

## ASSIGNMENT QUESTIONS

### UNIT 1

#### INTRODUCTION TO EMBEDDED SYSTEMS

1. What is an embedded system?
2. What is the difference between VLSI and embedded systems?
3. What are the three kinds of computing engine that are utilized in embedded system?
4. How are an embedded microcomputer and supporting hardware elements interconnected?
5. An embedded system bus is typically made up of 3 separate buses;what are these?
6. What is an instruction cycle?
7. An instruction cycle comprises several steps;what are these steps?
8. What is an instruction set?

### UNIT 2

#### THE HARDWARE SIDE

1. Identify and briefly describe the major functional blocks that comprise the computing core.
2. How are the major blocks of the computing core interconnected?
3. Describe what is meant by the term microcontroller.
4. What are state variables, & state diagram?
5. What are the basic elements of state diagram?
6. What is a finite state machine, and what is its purpose?

### UNIT 3

#### MEMORIES AND MEMORY SUBSYSTEM

1. What do the terms static and dynamic allocation of memory mean?
2. What do the terms SRAM and DRAM mean,and what are the major differences between the two types of RAM?

3. What are the major differences between the following types of read only memory: ROM,PROM,EPROM,EEPROM, and FLASH?
4. What is memory bandwidth, and why is it important in reading from or writing to a memory?
5. What are the 2 major categories of memory devices that are utilized in embedded applications?
6. How does the dynamic memory management scheme called multiprogramming work?

#### **UNIT 4**

##### **EMBEDDED SYSTEMS DESIGN AND DEVELOPMENT**

1. Why are deadlines and cost important when developing a product?
2. Why is it important to consider reliability,safety,and quality in an embedded design?
3. What are the 4 life cycle models ?
4. Briefly discuss the steps that comprise the V-life cycle model.
5. What are the major differences between system requirement and design system specification?
6. What are the purpose and goals of an architectural design?

#### **UNIT 5 & 6**

##### **REAL TIME KERNELS AND OPERATING SYSTEMS**

1. What are the differences between a program and a process?
2. What are the differences between a task and a process?
3. What is a thread? What is lightweight and heavy thread?
4. What is foreground/background system?
5. What is real-time operating system?
6. What are the differences between an operating system and an operating system kernel?

**UNIT 7 & 8****PEROFRMANCE ANALYSIS AND OPTIMIZATION**

1. What is meant by the performance of an embedded application?
2. What is the difference between an optimnization and a trade off?
3. In an embedded application, what is meant by the term response time? Throughput?  
Memory loading? Time loading?
4. What is a memory map?
5. When should a performance analysis be conducted on an embedded applications?
6. What are the major factors that can affect the time performance of an instruction?