Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.Tech(CSE)/SEM-8/CS-802B/2012
2012
REAL TIME & EMBEDDED SYSTEM

Time Allotted : 3 Hours   *Full Marks* : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

                                                        10 × 1 = 10

    i)   CPU speed is measured in

        a) MHz   b) flops

        c) MIPS   d) none of these.

    ii) PCB stands for

        a) Program Control Block

        b) Process control Block

        c) Process central Block

        d) none of these.

    iii) The primary job of the operating system of a computer
         is to

        a) command resources   b) manage resources

        c) provide utilities   d) provide GUI interface.

8303   [Turn over

iv) In .... operating system, the response time is very critical

   a) multitasking   b) batch

   c) real-Time   d) desktop.

v) Features of a real time OS

   a) clock and timer support

   b) real time priority levels

   c) predictable and fast interrupt latency

   d) all of these.

vi) Lynx is a

   a) multiprocessor OS   b) real time OS

   c) desktop OS   d) none of these.

vii) CAN stands for

   a) Communication Area Network

   b) Controller Area Network

   c) Communication Artificial Network

   d) Controller Architecture Network.

viii) USB is a

   a) Universal School Bus

   b) Universal Serial Bus

   c) Universal Signal Bus

   d) Unknown Signal Bus.

ix) I^2C uses .... signals for communication.

   a) SCL, SDA   b) SLA, SDA

   c) Clock, Data   d) Clk, CDA.

x) Watchdog timer is a

   a) hardware   b) software

   c) both (a) and (b)   d) none of these.

xi) OTP is a type of

    a) processor

    b) memory

    c) communication protocol

    d) none of these.

xii) SOC stands for

    a) Static One Chip   b) System On Chip

    c) System One Chip   d) Super One Chip.

GROUP – B
(Short Answer Type Questions)
Answer any *three* of the following.   3 × 5 = 15

2. a) What is micro controller ? In what does it defer from microprocessro ?   2

  b) Discuss the role of micro controller in designing embedded system.   3

3. a) What is an embedded system ? contrast embedded system with general purpose computer.   3

  b) Discuss some design constraints for embedded system.   2

4. a) Discuss the term 'Hardware-Software Co design.'   3

  b) What do you mean by Hard real time and Soft real time system ?   2

5. Explain Software Life Cycle in embedded system.   5

5. What is sporadic job ? How it differs from Aperiodic job ? 5

6. What is a single purpose processor ? What are the benefits of choosing a single purpose processor over general purpose processor.   2 + 3

8303   3   [Turn over

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following.   3 × 15 = 45

7. a) Describe working of USB in detail with protocol, architecture and topology if necessary give sketches. 10

    b) Classify the socket used in USB with diagram.   5

8. Explain the working of I ^{2}C with suitable diagrams.

9. Draw a circuit diagram to connect 4 seven segment display units with 8051 Microcontroller and explain how multiplexed display technique is used to display in this system.

10. a) Describe different types of processor used in embedded system.   10

    b) What is dynamic hardware design explain.   5

11. Write short notes on any *three* of the following :   3 × 5

    a) Sysgem On Chip

    b) RTOS

    c) FPGA (Field Programmable Gate Arrays)

    d) Static Branch Prediction

    e) LCD.