

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2180808****Date:09/05/2019****Subject Name:Embedded Systems****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define embedded system. **03**  
(b) Explain embedded hardware units and devices in a system. **04**  
(c) Explain basic architecture of MSP430. **07**
- Q.2** (a) Compare RISC and CISC architecture. **03**  
(b) Explain wireless and mobile system protocol in brief. **04**  
(c) Explain serial communication devices with protocol. **07**
- OR**
- (c) Explain watchdog timer and real time clock in embedded systems. **07**
- Q.3** (a) Explain I/O busy-wait approach in brief. **03**  
(b) Explain DMA (Direct Memory Access) in brief. **04**  
(c) Explain Interrupt Servicing (Handling) Mechanism in detail. **07**
- OR**
- Q.3** (a) Explain Interrupt Sources and ISR Concept. **03**  
(b) Define (i) Process (ii) Thread (iii) Task **04**  
(c) Explain Inter process communication in detail. **07**
- Q.4** (a) Explain message queue functions in brief. **03**  
(b) Explain Semaphores and their functions in embedded system **04**  
(c) Explain Real Time Operating System (RTOS) in detail. **07**
- OR**
- Q.4** (a) Explain file system management in RTOS **03**  
(b) Explain Memory management in RTOS. **04**  
(c) Explain Task scheduling in RTOS. **07**
- Q.5** (a) Explain RTOS security issues in brief. **03**  
(b) Explain Process Management in RTOS. **04**  
(c) Explain ADC module in MSP430. **07**
- OR**
- Q.5** (a) Enlist on-chip peripherals in MSP430. **03**  
(b) Explain basic features of CCS (Code Composer Studio). **04**  
(c) Explain I/O ports in MSP430. **07**