

Reg. No. :

**Question Paper Code : 52957**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fifth/Sixth Semester

Electrical and Electronics Engineering

EE 6502 – MICROPROCESSORS AND MICROCONTROLLERS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering/Manufacturing Engineering/Robotics and Automation Engineering)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention the use of ALE in 8085 microprocessor.
2. What is the function of HOLD and HLDA in 8085 microprocessor?
3. What is a Subroutine. Mention the instructions related to subroutine in 8085 microprocessor?
4. If the 8085 adds 87H and 79H, specify the contents of the accumulator and the status of the S, Z, and CY flag?
5. What are the addressing modes supported by 8051?
6. Name the interrupts of 8051 microcontroller.
7. What is the use of 8251 IC?
8. What is the function of the DMA controller?
9. List the 8051 instructions that always clear the carry flag.
10. Distinguish between the functions of the instructions XCHG and SWAP of 8051.

PART B — (5 × 13 = 65 marks)

11. (a) Describe the features in the architecture of 8085 microprocessor with a neat diagram. Explain the function of the various registers available in it.

Or

- (b) (i) Explain the function of the various interrupts available with 8085 microprocessor. (7)  
(ii) Explain with timing diagrams, the opcode fetch machine cycle of 8085 microprocessor. (6)
12. (a) (i) Explain the various addressing modes of 8085 microprocessor with example. (8)  
(ii) Explain the Compare instructions of 8085 microprocessor. (5)

Or

- (b) (i) Explain the various arithmetic instructions of 8085 with illustrative examples? (6)  
(ii) Write an ALP for 8085 microprocessor to add data stored in memory from 4200H. The first element in the location 4200H gives the number of elements in the array. Store the result of the addition in 4300h and 4301 H. Assume the sum does not exceed 16 bits. (7)
13. (a) Describe the importance of the Program Counter, Data pointer, Program status word, Special Function Registers in 8051. (13)

Or

- (b) (i) Explain the memory organization of 8051 microcontroller. (6)  
(ii) Explain the function of the I/O ports available in 8051 microcontroller for data transfer. (7)

14. (a) Explain the features and operating modes of 8255. Explain its interfacing with 8085 microcontroller. (13)

Or

- (b) Describe the features of the IC 8279 keyboard/display controller. (13)

15. (a) Explain with diagram the interfacing of keyboard and display using 8051 microcontroller. (13)

Or

- (b) (i) Explain the various program branching instructions available with 8051 microcontroller. (6)  
(ii) Write a Assembly language for 8051 microcontroller to divide the 8 bit number stored in memory location 2400H by the 8-bit data stored in memory location 2401H. Store the quotient in 2402 H and the remainder in 2403 H. (7)

PART C — (1 × 15 = 15 marks)

16. (a) With a neat diagram explain how stepper motor can be interfaced with 8085 microprocessor. Give both program and the interfacing circuit.

Or

- (b) Differentiate between the following instructions clearly

- (i) Push and POP (5 × 2 = 10)  
(ii) CALL and Jump  
(iii) ADD and ADC  
(iv) INC and INX  
(v) MOV B, B and MOV B, A  
(vi) What is the general format of an 8085 instruction set? (5)