

GANPAT UNIVERSITY
B. Tech. Semester – III Information Technology
Regular Examination November- December 2013
2IT302: Computer System Organization

Time: 3 Hours]

[Total Marks: 70

Instructions:

1. Attempt all questions.
2. Figures to the right indicate full marks.
3. Each section should be written in a separate answer book.

SECTION-I

- Q-1 A. $(6C2D.25)_{16} = (\text{_____})_8$ [4]
 $(9006.7)_{10} = (\text{_____})_2$
- B. Express function $F(A,B,C,D) = D(A'+B) + B'D$ in product of maxterm form. [4]
- C. Simplify $F(W, X, Y, Z) = \Sigma(0, 1, 4, 8, 10, 13, 14, 15)$ using K-map method. [4]
- OR**
- Q-1 A. Implement combinational circuit which performs subtraction of three bits. [4]
- B. Express function $F(A,B,C,D) = (A'+B+C+D')(B+C'+D')$ in sum of minterm form. [4]
- C. Simplify Boolean function $F(W, X, Y, Z) = \Sigma(0, 1, 2, 8, 10, 11, 14, 15)$ using Tabulation method. [4]
- Q-2 A. Design a counter which generates sequence from 0 0 0 to 1 1 1 using T- flip-flop. [5]
- B. Explain J-K flipflop with logic diagram and characteristic table. [6]
- OR**
- Q-2 A. Draw and explain logic diagram of look-ahead carry generator. [5]
- B. Draw and Explain bi-directional shift register with parallel load. [6]
- Q-3 A. 1. Perform $101110 - 101101$ using 2's complement. [4]
 2. Perform $2013 - 2014$ using 9's complement.
- B. Give dual of following Boolean expressions. [4]
1. $X + X' = 1$ 3. $X + Y = Y + X$
 2. $X + 1 = 1$ 4. $(X + Y)' = X'.Y'$
- C. Minimize the Boolean function $F(W, X, Y, Z) = \Sigma(0, 2, 4, 6, 8, 10, 12, 14)$ using K-map method. [4]

SECTION-II

- Q-4 A. Explain programming model of 8085 in brief. [6]
B. What is the difference between static RAM and Dynamic RAM? [3]
C. What is microprocessor? Draw the block diagram of computer with microprocessor as CPU. [3]

OR

- Q-4 A. Explain bus Structure of 8085 microprocessor in brief. [6]
B. Answer the following questions. [6]
1. How many memory locations can be addressed by 16 bits?
2. If signals IO/M =1 and RD=0 then which operation is performed by microprocessor.
3. Give name of flag registers of 8085 microprocessor.

- Q-5 A. Load 4F in register A and F3 in register B and perform the Ex-OR operation with the numbers and store result to memory location C200H (Use only AND, OR and compliment operations). [4]
B. Discuss externally initiated operations in 8085 Microprocessor. [4]
C. Give an example of 1-byte, 2-bytes and 3 bytes instruction in 8085. [3]

OR

- Q-5 A. Write an ALP to load register A and B from memory locations C101 and C102 respectively. Compare two numbers and load register C according to following conditions. [4]
If A > B then store 01 in register C.
If A = B then store 00 in register C.
If A < B then store 02 in register C.
B. Explain following instructions of 8085. [4]
1. STAX 2. RLC
C. If memory chip size is 256X1 bits, how many chips are required to make up 1K bytes and 8K bytes of memory? [3]

- Q-6 A. Identify addressing modes (Direct or Indirect or Immediate) for following 8085 instructions. [4]
1. INX B 3. INR M
2. MVI B, 10 4. MOV A,M

B. Write an ALP to add two numbers located at memory locations C201 and C202. Store result at memory location C202. [4]

C. Specify the contents of the accumulator and the status of CY (carry) flag and Z (zero) flag for each individual instruction when following programs are executed. Consider CY and Z flags are 0 initially. [4]

1. MVI A, B3 2. MVI A, C3
ORA A XRA A
RLC

END OF PAPER