

B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Seventh Semester

COMPUTER SCIENCE ENGINEERING

U07ITE08: Embedded Systems

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Small scale embedded system use.
 - a. 8 bit
 - b. 16 bit
 - c. 32 bit
 - d. 8 bit or 16 bit
2. What are the software used in high level language of embedded system?
 - a. C language
 - b. Tally
 - c. Fortran
 - d. exe file
3. UART can send a byte in _____ format.
 - a. 10 bits
 - b. 11 bits
 - c. 10 bits or 11 bits
 - d. 16 bits
4. Example of Synchronous Serial Input Devices is
 - a. Audio/Video Input
 - b. Keyboard
 - c. Mouse
 - d. Modem
5. The Queue data structure operated in _____ mode.
 - a. FIFO
 - b. LILO
 - c. LIFO
 - d. FILO
6. The stack data structure operated in _____ mode.
 - a. FIFO
 - a. LILO
 - c. LIFO
 - d. FILO
7. Thread is controlled by
 - a. OS kernel
 - b. Media processor
 - c. Microprocessor
 - d. DSP
8. The RTOS_Q Accept function for servicing of a queue can be
 - a. sends a message to the memory as per the queue back pointer, *Qback.
 - b. waits for a queue message at the queue and reads when received.
 - c. reads the present queue front pointer after checking its presence yes or no
 - d. reads queue from front to back, and deletes the queue block, as it is needed later after the flush.

9. The interrupt handling function Int Unlock () describes
- a. Disables interrupt
 - b. Set the interrupt vector
 - c. Enables interrupts
 - d. Gets interrupt vector
10. Queue related function includes
- a. Creating a queue for an IPC
 - b. Creating a mailbox for an IPC.
 - c. Waiting for availability of an IPC for a message at Mailbox.
 - d. Send a message for an IPC through Mailbox.

PART B (10 x 2 = 20 Marks)

- 11. Define Embedded System. What are the three main components of an embedded system?
- 12. Define system on chip (SOC) with an example.
- 13. Expand and brief on HDLC.
- 14. Why do you need at least one timer device in an embedded system?
- 15. What are the objectives of Kernel?
- 16. How RTOS differs from desktop OS?
- 17. What is the use of semaphores?
- 18. What are virtual Sockets?
- 19. What is the meaning of Task Service functions?
- 20. What are the queue related functions?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the various forms of memories present in a system. (7)
- (ii) Give a brief note on Exemplary Applications of each type of embedded system. (7)

(OR)

b) What are the essential structural units in

- (i) Microprocessors
- (ii) Embedded processor
- (iii) Micro controller
- (iv) DSP. Explain each of these

22. a) (i) Explain Synchronous, Iso-synchronous and Asynchronous Communications from Serial Devices (7)
- (ii) Explain the operation of UART with neat diagram. (7)

(OR)

b) Compare the characteristics of various buses used for networking of parallel devices.

23. a) (i) Explain the various alternatives for responding to a hardware source call on interrupts with necessary diagrams. (7)
- (ii) When is a RTOs necessary and when it is not necessary in the embedded system? (7)

(OR)

- b).(i) List the goals of Operating system services. (7)
- (ii) What are the strategies must be taken into account for designing the code for synchronization between the processes, ISRs, OS functions and tasks and for resource management? (7)

24. a). (i) What is process? Explain with process control block. (4)
- (ii) Define the term Task. How does a task differ from a thread? (5)
- (iii) Explain Threads and thread characteristics. (5)

(OR)

b). Explain inter process communication using signals.

25. a) Draw and explain basic system (ACVS) of an Automatic Chocolate Vending Machine.

(OR)

b) Explain the system level functions defined by any RTOS, of your choice.
