

# Z 3501

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1601 – COMPUTER ORGANIZATION

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Using 2's complement method perform  $(42)_{10} - (68)_{10}$ .
2. Reduce the Boolean expression  $((AB)' + A' + AB)'$ .
3. A 4 bit register is initialized with 1101 and it is shifted right with input as 101101. What is the content of register after each shift.
4. Show the block diagram of hardware that implements the following register transfer statement  $yT_2 : R_2 \leftarrow R_1, R_1 \leftarrow R_2$
5. Write an assembly language program to subtract 2 numbers.
6. Write the micro instructions needed for fetch instruction.
7. What is the difference between isolated I/O and memory mapped I/O?
8. Define baud rate.
9. A virtual memory of 64K and physical memory of 32K is available. Find the number of pages, page frames and their size.
10. Give an example for relative and register addressing.

PART B — (5 × 16 = 80 marks)

11. (a) Simplify using tabulation method

$$Y(w,x,y,z) = \sum m(1,2,3,5,9,12,14,15) + \sum d(4,8,11).$$

Or

- (b) Convert the decimal digits to the following binary codes : BCD,2421, Excess-3 and Gray.

12. (a) (i) Design a binary adder subtracted circuit. (8)  
(ii) Design a BCD subtractor circuit using 9's compliment method. (8)

Or

- (b) (i) Write a note tri-state buffers and explain their use in bus structure. (6)  
(ii) Draw the logic diagram of a 2 X 4 line decoder with only NOR gates. (10)

13. (a) Explain in detail the 2 passes in an assembler.

Or

- (b) Explain in detail the instruction cycle.

14. (a) Discuss how asynchronous data transfer is done. Explain with an example.

Or

- (b) Describe about priority interrupts.

15. (a) Explain the operations that can be performed in a stack. Illustrate with an example.

Or

- (b) Explain in detail the memory management hardware.
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