Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SIXTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, APRIL - 2018

SUBJECT: EMBEDDED SYSTEMS DESIGN [ICE 4002]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1A.	Describe the three different processor technologies with block diagram.	**5**
1B.	Explain the design productivity gap with necessary figures.	**3**
1C.	The design of a particular disk drive has an NRE cost of $100,000 and a unit cost of $20. How much has to be added to the cost of each product to cover NRE cost, assuming: (a) 100 units, and (b) 10,000 units will be sold.	**2**
2A.	Design a single purpose processor with controller and data path to compute Greatest Common Divisor of two numbers.	**4**
2B.	Sketch the templates used for creating state diagram from program statements.	**3**
2C.	Explain the software development process for embedded system with block diagram.	**3**
3A.	Compare direct cache mapping and set associative cache mapping techniques with block diagram.	**5**
3B.	Compare Fast Page Mode DRAM and Synchronous DRAM.	**3**
3C.	Design 2K X 16 ROM using 1K X 8 ROMs.	**2**
4A.	Explain priority assignment for scheduling processes using Rate Monotonic and Deadline Monotonic methods. Give suitable examples.	**4**
4B.	Describe Hierarchical/Concurrent State Machine Model with suitable example.	**4**
4C.	List the steps for describing a system's behavior as state machine.	**2**
5A.	Explain the two approaches/methods for capturing state machine in sequential programming language.	**4**
5B.	List the performance metrics for a control system problem. Indicate the metrics with the help of control system response graph.	**3**
5C.	With the block diagram describe the parts of control systems for automobile cruise controller.	**3**