Sem: 6 **EE6602-Embedded Systems** **Class: III year EEE**

Question Bank

Book Reference:

1. G.Prabhakar and Dr.S.Selvaperumal, "**Embedded Systems**", Anuradha Publications 2015.

Unit 1

Possible Two Marks:

1. Define Embedded System
2. What are the components of Embedded Systems?
3. Difference between CISC & RISC Processors.
4. Difference between Microprocessors and Microcontrollers.
5. Compare an Embedded system and Non embedded system with examples.
6. Define System On Chip (SOC) with an example.
7. List the important consideration when selecting a processor.
8. What are the types of Embedded System?
9. Name some DSP used in embedded systems?
10. What are the various types of memory in Embedded systems?
11. What is watch dog timer?
12. What are the 2 essential units of a processor on a embedded system?
13. Define Emulator and Simulator.
14. Define Compiler and Cross compiler
15. Define DMA.
16. Define Software Timer.
17. Define RTC (Real Time Clock)?
18. Define Timeout or Timer overflow?

Possible 8 Marks & 16 Marks Questions:

1. Explain in detail about the build process for embedded systems.
2. Describe the structural units in embedded processor
3. How to select the processor based upon its architecture and applications.
4. Explain the concept of DMA
5. What are the methods in memory management and explain each.
6. Write in detail about the timer and counter.

7. With example explain the classification of embedded systems
8. Describe the working principle of In circuit emulator
9. Explain the concept of Watch dog timer
10. What is meant by Target hardware debugging & explain in detail.

Unit 2

Possible Two Marks:

1. Difference between Synchronous and Asynchronous communication.
2. What is I2C?
3. What is a CAN bus? Where is it used?
4. What is meant by UART?
5. What does UART contain?
6. Define half duplex and full duplex communication.
7. Define SPI
8. Why we go for RS-485?
9. What is meant by Device Driver?
10. List out the Frames in CAN.

Possible 8 Marks & 16 Marks Questions:

1. Compare RS232 and RS485 in detail
2. Explain the CAN bus protocol with suitable diagrams
3. Explain SPI protocol and describe its interface
4. Explain I2C bus operation and describe its interface
5. Explain the serial port devices.
6. Write about the characteristics of Synchronous and Asynchronous communications.
7. Difference between serial port and parallel port
8. Why we need device drivers for interfacing?

Unit 3

Possible Two Marks:

1. What is EDLC?
2. What is Model?
3. Define Conceptualization phase.
4. Name the 3 categories of product development.
5. Define Requirement analysis phase.
6. Explain the preliminary design and detailed design in brief.
7. Define Product design and Development phase.
8. What are the models used in EDLC?
9. Define Linear model and Prototyping model.
10. Define Spiral Model.
11. Define Deployment Phase.
12. Explain Data flow model.
13. What are the differences between Data flow model and state machine model?

Possible 8 Marks & 16 Marks Questions:

1. Explain the embedded software development process
2. Discusses the objectives of EDLC
3. What are the fundamental issues in hardware-software co-design
4. Explain the water flow design of embedded system development
5. Discuss about the various computational models in embedded design
6. Explain in detail about the different phases of EDLC
7. Mention and explain the approaches of EDLC

Unit 4

Possible Two Marks:

1. Difference between Linux and RT Linux
2. What is meant by Semaphore?
3. Define Critical Section of a Task.
4. Define Deadlock situation.
5. Define Mailbox and Message queue.
6. What is meant by a Pipe in OS?

7. Define Priority Inversion and Priority Inheritance.
8. Define Mutex.
9. What do you mean by shared data problem?
10. What is RTOS?
11. Define Process.
12. Explain in brief about the Remote Procedure Call.
13. What is meant by Exception Handling?
14. What is context switching?
15. Explain in brief about Task Creation and Task deletion.

Possible 8 Marks & 16 Marks Questions:

1. Explain process and its process control block
2. Explain task and its task control block
3. Compare process, threads and tasks
4. Write about the interrupt routines in RTOS
5. Discuss about multiprocessing and multitasking
6. Write briefly about the semaphores and mutex
7. Explain Priority inversion and Priority inheritance in detail
8. Discuss deeply about the pre-emptive and non pre-emptive scheduling with suitable diagrams.
9. Write about the features of µC/OS-II and VxWorks
10. Write in detail about the shared memory and message passing.
11. Describe the three alternative systems in three RTOS for responding a hardware source call with the diagram.

Unit 5

Possible Two Marks:

1. What is Multi-state system?
2. What is Motor Driver?
3. Define RTC.
4. Write in brief about the PIC microcontroller.
5. What is Smart Card?
6. Define Class and Objects.
7. What is synchronization in RTOS?
8. What is PWM?

Possible 8 Marks & 16 Marks Questions:

1. Discuss in deeply about the case study of washing machine design.
2. Write about the design and interface of smart card system
3. Explain the complete design and development of automotive application system