

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VII• EXAMINATION – WINTER 2014

Subject Code: 171005**Date: 29/11/2014****Subject Name: Embedded Systems****Time: 10:30am 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) (i) “By decreasing the operating clock at a lower frequency reduces the power loss due to heat generation” Justify the statement. **03**
(ii) Compare the features and list the applications of Digital Signal Processor and General Purpose Processor. **04**
(b) Name the various types of memories used in an embedded system and explain in brief the functions assigned to them. **07**
- Q.2** (a) List at least seven software tools used for designing an embedded system and state the significance of them. **07**
(b) Explain the following ARM7 instructions with suitable example. **07**
(i) BVC (ii) UMLAL
- OR**
- (b) Explain the following ARM7 instructions with suitable example. **07**
(ii) RSCMI (ii) SWINE
- Q.3** (a) Explain in detail with example how nested subroutine call (a subroutine that calls another subroutine) is handled in ARM7 processor. **07**
(b) Write an assembly language program for ARM7 processor to find number of ONEs in a word (32-bit data) using subprogram FIND_ONE for FIVE words of array. Save result to another array. **07**
- OR**
- Q.3** (a) Draw the block diagram of ARM7 processor and explain it in detail. **07**
(b) Write an assembly language program for ARM7TDMI processor to execute the C code statement: **07**

$$i=0; y=0;$$

$$\text{while}(i < N)$$

$$\{ y = y + h[i] * x[i];$$

$$i++; \}$$
- Q.4** (a) Explain synchronous, iso-synchronous and asynchronous serial communication modes with suitable example. **07**
(b) Write short note on socket functions. **07**
- OR**
- Q.4** (a) Write short note on PCI parallel device bus. **07**
(b) What is semaphore? How to apply the concept of it for shared data problem? Explain in detail with an example. **07**
- Q.5** (a) Describe the following services of the OS: (i) Process management and (ii) Device management. **07**
(b) Explain in brief round robin time slicing scheduling strategy with an example. **07**
- OR**
- Q.5** (a) Explain following terms in brief. **07**
(i) Kernel (ii) TCB (iii) CPU load
(b) List three alternative systems for the OS to respond to hardware source call on interrupt. Explain in detail any one among them. **07**
