KINGS

COLLEGE OF ENGINEERING

DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

Subject Code & Name : EC1257 Microprocessors And Microcontrollers

Year / Sem : II / IV

UNIT – 1

THE 8085 MICROPROCESSOR

PART – A (2 MARKS)

1. How AD0 – AD7 are multiplexed?

2. Why the ready signals of 8085 microprocessor is sampled by the processor?

3. List out the similarities between CALL – RET and PUSH – POP instruction.

4. How the address and data lines are de multiplexed in 8085?

5. List out the function of SIM instructions.

6. What is buffer?

7. Write the function of HOLD pin in Intel 8085 processor.

8. What is the need of ALE signals in 8085 processor?

9. What is the necessity of S0, S1 pins in 8085?

10. List the allowed register pairs of 8085.

11. Mention the purpose of SID and SOD lines.

12. What is Microprocessor? Give the power supply & clock frequency of 8085.

13. List few applications of Microprocessor – based system.

14. What are the functions of an accumulator?

15. Mention the purpose of SID and SOD lines.

16. What is Opcode?

17. List the four instructions which control the interrupt structure of the 8085

18. What is meant by polling?

19. What is meant by interrupt?

20. Define priority interrupts of 8085.

PART – B (16 MARKS)

1 a) Explain the Logical and Arithmetic instructions available in 8085. (10)

b) Explain the functions of Flag register in 8085 processor. (06)

2 a) Differences between I/O mapped I/O and Memory mapped I/O. (06)

b) Write an assembly language program to convert 8 – bit binary to ASCII Code (10)

3 a) Draw the block diagram of 8085 microprocessor and explain. (10)

b) Write an assembly language program to add two 2 – digit BCD numbers. (06)

4 a) Explain the instruction set of 8085 microprocessor in detail with one example for each group. (10)

b) Write a note on status flag. (06)

5 a) Explain the pin diagram of 8085 microprocessor and explain the functional usage of each pin in detail. (16)

6 a) Draw the timing diagram of MVI A08H. (08)

b) Write an assembly language program to convert ASCII code to 8-bit binary. (08)

7 a) Explain the timing diagram when 8085 fetches and executes instruction. OUT FFH which is stored in memory staring from the address 8000H. (12)

b) List out the Maskable and non-maskable interrupts available in 8085 microprocessor. (04)

8 a) How do the instructions of 8085 is classified based on their functions and world length? Give example. (10)

b) Write an ASSEMBLY LANGUAGE PROGRAM to add two 8-bit numbers. (06)

9 a) Write briefly about IN and OUT instructions with an example program and draw the timing diagram for both instructions. (08)

b) Explain briefly about the different types of interrupts in 8085. (08)

UNIT – II

8086 SOFTWARE ASPECTS

PART – A (2 MARKS)

1. What is meant by Software interrupts in 8086?
2. State the modes in which 8086 operates.
3. How the interrupts can be masked/unmasked in 8086?
4. What are the signals involved in memory bank selection of 8086 microprocessor?
5. Write the difference between near procedure and far procedure.
6. What is the function of SI and DI registers in 8086?
7. What is meant by stack?
8. What are the advantages of using memory segmentation?
9. What is macro?
10. Write the uses of PUSH and POP instruction in 8086.
11. Define ALIGN & ASSUME.
12. Define PTR & GROUP.
13. Define PROC & MNDP.
14. Define SEGMENT & ENDS.
15. Define SOP.
16. What are procedures?
17. What is meant by Linking process?
18. Write about the passing parameters using registers with example.

19. What is a recursive procedure?

20. What are Macros?

21. What are the 8086 interrupt types?

22. What is interrupt service routine?

PART – B (16 MARKS)

1 a) Write an assembly language program in 8086 to search the largest data in the array (10)

b) Explain the various status flags in 8086 (06)

2 a) Discuss the various addressing modes of 8086 (10)

b) Explain the following assembler directive in 8086 (06)

(a) ASSEUME

(b) EQU

(c) DW

3 a) Write short notes on Macro (06)

b) Explain the function of assembler directives (10)

4 a) Explain the register organization of 8086 (10)

b) Explain the pin diagram of 8086 (06)

5. Discuss the instruction set of 8086 in detail (16)

UNIT – III

8086 SYSTEM DESIGN

PART – A (2 MARKS)

1. How clock signal is generated in 8086? What is the maximum internal clock frequency of 8086?
2. Define the multiprocessor system.
3. Draw and explain the time shared bus.
4. List the advantages of multiprocessor system.
5. What is bus arbiter? What is the function of that bus arbiter?
6. Write the features of 8087.
7. List the function of 8086 pin
   (a) NMI
   (b) DT / R
   (c) QS0 – QS1
8. Explain the function of
   (a) BUSY
   (b) RQ / GT
   (c) INT
9. What are the schemes used for establishing priority in order to resolve bus arbitration problem?
10. How single stepping can be done in 8086?
11. State the signification of LOCK signal in 8086?

