

GANPAT UNIVERSITY
B. Tech Semester V (Electrical) Engineering
Regular Examination Nov – Dec – 2015
2EE501: Fundamental of Microprocessors

Total Time: 3 Hour

Total Marks: 70

Instructions:

1. All questions are compulsory.
2. Assume suitable data if necessary.
3. Figures to the right indicate full marks.
4. Use separate answer sheet for both section.

SECTION : I

Que-1

- (a) Discuss instruction fetch operation with bus timing diagram. [06]
- (b) What do you understand by the term Addressing Modes? Explain, giving suitable, all the addressing modes supported by 8085. [04]
- (c) State the function of following instructions. [02]
1. DAA
 2. DAD

OR

Que-1

- (a) Explain the programming model of 8085 microprocessor. [06]
- (b) Two 8 bit numbers are stored in memory locations 2000 and 2001. Write a program to multiply them and store the result at memory location 2002 onwards. (Assume answer generates carry) [06]

Que-2

- (a) A data array of length 5 has been stored in memory location 3001 to 3005. Write an ALP (Assembly Language Program) to arrange data in ascending order from memory location 3001 to 3005. (i.e. In the same original space) [06]
- (b) Draw and explain timing diagram of memory read operation. [05]

OR

Que-2

- (a) Explain the working of rotate instructions of 8085 with proper example in each case. [05]
- (b) Total 16 data stores at memory location 4050 to 405F. Write a program to find out maximum data and store it at memory location 4080. [06]

Que-3 Attempt Any Three

[12]

- (a) Compare: Memory mapped IO with IO mapped IO.
- (b) What is conditional branching and unconditional branching? Illustrate the answer with an example.
- (c) Write a program to transfer set of data from memory location 2000 – 2003 to 2100 – 2103.
- (d) Write a program to add two 16 bit number and store result at memory location 4000.

SECTION : II

Que-4

- (a) Draw the block diagram of 8255 chip. And also state the function of each block. [06]
- (b) Explain: how SIM interprets accumulator? [04]
- (c) Write a program to find 2's compliment of given number stored at memory location 2500. [02]

OR

Que-4

- (a) What is stack and stack pointer? Explain the working and use of stack in subroutine program. [06]
- (b) Draw the format of flag register of 8086 Microprocessor. Also discuss the function of each flag. [06]

Que-5

- (a) What is DMA? State its importance. [04]
- (b) Write a program to count from 0 to 9 with one second delay between each count. At the count of 9, the counter should reset itself to 0 and repeat sequence continuously. Also show the delay calculation. (Assume Clock Frequency = 1 MHz) [07]

OR

Que-5

- (a) Point out the valid and invalid instructions. Correct the invalid ones. [03]
 1. MVI AB
 2. ANI 05
 3. LDA B
- (b) Write a program to provide the given on/ off time to three signal light (Green, Yellow and Red) and two pedestrian sign (Walk & Don't Walk). The signal light and signs are turned on/ off by the data bits of output port as shown below. [08]

| Lights | Data bits | On time |
|------------|-----------|------------|
| Green | D1 | 15 Seconds |
| Yellow | D3 | 5 Seconds |
| Red | D5 | 20 Seconds |
| Walk | D6 | 15 Seconds |
| Don't Walk | D7 | 25 Seconds |

The traffic and pedestrian flow are in same direction: the pedestrian should cross the road when green light is on. Also mention the delay calculation. (Assume clock frequency = 1Mhz)

Que-6 Attempt Any Two.

- (a) Draw and explain the control word format of 8254 Programmable Timer / Counter. [12]
- (b) Compare PUSH-POP with CALL – RET.
- (c) Write a note on 8259 programmable interrupt controller.

END OF PAPER