G 456 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

Branch : Applied Electronics and Instrumentation

MICROPROCESSORS AND MICROCONTROLLERS (A)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions briefly.*
Each question carries 4 marks.

1. Explain the use of CLKOUT and RESET OUT signals of 8085.
2. Explain various machine cycles supported by 8085.
3. Why the Program Counter (PC) and data pointer (DPTR) registers of 8051 are 16-bit wide, whereas the stack pointer is 8-bit wide only ? Justify.
4. **What do you mean by the term quasi-bidirectional port ? Why is Port 0 of 8051 true bidirectional ?**
5. Explain how does the status of $\overline{EA}$ pin affect the access to internal and external program memory.
6. What are the differences between a long jump (LJMP), a short jump (SJMP) and absolute jump (AJMP) ? Explain.
7. If two requests of interrupt are received simultaneously, how those are handled in 8051 ? As a programmer, how will you take care of this while writing a 8051 program ?
8. How do you decide the edge and level triggered configurations of external interrupts INT0 and INT1 ?
9. In which timer mode, timer 1 does not set its own overflow flag TF1 and will not generate its own interrupt ? Then what is the use of this timer/counter ?
10. If you write a SBUF in serial mode 1, nothing is being transmitted. What may be the probable reason for this ?

(10 × 4 = 40 marks)

Turn over

Part B

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Draw the circuit diagram to interface a 2kB RAM and 4 kB ROM to 8085. Show how the memory decoding, chip select signals are derived ?

Or

12. Draw the timing diagram to execute MVI A, data, in 8085. Define instruction cycle, machine cycle and T-state and show these in the timing diagram drawn and explain.

13. (a) Is it possible to address 8051 individual bits ? What are the address of bit addressable locations ? How is bit addressing distinguished from byte-wise addressing by 8051 ?

    (b) Give details of memory mapping of internal RAM in 8051.

Or

14. (a) How are port latch and port pins of 8051 different ? How does 8051 microcontroller interpret that a latch or port pin has to be read ?

    (b) Explain the port 2 and port 3 pin circuit with a neat diagram for 8051 and their functions.

15. Clearly explain what happens in the following examples :

    (i) MOV SP, # 70.
    (ii) JZ FEH.
    (iii) CPL 92H.
    (iv) SJMP $.
    (v) INC@ R3.
    (vi) JC 03.

Or

16. An 8-bit number BIN is stored in external data memory in an 8051 system. Write a program to convert it into equivalent BCD form a store them in external memory starting at location named as BCD RESULT. Comment your program adequately and include the flow chart/algorithm.

17. Write a program to measure the width of a pulse appearing at the pin INTO, with adequate comments.

Or

18. (a) Explain single step operation in 8051 with an example. What are its applications ?

    (b) Explain the interrupts of 8051 in detail.

19. Discuss the various timer modes supported by 8051. What is special about the auto-reload mode ? Write a program to initialise timer 1 in auto-reload mode, so that it overflows 10,000 times in a second.

Or

20. It is required to generate baud rate of 2.4 K in mode 3 of the 8051 serial port. Calculate the required count for timer 1, settings in various SFRs and write an initialization program to transmit and receive the same data byte again and again.

(5 × 12 = 60 marks)