Seat No.:	Enrolment No.

Subject Code:X71105

## GUJARAT TECHNOLOGICAL UNIVERSITY PDDC SEMESTER VII- EXAMINATION – SUMMER 2017

Date: 03/05/2017

**Subject Name: Embedded System** Time: 02.30PM to 05.00PM **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. (a) Explain the components of a typical Embedded System in detail. **Q.1** 07 What is Processor Architecture? What are the different processor architectures 07 available for processor/controller design? Give an example of each. **Q.2** What is Kernel in OS? Discuss various Kernel Services in an operating system. 07 (a) What is Real Time Operating System? Discuss various Services offered by **(b)** 07 RTOS. OR (b) Compare two scheduling strategies for the real-time scheduling – preemptive 07 mode and round robin scheduling. Explain ARM Programming Model along with its registers, CPSR, Memory **07** 0.3 System, Supervisory Mode and brief about Instruction Set. (b) Write Assembly language program for Arm to add two 64 bit numbers, and **07** modify the same programming to subtract two 64 bit numbers. What is Pipelining? Explain 3-Stage Pipelining in ARM Processors in detail. **Q.3** 07 (a) What do you mean by Development Tools? Explain different ARM development **(b)** 07 tools. Discuss the distinction between Functions, Interrupt Service Routine and Tasks. 0.4 07 (a) Define embedded System. Explain any one example of embedded system. 07 Differentiate between Processes, Threads and Tasks. Explain the use of a 0.4 07 (a) Semaphore as an Event-Signaling or Notifying Variable. What is Interprocess Communication? Discuss various IPC functions in brief. 07 **Q.5** Discuss various IO types available for Embedded Systems with examples. 07 (a) List and explain Serial Bus Communication Protocols used for Embedded **07 (b)** Systems. OR What is a Watchdog Timer, Explain its usefulness in Embedded System **Q.5 07** (a) implementations. (b) List and explain Parallel Bus Device Protocols used for Embedded Systems. 07 \*\*\*\*\*\*