Code: CT74   **Subject: EMBEDDED SYSTEMS**

ALCCS

Time: 3 Hours   **DECEMBER 2015**   **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. Describe the domestic and industrial application of embedded system.

     b. Show the contents of the PSW register of after execution of the following instruction.
MOV A, #0BFH
ADD A, #1BH

     c. Explain briefly different types of memories used in 8051.

     d. Explain Scheduling Algorithms of RTOS.

     e. What is Pipelining? Explain with an example.

     f. Explain development environment and debugging techniques.

     g. Generate a frequency of 100 KHz on pin p2.3. Use Timer 1 in mode 1 assume XTAL of 22 MHz.   **(7×4)**

Q.2   a. What are the criteria for selection of processor for use in an embedded system?   **(6)**

     b. Design a Finite State Machine using a simple microprocessor.   **(6)**

     c. Give the features of SoC design.   **(6)**

Q.3   a. What are the different types of ROM? Explain read/write mechanism of EEPROM.   **(6)**

     b. Discuss common memory problem and possible solutions.   **(6)**

     c. Give the issues that need to be considered when upgrading software using flash memory.   **(6)**

Q.4   a. Explain communication basics for embedded system with a simple example of bus structure, read protocol and write protocol.   **(6)**

     b. Discuss embedded processor interfacing and explain port-based I/O and bus-based I/O.   **(6)**

     c. Draw and explain two-level bus architecture.   **(6)**

Q.5   a. What is scheduler? Explain Priority based scheduling.   **(6)**

     b. Discuss some of the important criteria used in making an RTOS selection.   **(6)**

     c. Explain interrupt handling in embedded system.   **(6)**

Q.6   a. Discuss system synthesis and hardware/software co-design.   **(6)**

     b. Explain formal verification and simulation of hardware/software co-design.   **(6)**

     c. Give the steps of development of process model.   **(6)**

Q.7   a. Design a process control system and explain its different parts.   **(10)**

     b. Discuss the benefits of computer-based control implementations.   **(8)**