

Register Number: .....

**B.E. DEGREE EXAMINATIONS: APRIL/MAY 2014**

(Regulation 2009)

Sixth Semester

**MECHATRONICS ENGINEERING**

MCT140: Embedded System Design

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. .... for embedded systems commonly have functions in their libraries to enable or disable interrupts.  
a) C- Compiler                      b) Assembler  
c) Pointers                              d) Registers
2. What is the name given to a part of a program if it cannot be interrupted?  
a) Task                                      b) Disable  
c) Atomic                                  d) Enable
3. USB stands for .....
- a) Universal Standard Bus              b) Universal Serial Bus  
c) Uninterrupted Standard Bus        d) Uninterrupted Serial Bus
4. There are ..... I/O ports in embedded systems.  
a) 64    b) 256  
c) 512                                        d) 128
5. The example of system for which the round robin with interrupt architecture doesn't work well includes  
a) Cordless Barcode Scanner          b) Laser Printer  
c) Communication Bridge                d) Digital multimeter.
6. Which criteria often drive the choice of architecture?  
a) Simple                                    b) Writing codes  
c) Response requirement                d) Queuing
7. TCB stands for ...  
a) Throughput Communication Block    b) Throughput Control Block  
c) Task Communication Block          d) Task Control Block
8. Message queue provides  
a) Synchronous Communication protocol    b) Asynchronous Communication Protocol

- c) Internet Protocol                      d) Ethernet protocol
9. ICE stands for .....
- a) Integrated Circuit Emulators        b) Integrated Complex Emulators  
c) In circuit Emulators                  d) In Complex Emulators.
10. A tool required to write any of your program in assembly language is  
a) Linker                                    b) Loader  
c) Cross Assembler                      d) Cross Compiler

**PART B (10 x 2 = 20 Marks)**

11. What are the main components of embedded systems?
12. Draw a timing diagram for a NAND gate.
13. What is I<sup>2</sup>C?
14. Mention some I/O standard interface.
15. List types embedded software architecture.
16. What is the function queue scheduling architecture?
17. Define RTOS.
18. What is Remote Procedure Call(RPC)?
19. Define socket.
20. What is logic analyzer? State its uses.

**PART C (5 x 14 = 70 Marks)**

21. a) Explain in detail about data sharing problem and how to solve the same problem with relevant example.

**(OR)**

- b) Explain the architecture of "System with DMA"

22. a) With necessary block diagram explain the internal architecture of PIC microcontroller.

**(OR)**

- b) Describe in detail about the UART.

23. a) Explain in detail about Round Robin with interrupts.

**(OR)**

b) Briefly explain the Real Time Operating System Architecture.

24. a) Explain the design of “A tank monitoring system” – as an embedded system with required software and hardware architecture.

**(OR)**

b) Write in detail about the Semaphores and shared data.

25. a) Explain about the assert macros.

**(OR)**

b) Explain the testing techniques used for test machine testing.

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