NOV-DEC- 2012

Total No. of Questions : 12]

SEAT No. :

P1155

[Total No. of Pages : 2

[4264] - 545
B.E. (E & TC)
EMBEDDED SYSTEMS AND RTOS
(2008 Pattern) (Elective - I) (Semester - I) (Theory)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates :

1) *Solve Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6, Q. 7 or Q. 8, Q. 9 or Q. 10, Q. 11 or Q. 12.*
2) *Answers to the two sections should be written in separate books.*
3) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) a) List and define the main characteristics of embedded system that distinguishes from other system. [8]

b) With the help of design metrics explain the design challenges and optimization of embedded systems. [10]

OR

Q2) a) List the different processors available for embedded system applications. [8]

b) Explain the transceiver section of IrDA. [4]

c) Explain the concept of bit encoding in CAN. [6]

Q3) a) Draw the interfacing diagram between LPC 2148 and seven segment display. Write down the code in C language for displaying number 0 to 9 on seven segment displays. [8]

b) Explain the following terms : [8]

i) Banked Registers in ARM.

ii) CPSR Register and Processor modes.

OR

Q4) a) Explain the architecture of LPC 2148 with a neat block diagram. [8]

b) How the ARM instruction set differs from the pure RISC definition. [8]

Q5) a) Explain various message passing techniques of Inter Process/Task Communication. [8]

b) What do you mean by mutual exclusion and explain mutual exclusion through busy waiting/spin lock. [8]

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OR

Q6) a) Compare the following software architectures : [8]

i) Round - Robin.
ii) Round - Robin with interrupts.
iii) Function queue scheduling.
iv) Real - Time operating system.

b) Explain the term Task, process and Thread. List and explain various state of a task with diagram. [8]

SECTION - II

Q7) a) What is embedded LINUX? Explain Embedded Linux development set up. [10]

b) Explain the device driver with a simple application. [8]

OR

Q8) a) What are the file system supported by LINUX. [8]

b) Explain the following tool utilities in Embedded Linux system. [10]

i) Busy Box.
ii) Redboot.
iii) LIBC.

Q9) a) Explain various functional requirements that needs to be analyzed in the selection of an RTOS for an embedded design. [8]

b) Explain different stages of the embedded development process in waterfall model. [8]

OR

Q10) a) State important features of Vx works essential in a sophisticated embedded system design. [8]

b) State salient features of Win CE OS. [8]

Q11) a) State hardware requirement of digital camera. Suggest suitable processor, memories and I/O's for it. [8]

b) Explain the task scheduling model of adabtive cruise control system. [8]

OR

Q12) a) Explain the different software requirement (No. of tasks, RTOS services) for the smart card. [8]

b) Explain the features of processor, memory and I/O device required for implementation of ATM. [8]