**ST. ANNE’S**

**COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai)

(An ISO 9001: 2015 Certified Institution)

ANGUCHETTYPALAYAM, PANRUTI – 607 106.

**QUESTION BANK**

**PERIOD:** JULY - NOV 2018 **BATCH**: 2016 – 2020

**BRANCH:** EEE **YEAR/SEM:** III/V

**SUB CODE/NAME:EE6502– MICROPROCESSOR AND MICROCONTROLLER**

**UNIT I 8085 PROCESSOR**

**PART – A**

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

**[May 2014][D]**

1. What are the various flags used in 8085? **[Nov/Dec 2013 , Nov/Dec 2012][D]**
2. List the registers available in 8085 Microprocessor**.[Nov/Dec 2011][D]**
3. What is the size of stack pointer and program counter in 8085? **.[Nov/Dec 2011][D]**
4. What is ALE? [**Nov/Dec 2013][D]**
5. What is the function of program counter in 8085 microprocessor? **[May 2013][D]**
6. What is program counter? [**Nov/Dec 2012, May 2014][D]**
7. What is Microprocessor **?[Nov/Dec 2011] [D]**

What is assembly language?[**April 2009] [D]**

1. Why address bus is unidirectional**?[May/Jun 2010][D]**
2. Differentiate between software and hardware interrupts? **[Apr/May 2010][D]**
3. What is interrupt? **[Apr/May 2010][D]**
4. What do you mean by masking the interrupt? How it is activated in8085? **[Apr/May 2012][D]**
5. List the main applications of 8 bit microprocessors? [**May/Jun 20012**][D]
6. What is Address Bus and System Bus? [**Apr/May 2010][D]**
7. What is a flag? [**Apr/May 2010][D]**
8. What is an Interrupt? Haw the interrupt are classified **?[Nov 2008][D]**
9. Give the power supply & clock frequency of 8085**[Nov/Dec 2011][D]**
10. Mention the purpose of SOD and SID lines**.[May/June 2016][D]**
11. List the four instructions which control the interrupt structure of the 8085 **[Nov/Dec 2006, APR/MAY 2011][D]**
12. Why is data bus bidirectional **?[Apr/May 2011][D]**

**PART – B**

**[first half]**

**[Hardware architecture]**

1. Draw and Explain the Architecture of 8085(**16) [D] [ Nov 2013]**
2. write the features of 8085 microprocessor **(6) [D] [ Nov 2013]**

**[Pin outs]**

1. Draw the signal configuration of 8085 and explain the purpose of each signal**.[ID](May/June 2014]**
2. Describe the functional pin diagram of 8085. (**16) [D][Nov 2011, 2012]**

**[Functional building blocks of processor]**

1. Describe the functional block diagram of 8085. (16**) [D][May 2006,2010]**

**[Memory organization]**

1. Explain in detail about memory interfacing**.(10)[D][ Apr 2007**]

**[second half]**

**[I/O ports and data transfer concepts]**

1. With suitable examples explain how I/O devices are connected using memory mapped I/O and peripheral I/O. (10**)[D][Apr 2008]**
2. Explain data transfer schemes of 8085 **[D](10)**

**[Timing diagram]**

1. Explain various machine cycles supported by 8085. (16**) [D][Nov 2009]**
2. Draw the timing diagram of I/O read cycle in 8085 and explain it (8**)[D][May 2014]**

**[Interrupts]**

1. Write short notes on vectored interrupts [HARDWARE INTERRUPTS] of 8085. (8**)[ID][Nov 2011]**
2. Explain the different types of interrupts used in 8085 .(16) [**D] [May/June 2012][Dec 2013][Dec 2008][Dec 2015]**

