ROLL NO. _____

Code: CT74 **Subject: EMBEDDED SYSTEMS**

ALCCS

Time: 3 Hours **JUNE 2016** **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. List and define the three main characteristics of embedded systems that distinguish such systems from other computing systems.

b. Discuss the factors for selection of DSP processor for Embedded Systems.

c. What is the difference between a big-endian and little-endian data representation?

d. Why do most computer systems use memory-mapped I/O?

e. Explain the benefits that an interrupt address table has over fixed and vectored interrupt methods.

f. Explain the concept of Pipelining in Embedded Processors.

g. Differentiate between a microprocessor and a microcontroller. **(7×4)**

Q.2 a. What is the embedded system? How digital Camera is an embedded system? **(6)**

b. Explain the Top to Down Embedded System Design flow methodology **(12)**

Q.3 a. Design a Greatest Common divisor (GCD) Custom Single Purpose Processor. Start with the functional computing results, translate into state diagram and sketch a part data path. **(18)**

Q.4 a. Discuss the Cache Memory organization. Explain the Read operation in Cache memory with an example. **(10)**

b. Explain Peripheral to memory transfer with DMA controller. **(8)**

Q.5 a. What is the Action Plan to follow while designing embedded system? **(10)**

b. Discuss the Design cycle in the development phase for embedded systems. **(8)**

Q.6 a. What is RTOS? When is an RTOS Necessary and when is not in the embedded system? **(9)**

b. Discuss the advantage of Software Programming in Assembly languages and High Level languages. **(9)**

Q.7 a. Write a short Note on
(i) Universal Asynchronous Receiver Transmitter (UART) **(5)**
(ii) Controller Area Network (CAN) **(5)**

b. Discuss the applications of Embedded systems in Telecommunication. **(8)**