Code: CT12   **Subject: COMPUTER ARCHITECTURE**

ALCCS – NEW SCHEME

Time: 3 Hours   **AUGUST 2013**   Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE:
- **Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.**
- **Parts of a question should be answered at the same place.**

Q.1   a. Show that any three variable logic function f(x, y, z) can be realized using 2-input multi-plexer. Give the realization & truth table.

  b. State Flynn's classification.

  c. What is assembly language? State its advantages over higher level language.

  d. What is meant by normalized floating point number and biased floating point number?

  e. What are the advantages of byte addressing over word addressing and what are their disadvantages?

  f. What is the difference between access time and cycle time of a memory? Which is larger?

  g. What is LRU Policy of replacing a memory block in a cache line?   **(7×4)**

Q.2   a. Discuss different addressing modes used in computer systems?   **(9)**

  b. Design a controlled four bit register which can be controlled to perform the four functions:
  (i) LOAD   (ii) 1's complement   (iii) 2's complement   (iv) CLEAR   **(9)**

Q.3   a. Design a 4-bit Carry Look ahead circuit and show its realization.   **(9)**

  b. What is Macro assembler? Give the similarity & dis-similarity features of macro and subroutine.   **(9)**

Q.4   a. Design a 16x4 memory subsystem with
  (i) High order interleaving
  (ii) Low Order interleaving, using 8x2 memory chips   **(9)**

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b. Write RTL Statements for all types of shift operations to be performed on a 8 bit register. Draw the Logic Circuit for their implementation.   **(9)**

Q.5   a. With neat block diagram explain the operation of a micro-sequencer.   **(6)**

b. Compare Horizontal Micro Code & Vertical Micro Code.   **(6)**

c. Discuss associative mapping technique and state its advantages over direct mapping technique.   **(6)**

Q.6   a. What is RS 232-C standard? Explain the signals associated with it.   **(6)**

b. State the features of RISC Processor. What is meant by speculative execution of Instructions? Is it a feature of RISC Processor?   **(6)**

c. Give the flowchart for restoring method for division.   **(6)**

Q.7   a. With neat diagram, discuss the working of Priority of Interrupt hardware circuit using Priority encoder. State its advantage over Daisy Chaining Method.   **(6+2)**

b. Briefly explain VLIW & EPIC architecture.   **(10)**