**UNIT II PROGRAMMING OF 8085 PROCESSOR**

**PART – A**

1. Name the various schemes of data transfer in 8085**?[Apr/May 2011][D]**
2. What is a subroutine **[May/June 2016][D]**
3. What is the function of CALL instructions**.[Nov/Dec 2016][D]**
4. Classify the addressing modes of 8085**? [Nov/Dec 2016][D]**
5. Explain the function of CMP instruction**.[Nov/Dec 2015][D]**
6. How is time delay generating using subroutine? **[Nov/Dec 2015][D]**
7. Define stack and stack related instructions**.[May/June 2016][D]**
8. What is a recursive procedures**.[May/June 2016][D]**
9. Give two examples for two byte and three-byte instruction**.[May/June 2012][D]**
10. What is the function of rotate instructions? Give an example [**Apr/May 2015][D]**
11. What are the different machine control instructions used in 8085? [**May/June 2013][D]**
12. How is the 8085 instructions classified according to the functional categories? **[Nov/Dec 2011, Apr/May 2017][D]**
13. What is the use of branching instructions? Give examples. [**Apr/May 2012][D]**
14. State the function of given 8085 instruction: JP, JPE, JPO, and JNZ**. [Apr/May 2011][D]**
15. With an example program, explain the concept of Looping, Counting and Indexing.[ **Apr/May 2017][D]**
16. What is indexing?[ **Nov/Dec 2012][D]**
17. Why do we need look up table**? [Nov/Dec 2011][D]**
18. What is subroutine? What are the instructions associated with the subroutine**. [Nov/Dec 2013][D]**
19. What is the function of stack? [**May/June 2013][D]**
20. What is a stack in an 8085 microcomputer system?[ **Apr/May 2012][D]**
21. Define Opcode and operand?[**D]**
22. What is an assembler**?[D**]

**PART – B**

**[first half]**

**[Instruction -format and addressing modes – assembly language format – data transfer, data manipulation& control instructions]**

1. Explain the different data transfer control instructions supported by 8085 processor**. (12)[D][Nov/Dec 2011]**
2. Describe the instruction format and addressing modes of 8085 microprocessor?**(12)[D][May 2011]**
3. Describe the instruction format of 8085 microprocessor.(**4)[D][May 2011]**
4. Write an 8085 assembly language program with flow chart to multiply two 8 bit numbers**.(8)[D][Dec 2011,2012]]**
5. Write an 8085 assembly language program to sort numbers ascending orders**.(8)[D][May 2013]**
6. Write an 8085 assembly language program with flow chart to add two 8 bit numbers**.(8)[D][Dec 2013]**
7. Write an assembly language program to store 8 bit numbers using 8085**.(6)[D][Dec 2013]**

**[second half]**

**[Loop structure with counting & indexing – look up table - subroutine instructions - stack.]**

1. Write short notes on Look up table and its usage. **(8) [D][Apr/May 2015]**
2. Compare the similarities and differences of CALL and RET instructions with PUSH and POP instructions**.(8)[D] [Nov/Dec 2011][May/June 2016]**
3. Write an ALP based on 8085 microprocessor instruction set to find the square root of data from 1 to 9 using lookup table. (**8)[D] [Apr/May 2011]**
4. Describe with a suitable example, the operation of stack. (**8)[D] [May/June 2012]**
5. Describe with suitable 8085 ALP, the use of subroutine instruction**?(10)[D] [May/June 2013] [Apr/May -2017]**

**UNIT III 8051 MICRO CONTROLLER**

**PART A**

1. Give the memory size of 8051microcontroller**. [April/may -2010][D]**
2. Give the details of PSW register in 8051**. [May/June -2012,May/June -2014][D]**
3. List the alternative functions assigned to Port 3 pins of 8051 microcontroller**[April/may -2011][D]**
4. Mention the size of DPTR and Stack Pointer in 8051 microcontroller.**[April/may -2011][D]**
5. What are the main features of 8051 microcontroller?[**May/June -2012][D]**
6. What are the addressing modes of 8051**? [Nov/Dec-2011][D]**
7. What is the function of R register in 8051? **[May/June -2013][D]**
8. List the interrupt sources in 8051. **[May/June -2014][D]**
9. List the on-chip peripherals of 8051 microcontroller**.[Nov/Dec-2011][D]**
10. How many ports are bit addressable in 8051 microcontroller**. [Nov/Dec-2012][D]**
11. Give an example of DA instruction of 8051 microcontroller**.[Nov/Dec-2012][D]**
12. Write A program to perform multiplication of 2 no’s using 8051? **[NOV-2009][D]**
13. What is memory mapping**? [May/June 2011][D]**
14. Name any four additional hardware features available in microcontrollers when compared to microprocessors.[D]
15. Which port of the 8085 is used as address / data bus**?[Apr/May 2011][D]**
16. Write the vector address and priority sequence of 8051 interrupts**?[June 2007][D]**
17. List the features of 8051 microcontroller**.[May/June 2016][D]**
18. List the interrupts of 8051 microcontroller**.[Nov/Dec 2015][D]**
19. What is program status word of 8051**?[May 2012][D]**
20. Explain the interrupts of 8051 microcontroller**.[Nov/Dec 2016][D]**
21. Mention any four data transfer instructions of 8051 microcontroller**.[Nov/Dec 2016][D]**
22. Give the details of PSW register in 8051. **[April/may -2010][D]**
23. What are the applications of 8051 microcontroller**[May 2012][D]**

