PSG POLYTECHNIC COLLEGE, COIMBATORE - 641 004

DIPLOMA ODD SEMESTER EXAMINATIONS – OCT 2014

DEPARTMENT OF COMPUTER ENGINEERING
Z12502 MICROPROCESSOR AND ITS APPLICATIONS
MODEL QUESTION PAPER

Time: 3 Hours   **Max. Marks: 100**

Instructions:

1. **Group A** and **Group B** questions should be answered in the Main Answer book.
2. Answer any **TEN** questions in **Group A**. Each question carries three marks.
3. Answer **ALL** questions either **(a)** subdivision or **(b)** subdivision in **Group B**. Each question carries 14 marks.

Group – A   **Marks: 10 x 3 = 30**

1. What are tri-state devices? Why are they required in a bus oriented system?

2. How is an instruction fetched from memory?

3. Why is program counter and stack pointer 16-bit registers? Mention their uses?

4. Differentiate between compare and subtract instructions in 8085 with an example

5. The memory location 2050h holds the data byte F7H. Write instructions to transfer the data byte to the accumulator using three different opcodes: MOV, LDAX and LDA.

6. List the similarities and differences between CALL & RET and PUSH & POP instructions.

7. Give the significance of RIM and SIM instruction available in 8085?

8. Can the microprocessor differentiate whether it is reading from a memory –mapped input port or from memory? Justify your answer.

9. How hardware interrupts of 8085 are classified? Give their vector address.

10. Specify the Mode 1 output control signals of IC 8255 and brief their use.

11. List the various functions performed by the command word in IC 8279.

12. What are drivers? Why are they required in a common cathode seven-segment LED?

13. Calculate the number of steps needed to rotate one complete rotation in a stepper motor. If number of tooth in the stator is 4. Also define the motor speed.

14. Draw the flowchart to describe the operation of traffic light controller.

15. List any few applications of temperature controller.

Group– B   **Marks: 5 x 14 = 70**

16. a) i) How does the 8085 microprocessor use multiplexed address data bus to transfer address and data? Explain.   (5)

     ii) Illustrate the memory interfacing concept with timing diagram.   (9)

         (OR)

   b) Explain the architecture of 8085 microprocessor with functional block diagram.   (14)

17. a) i) Write an assembly language program to convert on array of ASCII code to corresponding binary (hex) value.   (7)

     ii) Discuss the sequence and the events in the execution of the CALL instruction by the 8085.   (7)

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(OR)

b) How is the instructions of 8085 classified based on their function and word length? Explain each classification with an example?   (14)

18. a) i) Compare I/O mapped I/O with Memory mapped I/O.   (6)

   ii) Explain the 8085 vectored interrupts in detail.   (8)

(OR)

b) Design a seven=segment LED output port with the device address F3H and display digit 5 at the port. Analyze the circuit and its operation.   (14)

19. a) i) Design a six segment LED display using the technique of multiplexing.   (5)

   ii) Illustrate the process of data transfer from the peripheral to the system memory under the DMA controller with necessary diagrams.   (9)

(OR)

b)   Interface a 16-bit keyboard using ports A and B of the IC 8255 and write a keyboard subroutine with a software key bounce to read the keyboard and return the equivalent binary code of the key pressed in the accumulator.   (14)

20. a) Discuss in detail stepper motor interfacing with 8085 with neat block diagram and flowchart.   (14)

(OR)

b) i) Draw the block diagram of traffic light controller and explain.   (7)

   ii) Explain the working principle of temperature controller   (7)

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Note:

i)   Group A should have three questions from each unit.
ii) Group B should have Five long answer questions, i.e., one question in each unit with either OR type. (may have subdivisions if necessary)