KUMARAGURU college of technology
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Register Number: …….

B.E DEGREE EXAMINATIONS: APRIL/ MAY 2016

(Regulation 2013)

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U13EIT605 : Embedded Systems

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ processors use MAC units.
   a) ASSP b) Embedded processors
   c) ASIP d) DSP
2. Embedded Systems communicate with the outside world through_____.
3. Some embedded systems provide a UI remotely with the help of _____ .
   a) RS32 b) USB
   c) LAN d) Both 1 and 2
4. The 8051 supports a maximum of _____ K bytes of program memory space.
5. What memory address in the interrupt vector table is assigned to INT0?
   a) 0000 b) 0003
   c) 001B d) 0013
6. Converted digital data is brought out on the _____ edge of the SCLK signal in ADC.
7. The primary purpose of operating system is _____.
   a) To make the most efficient use of the computer hardware b) To allow the people to use the computer
   c) To keep systems programmer employed d) To make computers easier to use.
8. A process can be_____ threaded.
9. Which of the following strategy is employed for overcoming the priority inversion problem?
   a) Abandon the notion of priorities altogether b) Have only two priority levels
   c) Allow for temporarily raising the priority of lower level priority process d) Use pre-emptive policies strictly based on priorities

10. The synchronization technique followed for sleep and wake up mechanism for mutual exclusion is _____.

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Compare RISC and CISC processor.
12. Why is an embedded processor preferred over a microprocessor or microcontroller in an embedded system?
13. Give a brief comment on the features of I^2C bus.
14. State the use of NULL pointer in C programs.
15. Give the state of RS,E and R/W when sending a command code to the LCD.
16. How many pins of the 8255 are used for ports, and how are they Categorized?
17. Distinguish premature and non premature multitasking.
18. Classify the different types of operating systems.
19. Define Deadlock.
20. What is device driver?

PART C (5 x 14 = 70 Marks)

(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Write an embedded program to create a square wave that has a high portion of 1085µS and a low portion of 15µS.Assume XTAL= 11.0592MHz. Use timer 1.

22. (a) Write an embedded C program to read the keypad and send the result to the first serial port P1.0-P1.3 connected to rows, P2.0- P2.3 connected to columns. Configure the serial port for 9600 baud rate,8 bit, and 1 stop bit.

(OR)

(b) Discuss about the interfacing of DAC to 8051 and write a program to generate a triangular wave.

23. (a) What are the design metrics of an embedded system? How are they optimized to achieve a desirable embedded product?

(OR)

(b) Explain in detail about the various design process used in embedded system.

24. (a) Discuss in detail about the different task scheduling used in RTOS.

(OR)

(b) (i) Compare operating system with Real time operating system. (7)

(ii) Illustrate the concept of multithreading with examples. (7)

25. (a) What are the mechanisms adopted for implementing shared memory? Explain each one with detail.

(OR)

(b) (i) Briefly explain about the RPC and sockets with suitable example. (7)

(ii) Describe the various task synchronization used in Task communications. (7)

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