Level: Bachelor   Semester: Spring   Year   : 2017
Programme: BE   Full Marks: 100
Course: Embedded Systems   Pass Marks: 45
    Time   : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1.	a)	What is an Embedded System? List and define the three main characteristics of embedded systems that distinguish embedded system from other computing systems.	7
	b)	What is optimization? Explain optimization of single purpose processor in detail.	8
2.	a)	Design a processor that calculates the GCD of two numbers. Show the design of datapath only and construct the diagram of controller.	7
	b)	How does a programmer view a microprocessor based embedded system? what are his/her concern?	8
3.	a)	Compose 1K×8 ROM into an 2K×16 ROM.	7
	b)	What is Direct Memory Access? Why such circuitry is needed? Explain with its block diagram.	8
4.	a)	What is Arbitration. Explain Daisy-Chain arbitration.	7
	b)	In an RTOS environment different tasks may share same variables and functions. Explain the problems faced due to this type of sharing and also suggest the solutions.	8
5.	a)	Define Real time operating System? Explain various stages of task.	7
	b)	Explain the architecture of 8051 microcontroller with the aid of its block diagram. Also explain the addressing modes of 8051.	8
6.	a)	Write a VHDL code to simulate 8×1 MUX.	7
	b)	Give the VHDL implementation of full adder using both behavioral and structural architecture. And then point out the difference between the two architectures.	8
7.		Write short notes on: (**Any two**)	2×5
	a)	Types of Memory	
	b)	Debuggers and downloader	
	c)	VHDL code to simulate shift register	