

## ALCCS

Time: 3 Hours

**JUNE 2017**

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. Define the Embedded System. Give 15 examples of embedded system.
- b. Explain the common characteristics of embedded systems.
- c. Identify the difference between microcontroller and microprocessor.
- d. Show the addition of two numbers 44H and 55H.
- e. Write the common characteristics of embedded system.
- f. Explain the role of DSP in Embedded System.
- g. Proof that mobile is example of embedded system (7×4)
- Q.2** a. Explain the difference between Semi-custom and Full-custom embedded ICs. Write the name of Design tools of Semicustom and Full custom ICs. (9)
- b. Draw the circuit diagram of two input CMOS NOR gate with suitable aspect ratio. Show the switching action of all the transistors and draw the Euler's graph of the same circuit (9)
- Q.3** a. Differentiate between single purpose processor and general purpose processor with suitable diagram. Explain the types of protocols in transport layer. (9)
- b. Define the terms: size, power, NRE cost, unit cost, throughput, speedup, observability, controllability. (9)
- Q.4** a. Explain the hierarchy of the semiconductor memory. Explain storage process of data in the EPROM & OTPROM. (9)
- b. Prove that the digital camera is an embedded system. Draw the internal structure of digital camera and show its function. Explain the importance of DCT in Digital Camera. (9)

- Q.5** a. Prove that embedded systems is life supporting system with any suitable examples. (9)
- b. Show the structure of Harvard and Princeton processor architecture, also predict the difference between them. Draw the internal structure of RAM. (9)
- Q.6** a. Define watchdog timer and reaction timer. Write the program for calculation of GCD number of 16 and 20. (9)
- b. Show the role play of ATM. Explain Pulse width modulator controlling a DC motor using a PWM. (9)
- Q.7** a. Explain the interfacing. Show the standard structure & protocol for advance communications. (9)
- b. Explain in details, serial protocols, parallel protocols, and wireless protocols with suitable diagrams (9)