

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-Semester VII Examination Nov/Dec-2011

Subject code: 171005

Date: 29/11/2011

Subject Name: Embedded Systems

Time: 10.30 am-1.00 pm

Total marks: 70

Instructions:

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

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| Q.1 | (a) Define and classify the embedded systems, give few examples of such systems. | 07 |
| | (b) ARM (Acorn RISC Machines) architecture supports the design of embedded systems. Justify this statement with special features that are incorporated into ARM controller. | 07 |

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| Q.2 | <p>(a) Describe the flow of ARM development tools for embedded system design.</p> <p>(b) What is pipeline concept of ARM architecture, explains it with proper block diagram. How its affects in system performance.</p> | <p>07</p> <p>07</p> |
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OR

- (b)** Draw and discuss the basic block diagram of architectural model of ARM controller. **07**

- Q.3**
- (a) Explain the following ARM instruction by giving examples.
i) ASR ii) LDMIA
- (b) Which are the wireless and mobile system protocols available for the embedded systems; explain in short any two of the wireless protocols that you have mention?

OR

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| Q.3 | <p>(a) Explain the following Thumb ARM instruction by giving examples.</p> <div style="display: flex; justify-content: space-around; margin: 10px 0;"> i) CMN ii) MVN </div> <p>(b) Explain the difference between Real Time Clock and Watch Dog Timer related to embedded systems.</p> | <p>07</p> <p>07</p> |
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| Q.4 | <p>(a) What do you mean by “Task” and “Task state” related to embedded operating systems; also discuss about task control block (TCB) and its data.</p> <p>(b) Explain the use of “semaphore” with respect to embedded operating systems. List out few semaphore related function which are found on Real Time OS.</p> | <p>07</p> <p>07</p> |
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OR

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| Q.4 | <p>(a) What do you mean by Inter Process Communication (IPC) functions? Explain in short. Which are the IPC functions generally found on Real Time OS.</p> <p>(b) With respect to RTOS (Real Time Operating Systems) explain the use of Timer and Event functions, and list out few examples of Timer and Event functions.</p> | <p>07</p> <p>07</p> |
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- Q.5** (a) Which are the basic services offered by RTOS (Real Time Operating Systems) for the embedded system design? Describe any one service in short. **07**
- (b) Explain the file system organization related to RTOS and which are basic functions you will find with such file systems. **07**

OR

- Q.5** (a) What is task scheduling models of RTOS, explain any two scheduling models of RTOS in short. **07**
- (b) What are the RTOS security issues, which are the important security function generally found on RTOS? **07**
