masking the upper 4 bits. (8)
ii) Write 8051 ALP to transmit 'Hello World' to PC at 9600 baud for external crystal frequency of 11.0592MHz. (8)
2. With a neat circuit diagram explain how a 4 x 4 keypad is interfaced with 8051 microcontroller and write 8051 ALP for keypad scanning. (16)
3. Draw the schematic for interfacing a stepper motor with 8051 microcontroller and write 8051 ALP for changing speed and direction of motor. (16)
4. Draw the schematic for interfacing a servo motor with 8051 microcontroller and write 8051 ALP for servo motor control. (16)
5. i) Explain addition and subtraction instructions of 8051. (8)
ii) Explain various types of jump instructions according to range. (8)
6. i) Write a 8051 ALP to find Fibonacci series of N given numbers. (8)
ii) Write a 8051 ALP to find the average of given N numbers. (8)

ALL THE BEST