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**Code No: B0509, B5802**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**M.TECH II SEMESTER EXAMINATIONS, APRIL/MAY 2012**
**EMBEDDED SYSTEMS**
**(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGINEERING)**

**Time: 3hours** **Max.Marks:60**

**Answer any five questions**
**All questions carry equal marks**

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1.a) Write the challenges in Embedded Computing System Design.
b) Explain Architecture design steps in design process of Embedded System.

2.a) What is an Interrupt? Explain in detail.
b) Draw and explain block diagram of 8051 Micro controller.

3.a) Assume that 5 BCD data items are stored in RAM locations starting at 40H, as shown below. Write a program to find the sum of all the numbers. The result must be in BCD.

40= (71)
41= (11)
42= (65)
43= (59)
44= (37)

b) Write a program that finds the number of 1s in a given byte.

4.a) Write a program to get hex data in the range of 00H-FFH from port1 and convert it to decimal. Save the digits in R7, R6 and R5, where the least significant digit is in R7.
b) Analyze the program, assuming that P1 has a value of FDH for data.

5. Describe the operation modes of LCDS and also describe how to program and interface an LCD to an 8051.

6. Explain Semaphores and Shared data.

7.a) Explain $I^2C$ and compare with CAN Bus Protocols.
b) Briefly Explain the Architectures of ARM & SHARC.

8.a) Explain various Debugging Techniques.
b) Write the characteristics of Embedded computing Algorithms.

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