PART – B (16 MARKS)

1. a) Draw and explain the maximum mode of 8086. (12)

   b) List the advantages of multiprocessor system. (04)

2. a) Explain the functions of

   (a) HLDA (04)

   (b) RQ/GT0 (04)

   (c) DEN (04)

   (d) ALE (04)

3. a) Draw and explain the block diagram of minimum mode of operation. (12)

   b) Write notes on addressing memory. (04)

4. Define the bus cycle and minimum modes read and write bus cycles with proper timing diagram. (16)

5. a) Draw the input and output timing diagram of maximum mode of operation in 8086. (10)

   b) Explain the addressing capabilities of 8086. (06)

6. a) Draw and explain the bit pattern of the control registers of 8087. (04)

   b) Draw and explain the block diagram of 8087. (12)

UNIT – IV

I/O INTERFACING

PART – A (2 MARKS)

1. What is meant by i/p port and o/p port?
2. Compare I/o mapped I/o memory mapped I/o
3. Illustrates the different modes of operation in 8255.
4. List the features of 8251.
5. What is the internal operating frequency of 8259 and How can you derive it from the clock signal?
6. What is the function of GATE signal in 8254 timer?
7. What is the format of KWI in 8259?
8. What is difference between programmable internal timers 8253 / 54?
9. Give the control format of 8253 / 54.
10. What is the need of DMA in microprocessor?
11. Explain the different types of DMA transfer.
12. Write the features of mode 0 in 8255?
13. What are the features of mode 1 in 8255?
14. What are the signals used in input control signal & Output control signal?
15. What are the features used mode 2 in 8255?
16. What are the features of operations used in 8253?
17. What are the different types of Write operations used in 8253?
18. Give the different types of command words used in 8259a?
19. Give the operating modes of 8259a.
20. What are the output modes used in 8279?

PART – B (16 MARKS)

1. Draw the block diagram of 8279 and explain the functions of each. (16)
2. With the help of neat diagram explain how 8251 is interfaced with 8085 and used for serial communication. (16)
3. Discuss the silent feature of 8259 and explain the block diagram of 8259 programmable interrupts controllers. (16)

4 a) Describe the various modes of operation in 8253 programmable internal timer. (08)

b) Explain the operation of DMA controller 8237. (08)

5 a) Draw and explain the interfacing of cascaded 8259 with 8086. (10)

b) Explain in detail about the modes of operation in 8255. (06)

6. Draw the pin diagram of 8257 programmable DMA controller and explain the function of each pin in detail. (16)
7. Discuss the various operating modes of 8253 timer with necessary control Words. (16)

UNIT – V

MICROCONTOLLERS

PART – A (2 MARKS)

1. What is microcontroller?
2. What is the difference between the microprocessor and microcontrollers?
3. List the features of 8051 microcontrollers.
4. State the various modes available for timer in 8051.
5. List the interrupts of 8051 microcontroller?
6. What are the register banks in 8051 microcontroller?

7. Draw and explain the bit pattern of TMOD register.

8. What are the types of addressing modes in the 8051?

9. Write the DJNZ instructions of intel 8051 microcontroller?

10. State the function of RS1 and RS0 bits in the flag register of Intel 8051.

11. Write the function of the pins PSEN and EA of 8051.

12. Define 16-bit registers DPTR and SP of 8051.

13. Name the special functions of registers available in 8051.

14. Write the register IE format of 8051.

15. List the five interrupt sources of 8051.

PART – B (16 MARKS)

1. With the necessary diagram of control word format and explain the various Operating modes of timer in 8051 microcontroller. (16)

2. With the help of neat diagram and explain the memory organization of 8051 Microcontroller. (16)

3. Give the details of pin diagram of 8051. (16)

4. a) Explain the interrupt structure of 8051. (08)

   b) Explain the memory structure of 8051. (08)

5. Explain the instruction set of 8051 with an example. (16)

6. a) Draw and explain the interfacing keyboard with 8051. (08)

   b) Describe the interfacing LCD with 8051. (08)

7. a)Describe with necessary diagram of interfacing A/D converter with 8051. (08)

   b) Draw and explain the interfacing D/A converter with 8051. (08)