

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012****Subject code: 171005****Date: 28/12/2012****Subject Name: Embedded Systems (Department Elective - I)****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

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

- Q.1 (a)** Do as directed. **08**
 (i) Compare microprocessor, microcontroller, DSP and ASSP.
 (ii) What do you mean by charge pump? How does a charge pump supply power in an embedded system without using power-supply lines?
- (b)** Discuss the following terms. **06**
 (i) ASIP (ii) FPGA (iii) CPLD
- Q.2 (a)** Discuss the ARM programmer's model in detail. **06**
(b) Explain the following ARM instructions with an example. **08**
 (i) ADDEQ (ii) BNE (iii) LDRB (iv) SMULL
- OR**
- (b)** Explain the following ARM instructions with an example. **08**
 (i) SUBS (ii) SWI (iii) CMN (iv) SMLAL
- Q.3 (a)** Explain in detail ARM 3-stage pipelining. **07**
(b) Discuss the thumb programmer's model in brief. **07**
- OR**
- Q.3 (a)** How branch instructions are executed in ARM? **07**
(b) Discuss Thumb data processing instructions. **07**
- Q.4 (a)** Discuss socket functions in detail. **07**
(b) Explain three modes of serial communication, 'synchronous', 'iso-synchronous' and 'asynchronous' using serial devices with one example of each. **07**
- OR**
- Q.4 (a)** List wireless and mobile system protocols and discuss any two in detail. **07**
- Q.4 (b)** Compare cooperative scheduling and preemptive scheduling. **07**
- Q.5 (a)** Discuss Methods of saving and optimizing the Memory space. **07**
(b) Discuss Earlier Deadline First (EDF) precedence and Rate Monotonic Scheduling (RMS) Models **07**
- OR**
- Q.5 (a)** What are the situations, which lead to priority inversion problems? How does it is resolved? **07**
- (b)** Discuss use of a semaphore as an Event-signalling or Notifying variable. **07**
