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B.E DEGREE EXAMINATIONS: MAY 2015

(Regulations 2009)

Fifth Semester

MECHATRONICS ENGINEERING

MCT108:Microprocessors and Microcontroller

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. In 8085,if the clock frequency is 5MHz,the time required to execute an instruction of 18T states is

   a) 3.0   b) 3.6

   c) 4.0   d) 6.0

2. Which one of the following is not a vectored interrupt?

   a) TRAP   b) INTR

   c) RST3   d) RST 7.5

3. Consider the following set of 8085 instructions

   MVI A,$8E_H$

   ADI 73_H

   JC DSPLY

   OUT PORT1

   HLT

   DSPLY:XRA A

   OUT PORT1

   HLT

   the output at PORT1 is

   a) 00   b) FE_H

   c) 01_H d) 11_H

4. In 8251 the function of transmit buffer section is

   a) To convert parallel date into serial data   b) just transmit the data

   c) To covert serial data into parallel data   d) Buffer storage

5. Frequently used keyboard configuration is _____

   a) single key per line   b) matrix

   c) double key per line   d) multiple key per line

6. Which of the following instruction perform as of indirect RAM to accumulator?

    a) MOV A, Rn
    b) MOV @Ri, A
    c) MOV A, @Ri
    d) MOV Rn, A

7. What are the Addresses (SFR) for TCON, SCON, SBUF, PCON and PSW respectively?

    a) 88H, 98H, 99H, 87H, 0D0H
    b) 98H, 99H, 87H, 88H, 0D0H
    c) 0D0H, 87H, 88H, 99H, 98H
    d) 87H, 88H, 0D0H, 98H, 99H

8. Match the following:

    1) TCON   i) contains status information

    2) SBUF   ii) timer / counter control register.

    3) TMOD   iii) idle bit, power down bit

    4) PSW   iv) serial data buffer for Tx and Rx.

    5) PCON   v) timer/ counter modes of operation.

    a) 1->ii, 2->iv, 3->v, 4->i, 5->iii.
    b) 1->i, 2->v, 3->iv, 4->iii, 5->ii.
    c) 1->v, 2->iii, 3->ii, 4->iv, 5->i.
    d) 1->iii, 2->ii, 3->i, 4->v, 5->iv.

9. In modes 2 and 3, if _____ bit of SCON bit is set, multiprocessor communication will be enabled which is of ____ bit address.

    a) SM1, 9EH
    b) TB8 , 9CH
    c) SM2 , 9DH
    d) SM0, 9FH

10. In serial communication modes, mode 1 the Baud rate =

    a) $BR=2^{SMOD}/32$ * (Timer 0 over flow rate)
    b) $BR=2^{SMOD}/16$ * (Timer 1 over flow rate)
    c) $BR=2^{SMOD}/16$ * (Timer 0 over flow rate)
    d) $BR=2^{SMOD}/32$ * (Timer 1 over flow rate)

PART B (10 x 2 = 20 Marks)

11. Give the Significance of SIM and RIM instructions available in 8085

12. List various instruction that can be used to clear accumulator in 8085

13. List the types of data transfer scheme in 8085.

14. Sketch a simple block diagram to interface ADC with microprocessor.

15. What is polling? Mention its types.

16. Differentiate hardware and software interrupts

17. Mention why mode 0 is not suitable for 8051 communication.

18. Define PSW of 8051.

19. Which Network configuration is preferred for long distances? Why?

20. What is settling or conversion time in DAC?

PART C (5 x 14 = 70 Marks)

21. a) (i) Draw the timing diagram of the following Instruction. (7)
       • STA 5000

    (ii) List the branching and machine control instructions and explain each with an (7)
         example.

(OR)

b) (i) Explain about the addressing modes of 8085. (6)

   (ii) Write an assembly language program to subtract two numbers of 2 digit BCD (8)
        data stored in memory 4200 and 4201 and store the result in 4202.

22. a) Explain the serial data transfer scheme.

(OR)

b) (i) Differentiate between memory mapped I/O and I/O mapped I/O (4)

   (ii) In a microprocessor based system using 8085,8kb EPROM and 8KB RAM are (10)
        needed. For interfacing I/O devices two numbers of 8155 are required.select
        suitable memories and explain how they are interfaced in the system.interface
        the 8155 ports by I/O mapping.

23. a) Explain the block diagram of the 8279 Keyboard/Display interface and its
        operations.

(OR)

b) With a neat block diagram, explain in detail the internal architecture of 8255 and
    interface matrix keyboard using 8255 with 8085.

24. a) Write an assembly language program to add two numbers AAH and F9H using
        8051 microcontroller. Write the status of different flags after this addition.

(OR)

b) Discuss about the logical instruction set of 8051 with an example.

25. a) What do you mean by A/D conversion? Explain different A/D techniques and
        how to interface with 8051.

(OR)

b) How multiple interrupts are handled in 8051 and Explain in detail about the
    hardware circuit for handling multiple interrupts.

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