

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012****Subject code: 170907****Date: 28/12/2012****Subject Name: Advanced Microcontroller and Embedded System****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.

- Q.1** (a) Explain the architecture of CIP-51 microcontroller with block diagram. **07**
(b) Discuss the PLL of CIP-51 microcontroller and also explain the procedure for initializing. **07**

- Q.2** (a) Discuss the capture mode of PCA timer in 89C51rd2 microcontroller. **07**
(b) Discuss the pulse width modulator mode of 89C51rd2 microcontroller with C-programming code. **07**

OR

- (b) What are advantages of watchdog timer of 89C51rd2 microcontroller? **07**
Explain the watchdog timer in details.

- Q.3** (a) Explain the SPI communication protocol of 89C51rd2 microcontroller. **07**
(b) Explain the interfacing of 89C51 controller to RTC. **07**

OR

- Q.3** (a) Explain the different mode of URAT of 89C51rd2 microcontroller. **07**
(b) Discuss the I2C communication protocol of 89C51rd2 microcontroller. **07**

- Q.4** (a) Explain the round robin with interrupt architecture with appropriate C-programming structure. **07**
(b) Compare the characteristics of following software architecture (1) Round Robin (2) Function Queue Scheduling (3) Real Time Operating System **07**

OR

- Q.4** (a) Explain the task and task states in RTOS. Also discuss the role of scheduler. **07**
(b) What is the shared data problem in RTOS? Explain with C-programming structure. **07**

- Q.5** (a) Define the embedded system. List the application of small, medium and large embedded system. **07**
(b) What is the Reentrancy in RTOS ? Discuss the reentrancy rules. **07**

OR

- Q.5** (a) Explain the task code and routine code in embedded programming. **07**
(b) What is worst time and worse case in embedded system? **07**
Also explain the difference between Real Time OS and Conventional OS
