

ECE

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R09

Code No: 09A70409

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, May/June - 2013

Embedded Systems

(Information Technology) ECE

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions
All Questions Carry Equal Marks

- 1.a) Explain the characteristics of embedded computing applications.
- b) Explain the important problems or challenges that must be considered while designing an embedded system. [7+8]
- 2.a) Explain all the major steps involved in the embedded system design process and also explain about the requirements analysis of a GPS moving map.
- b) Explain how UML is used to model systems, by taking model train controller as an example. [7+8]
- 3.a) Explain the different modes of operation of timer/counter in 8051 microcontroller.
- b) Write an 8051 assembly language program for serial port programming and also explain the steps involved. [7+8]
- 4.a) Write an 8051 assembly language program for multiplying the unsigned number in register R3 by the unsigned number on port2 and storing the result in external RAM locations 10h and 11h.
- b) Write a program to read data from P0 and echo it to P1 continuously while giving a copy of it to the serial COM port to be transmitted out serially. [7+8]
- 5.a) Explain the features of the PSoC 3 and PSoC 5 Architectures with neat diagrams.
- b) Explain the operation of PSoC based capacitive sensor used for robust detection of the human finger with a light touch. [7+8]
- 6.a) Explain how semaphores are useful as a signalling device.
- b) Explain about events and compare different methods for inter task communication. [7+8]
- 7.a) Compare various techniques of loading software in to the target system for testing.
- b) Explain the operation of logic analyzer both in timing mode and state mode. [7+8]
- 8.a) Explain about physical and electrical organization of a CAN bus along with its data frame format.
- b) Explain the theory of operation and requirements of an elevator controller with neat diagram. [7+8]