Register Number:……………………..

B.E DEGREE EXAMINATIONS: APRIL 2015

(Regulation 2009)

Fifth Semester

B.E. ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE107: Microprocessor and Microcontroller

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.   The number of address lines required to access 16KB memory is

     a)   A0-A13   b)   A0-A12

     c)   A8-A13   d)   A0-A15

2.   -------------------- is the signal used to activate the external address latch whenever 8085 begins an operation.

     a)   HOLD   b)   ALE

     c)   RD   d)   WR

3.   Which is the 8085 instruction used to load the ACC indirectly?

     a)   LDA 16 bit   b)   LXI 16 bit

     c)   LDAX rp   d)   LHLD 16 bit

4.   The instruction ------------- is used to exchange the data memory pointer with stack top.

     a)   SPHL   b)   XCHG

     c)   SIM   d)   XTHL

5.   The 8 bit ADC 0801 compatible to 8 bit CPUs has -------------------- as the reference voltage

     a)   1V   b)   2V

     c)   2.5V   d)   0V

6.   8259 Programmable Interrupt controller has ------------ level priority controller.

     a)   4   b)   8

     c)   16   d)   32

7.   What is the size of the stack pointer in 8051?

     a)   8   b)   16

     c)   24   d)   32

8. Which is the un maskable interrupt in 8051?

   a) IE0/IE1
   b) TF0 / TF1
   c) RESET
   d) SERIAL

9. To interchange the nibbles of ACC, the 8051 instruction used is

   a) CPL A
   b) ORL A
   c) SWAP A
   d) XCHG A

10. To adjust the final sum to BCD the following instruction is used in 8051

    a) DAA
    b) ANL c, bit
    c) ADDC A, #BCD
    d) RL A

PART B (10 x 2 = 20 Marks)

11. Write the consequences of deactivating READY signal in 8085?

12. Mention the significance of tri – state devices in a bus oriented system?

13. How does RST instruction work in 8085?

14. Specify the output at port 0 after the execution of the following instructions.

    MVI A, F2H

    MVI B, 7AH

    ADD B

    OUT PORT 0

    HLT

15. List the input modes of working in 8279.

16. Calculate the values of LSB and MSB for an 8 bit DAC for the 0V to 10V range.

17. List out the I/O ports in 8051.

18. Give out the formula for baud rate generation in serial data mode 2 of 8051.

19. Which are the two instructions involve in code memory read only data moves?

20. Using 8051 instructions, swap the bytes in Timer 0 ; Put TL0 into TH0 and vice versa.

PART C (5 x 14 = 70 Marks)

21. a) (i) Draw the timing diagram that represents the execution of the 8085 instruction: (7)
       ACI 05H

    (ii) Represent the 8085 interrupt structure through a block diagram and express the (7)
       interrupt process with vector locations

(OR)

    b) (i) Design a memory interface for 8085 CPU with the following memory chips:

       • 8KB EPROM

- 8KB RAM
- 16KB EPROM (optional)
- 8KB RAM (optional)

Give out the detailed interface diagram and show the address decoding logic with memory addresses.

22. a) (i) Write an ALP in 8085 to sort out the odd and even numbers and store them in separate arrays. The input array has 25 numbers which need to be sorted. The starting address of the array is 4200H (10)

(ii) List out any four 8085 instructions that uses direct addressing mode. (4)

(OR)

b) (i) Generate a rectangular wave at port A of 8255. The ON time is 25ms and off time is 40ms for the wave. Show the calculations of timing for the delay routine. Assume that the operating frequency of 8085 as 3MHZ. Develop the Assembly language program code for the same. (12)

(ii) Give out the instructions used in stack operations. (2)

23. a) (i) Illustrate the interfacing of an 8 bit ADC converter using 8255 in mode 0 and BSR mode with the detailed problem analysis and program description. (10)

(ii) Show the control word format of 8254. (4)

(OR)

b) (i) With the neat block diagram of 8251 PCI, explain its transmitter and receiver section architecture and signal involved in operation.

24. a) (i) List the addressing modes supported in 8051 instruction set. Give an example instruction for each case. (5)

(ii) Draw the internal architecture of Port 0 in 8051 and explain the Input / Output operation. (9)

(OR)

b) (i) How do the timer modes differ in operation in 8051? Explain with simple block diagrams (8)

(ii) Give out the bit format of SCON, PCON & TCON SFRs. (6)

25. a) Write an ALP in 8051 to detect the key press from an 4X4 matrix keyboard and to identify the pressed key and generate key code for it. Draw the flow diagram.

b)   To control the speed of the 4 winding stepper motor, write an ALP using 8051 instructions. To run the motor at a speed of 1000rpm, calculate the delay in each step and obtain the same through the delay routine. Assume the operating frequency of 8051 as 12MHz.

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