This question paper contains 3 printed pages]

Your Roll No ....

5191

B.Sc. (Prog.) / II J
COMPUTER SCIENCE
CS-202 – Computer System Architecture
(Admissions of 2005 and onwards)

Time : 3 Hours **Maximum Marks : 75**

(Write your Roll No on the top immediately on receipt of this question paper.)

All questions are compulsory.

1 (a) Simplify the boolean function F together with the don't care condition d using Karnaugh map in sum of product form.
$F(x, y, z) = \sum(0, 2\ 6)$
$d(x, y, z) = \sum(1, 3, 5)$ **5**

(b) What is a state table ? How is it different from excitation table ? **3**

(c) Write excitation table for SR Flip Flop. **1**

2 (a) Differentiate between Multiplexer, a decoder and an encoder. **3**

(b) Draw and explain the functioning of a 4 bit bidirectional shift register with parallel load. **6**

3 (a) Convert the following numbers to the indicated base :

(i) $(7562)_{10}$ to $(\_\_\_)_8$

(ii) $(1938)_{10}$ to $(\_\_\_)_{16}$

(iii) $(175)_{10}$ to $(\_\_\_)_2$

(iv) $(F3A7C2)_{16}$ to $(\_\_\_)_2$

(v) $(F3A7C2)_{16}$ to $(\_\_\_)_8$ 5

(b) Perform following arithmetic operations in binary using two's complement and 4 bit registers

(i) +14 +5

(ii) +14 –5 4

(c) What is floating point representation of real numbers ? Give an example of normalized floating point number. 3

4. (a) Draw the circuit diagram and explain the functioning of a 3 state bus buffer Where is it used ? 6

(b) Explain the selective mask, selective complement and selective clear operations Compute the contents of register A after each operation, if contents of register A before operation = 1100
and contents of register B (logic operand) = 1010 6

5 (a) Explain the following instructions giving two examples of each :

(i) memory reference instruction

(ii) register reference instruction

(iii) input output instruction 6

(b) Draw and explain the flow chart for the instruction cycle (initial configuration) showing how the control determines the instruction type after the decoding 7

6 (a) Distinguish between Isolated I/O and Memory mapped I/O 4

(b) Explain asynchronous data transfer giving an example 2

(c) Differentiate between Implied and Immediate mode of addressing 2

(d) What is the need to have I/O interface for peripheral devices ? 2

7 (a) Briefly explain the Daisy-chaining method of handling priority interrupt 3

(b) Explain three different types of interrupts 3

(c) What is cache memory ? What are its uses ? 2

(d) What is Content Addressable Memory (CAM) ? 2