**PART B**

**[first half]**

**[Hardware Architecture, pin outs – Functional Building Blocks of Processor – Memory organization]**

1. Describe the architecture of 8051 with neat diagram.(16)[D] **[May/June 2012]**
2. Discuss the internal memory organization of 8051 microcontroller.(16**)[Dec 2010]**
3. What is the internal memory capacity of microcontroller 8051?(8)[D][**May 2011]**
4. Explain the operation of stack in 8051.(8)[D]
5. Explain the program memory and data memory structure of 8051 microcontroller.(10)[D**][Nov/Dec 2011]**
6. Draw the pin diagram of 8051 microcontroller and explain its port structure. (12)[D**][Nov/Dec 2011]**
7. Explain the RAM structure of 8051.(8)[D][**Nov/Dec 2016]**

**[second half]**

**[I/O ports and data transfer concepts– Timing Diagram – Interrupts-Comparison to Programming concepts with 8085]**

1. Explain the different addressing modes of 8051 microcontroller.(8)[D]**[May/June 2016]**
2. Explain the I/O ports and their functions of 8051 micrcontroller**.(16)[D][Nov/Dec 2015,2016]**
3. Explain the timers of 8051 micrcontroller with appropriate diagrams.(16)[D] **[Nov/Dec 2015]**
4. Explain how serial communication is performed in 8051 microcontroller.(**10)[D][Nov/Dec 2011]**

**UNIT IV PERIPHERAL INTERFACING**

**PART A**

1. What are the different ways to end the interrupt execution in 8259 PIC? [**Apr/May 2011][D]**
2. What is the function of Scan section in 8279 programmable keyboard/Display controller? **[Apr/May 2011][D]**
3. Draw the ‘mode word’ format of 8251 USART. **[Nov/Dec 2011[Nov/Dec 2012][D]**
4. State the use of ISR and PR registers in 8259 PIC. **[Nov/Dec 2011][D]**
5. What are the salient features of INTEL 8259 Programmable interrupt controller? **[May/June 2014][D]**
6. How data is transmitted in asynchronous serial communication? **[May/June 2014][D]**
7. What are the applications of D/A converter interfacing with 8255? **[May/June 2012][D]**
8. What is keyboard interfacing? **[May/June 2012][D]**
9. What are the different peripheral interfacing used with 8085 processor? [**May/June 2013][D]**
10. What are the output terminals in USART 8251**? [May/ June 2013][D]**
11. What are the basic modes of 8255? **[Nov/Dec 2013][D]**
12. What are the internal devices of a typical DAC**.[May/June 2016][D]**
13. What are the working modes of 8254 timer**?[Nov/Dec 2015][D]**
14. Draw the command word format of 8255 in I/O mode**.[Nov/Dec 2016][D]**
15. List some of the features of 8259 programmable interrupt controller.[**Nov/Dec 2016**][D]
16. What are the operating modes of IC 8253 / 8254 Timer?[D]
17. What is key de bouncing?[**D]**
18. List the features of 8279.[**D]**
19. What are the different types of DMA?[**D]**
20. What is Cycle stealing DMA?[**D]**
21. What is meant by Baud rate?[**D]**
22. Explain the mode3 of 8051 serial ports? **[Nov 2009][D]**

**PART B**

**[first half]**

**[Study on need, Architecture, configuration and interfacing, with ICs: 8255, 8259 , 8254,8237,8251, 8279]**

1. Draw and explain the functional block diagram of 8254 timer.(**8)**[**D][May/June 2016]**
2. Draw and explain the functional block diagram of 8251 timer**.(8)[D][May/June 2016**]
3. Explain the block diagram, architecture and registers of the 8279 keyboard/display controller.(**16)[D][Nov/Dec 2015]**
4. Explain the working of 8279 as a keyboard /display controller and explain its command registers and its functions.(**16)[D][Nov/Dec 2016]**
5. With neat block diagram explain 8255 PPI **and its operating modes (16)[D][May/June 2013]**
6. Bring about the features of 8251**.(10)[D]**
7. With functional diagram, explain the operation and programming of 8251 USART in detail.(**16)[D][Apr/May 2011][May/June 2012]**
8. Explain the working of 8259 with a neat block diagram.(**8)[D][Nov/Dec 2016]**

