Register Number: ……..

**B.E DEGREE EXAMINATIONS: APRIL/MAY 2014**

(Regulation 2009)

Fifth Semester

**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 for interfacing a 32 KB external memory is
   a) 15 b) 5
   c) 14 d) 4
2. Which one of the following is a non vectored interrupt ?
   a) TRAP b) RST 7.5
   c) INTR d) RST 6.5
3. The instruction used to store a 16 bit data in the memory location is
   a) STA b) LDA
   c) LDAX d) STAX
4. When a subroutine call occurs the instruction next to be executed in the main program is stored in the
   a) Program counter b) External memory address
   c) Stack d) Registers
5. Which of the following registers is used to deny service to an external interrupt
   a) Interrupt mask register b) Interrupt request register
   c) Interrupt service register d) Priority resolver
6. Which ports of 8255 is used in handshake mode
   a) Port C b) Port A & B
   c) Port B & C d) Port A & C
7. An interrupt is generated during serial communication after
   a) Transmission alone b) Reception alone
   c) Both transmission and reception d) Either after transmission or reception
8. When timer 1 overflows the program control shifts to _____ address



   a) 0003 b) 000B
   c) 0013 d) 0003
9. The instructions useful in accessing code memory is
   a) MOVX b) MOVC
   c) MOV d) All of the above
10. The status of _____ flag is affected during bit level logical operations
   a) Zero b) Carry
   c) Sign d) Auxiliary carry

**PART B (10 x 2 = 20 Marks)**

11. How is time multiplexing of the address /data lines $AD_0$-$AD_7$ done?
12. Draw the timing diagram of opcode fetch machine cycle
13. Given the following set of codes, calculate the maximum delay that can be obtained for an operating frequency of 2 MHz.

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      MVI   B, IOH
loop  DCR B
      JNZ   loop
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14. Explain the significance of DAA instruction.
15. Write the control word format of 8255 for using the ports in the following configuration

    Port A : Input with handshake

    Port B : Input with handshake

    Port C lower :output and port C upper output
16. What is overrun and framing error?
17. List all the interrupts of 8051? And give their interrupt vector locations?
18. Give the word format of TCON register.
19. What is the purpose of using register pointers? Which of the registers from the register bank are used as pointers?
20. MOV R1,#00h

    DJNZ R1, 4500h.

    What will be the content of R1 after the first execution of the second instruction?

**PART C (5 x 14 = 70 Marks)**

21. a) (i) What are the basic steps involved in memory interfacing and explain the concept of absolute and partial decoding (8)

| | | | | |
|---|---|---|---|---|
| | | (ii) | Interface a 8KB EPROM and 8 KB RAM to a 8085 microprocessor. Also give the starting and end addresses of each chip | (6) |
| | | | **(OR)** | |
| | b) | (i) | With neat sketch explain the architecture of 8085 microprocessor | (10) |
| | | (ii) | Briefly explain about the control signals used by 8085 | (4) |
| 22. | a) | (i) | What are the different addressing modes available in 8085? Explain each with an example. | (10) |
| | | (ii) | Write a 8085 ALP to add 2 hexadecimal numbers stored in memory locations 4500 H and 4501 H. Store the result in 4502H. | (4) |
| | | | **(OR)** | |
| | b) | (i) | Brief on the need for software timers. | (4) |
| | | (ii) | Write a 8085 ALP to generate a time delay using a register pair. Show the delay calculations. | (10) |
| 23. | a) | | Discuss about the concept of asynchronous and synchronous transmission and reception. Explain how it is made possible with microprocessors. | |
| | | | **(OR)** | |
| | b) | | With relevant software explain how a DAC can be interfaced to a 8085 microprocessor. | |
| 24. | a) | | Write short notes on<br>i. The multifunctional capability of 8051 port pins<br>ii. Creating delays through 8051 timer pins | |
| | | | **(OR)** | |
| | b) | | Explain the operating modes for serial communication in 8051. | |
| 25. | a) | | Discuss in detail the interfacing of stepper motor with 8051. | |
| | | | **(OR)** | |
| | b) | | Detail on the various bit level and byte level instructions in 8051 | |

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