



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.



- iv) In operating system, the response time is very critical.
- a) multitasking
 - b) batch
 - c) real-time
 - d) desktop.
- v) Feature(s) of a real time OS is(are)
- 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) I²C 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
- processor
 - memory
 - communication protocol
 - none of these.
- xii) SOC stands for
- Static One Chip
 - System On Chip
 - System One Chip
 - Super One Chip.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- What is micro-controller ? In what way does it differ from microprocessor ? 2
 - Discuss the role of micro-controller in designing embedded system. 3
- What is an embedded system ? Contrast embedded system with general purpose computer. 3
 - Discuss some design constraints for embedded system. 2
- Discuss the term 'Hardware-Software Co-design.' 3
 - What do you mean by Hard real time and Soft real time system ? 2
- Explain Software Life Cycle in embedded system.
- What is sporadic job ? How does it differ from aperiodic job ?
- What is a single purpose processor ? What are the benefits of choosing a single purpose processor over general purpose processor ? 2 + 3



GROUP - C
(Long Answer Type Questions)

Answer any *three* of the following.

$3 \times 15 = 45$

8. 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
9. Explain the working of I²C with suitable diagrams.
10. Draw a circuit diagram to connect 4 seven segment display units with 8051 micro-controller and explain how multiplexed display technique is used to display in this system.
11. a) Describe different types of processor used in embedded system. 10
b) What is dynamic hardware design ? Explain. 5
12. Write short notes on any *three* of the following : 3 × 5
 - a) System On Chip
 - b) RTOS
 - c) FPGA (Field Programmable Gate Arrays)
 - d) Static Branch Prediction
 - e) LCD.

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