**[second half]**

**[A/D and D/A converters &Interfacing with 8085& 8051**]

1. With neat diagram explain the ADC interface to microprocessor.(**16)[D][Dec 2011]**
2. Show and explain the ADC interfacing with 8085 microprocessor.(**16)[D] [Apr/May 2011]**
3. Draw the block diagram to interface 8051 microprocessor with ADC and DAC.(**16)[D]**

**UNIT V MICRO CONTROLLER PROGRAMMING & APPLICATIONS**

**PART A**

1. List the different types of 8051 instructions. [ **April/may -2010, Nov/Dec-2011][D]**
2. What are the various operations performed by Boolean variable instructions of 8051**?[April/may -2010, April/may -2011][D][D]**
3. What is the operation of the given 8051 microcontroller instructions:XRL A, direct? **[April/may -2011][D]**
4. Draw the flow chart for the programming of serial port of 8051 [**May/June -2012][D]**
5. What are the applications of 8051 microcontroller? [**May/June -2012][D]**
6. How is the pulse generated from microcontroller for stepper motor control [**May/June -2013][D]**
7. Why do we need opto-isolator circuit between microcontroller and the stepper motor? [**Nov/Dec-2011][D]**
8. Why interfacing is needed for 1/0 devices? [**Nov 2009][D]**
9. Write a program to perform multiplication of 2 numbers using 8051? **[NOV-2009][D]**
10. How many ports are bit addressable in an 8051 microcontroller?[**Nov/Dec 2012**][D]
11. Write a program to find the 2’s complement using 8051?[**NOV-2008][D]**
12. What does the mnemonics “LCALL” and “ACALL” stands for? [**Nov/Dec-2012][D]**
13. What are the different addressing modes of microcontroller 8051? [ **Apr/ May 2008][D]**
14. How a keyboard matrix is formed in keyboard interface **?[May/June 2016][D]**
15. What is the use of PSW**?[Nov/Dec 2016][D]**
16. Mention any four data transfer instructions of 8051 microcontroller. **?[Nov/Dec 2016][D]**
17. List the features of ADC0804?[**D]**
18. What are the uses of PWM in motor control using microcontroller**?[D]**
19. Explain rotate instructions of 8051**[D]**
20. Explain DAA instruction of 8051.[**D]**

**PART B**

**[first half]**

**[Data Transfer, Manipulation, Control Algorithms& I/O instructions – Simple programming exercises key board and display interface]**

1. Explain the data transfer instructions and program control instructions of 8051 Microcontroller**.(16)[D] [Apr/May 2011]**
2. Explain the interfacing of Keyboard/Display with 8051 microcontroller**.(12)[D] [Apr/May 2011]**
3. How to interface a 7 segment display using 8051 microcontroller.(**12)[D][Nov/Dec 2011]**
4. Instruction set of 8051-Data transfer, Data manipulation, I/O and control instructions with examples and explanations. (**16)[D]**
5. Explain the interfacing of four digit 7 segment display to 8051 and its program.(**16) [D][Nov/Dec 2016]**
6. How do you interface a 4X4 matrix keyboard using 8051 microcontroller.(**12)[D] [Nov/Dec2011]**
7. Explain in detail about **Keyboard & Display Interface(16)[D]**

**[second half]**

**[Closed loop control of servo motor- stepper motor control – Washing Machine Control]**

1. Draw the schematic for interfacing a stepper motor with 8051 microcontroller and write 8051 ALP for changing speed and direction of motor.(**16)[D]** **[May/June 2012]**
2. Explain the servomotor control using 8051 microcontroller.(**16)[D][Apr/May2011]**
3. Explain in detail about **Washing machine control, stepper motor & servo motor (16)[D]**
4. 16.Explain with a neat diagram the closed loop control of servo motor using microcontroller?(**16)[D][May/June 2016]**
5. Explain the washing machine control using 8051 and write a program for the same.(**16) [D][Nov/Dec 2016]**