SIDDHARTH INSTITUTE OF ENGINEERING AND TECHNOLOGY :: PUTTUR (AUTONOMOUS)

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QUESTION BANK

Subject with Code : Embedded System Concepts(16EC5502)

Course & Branch: M.Tech – (ES,DECS,VLSI)   **Year & Sem:** I-M.Tech & I-Sem

UNIT –I

INTRODUCTION & EMBEDDED COMPUTING PLATFORM

1. (a) Explain about the details of other hardware units available in embedded system.   [5M]

   (b) Describe in detail about embedded system on-chip with necessary sketch.   [5M]

2. (a) Discuss about the factors to be considered for selection of processor in embedded system.   [5M]

   (b) Illustrate with example the techniques used for memory devices.   [5M]

3. (a) Write the need for software in embedded systems.   [5M]

   (b) What do you mean by system-on-chip (SOC).   [5M]

4. (a) What are the different memory devices used in embedded systems?   [5M]

   (b) Explain input output devices used in embedded systems.   [5M]

5. (a) What is system on chip? Explain embedded systems change with system on chip.   [5M]

   (b) What is processor architecture? What are the different processor architectures available for

   processor design?   [5M]

6. (a) Explain the RS232/UART communication interface.   [5M]

   (b) Explain the RS422/RS485 communication interface.   [5M]

7. (a) Explain about the components used as core of an embedded system. Also mention their

   commonly used application.   [5M]

   (b) Explain the need for software in embedded systems.   [5M]

8. (a) Compare Harvard and Princeton memory organization.   [5M]

   (b) Explain the input and output devices used in embedded systems   [5M]

9. (a) What is an embedded system? List out its applications. Explain why the processors

   play a vital role in embedded systems.   [5M]

   (b) How the software is embedded on to the system? Explain.   [5M]

10. (a) Explain the techniques used for selection of memory in embedded systems.   [5M]

    (b) Discuss the functions of CPU bus.   [5M]

UNIT-II
SURVEY OF SOFTWARE ARCHITECTURE & EMBEDDED SOFTWARE
DEVELOPMENT TOOLS

1. (a) Explain the architecture of I2C bus with neat sketch. [5M]

    (b) Compare the important features of ISA, PCI & PCI-X. [5M]

2. (a) Discuss about round robin architecture. [5M]

    (b) Write about round robin with interrupts architecture. [5M]

3. (a) Explain the section of memory in the embedded systems. [5M]

    (b) Explain embedded software development tools of host and target machines. [5M]

4. (a) What are advantages DMA based data transfer over the interrupt driven data transfer? [5M]

    (b) Write about the locations for embedded software. [5M]

5. (a) (a) Discuss the advantages and disadvantages of data transfer using serial and parallel ports. [5M]

    (b) Explain embedded software development tools of linkers. [5M]

6. (a) Write about function queue scheduling architecture. [5M]

    (b) Explain parallel port device drivers development procedure. [5M]

7. (a) Compare round robin, round robin with interrupts and function queue scheduling architecture.[5M]

    (b) Explain the parallel communication between the networked I/O devices using

    PCI bus with diagram. [5M]

8. (a) Differentiate parallel port and serial port device drivers. [5M]

    (b) Explain about the concept of context switching in multiple interrupt mechanism. [5M]

9. (a) Classify I/O devices, timers and counting devices. [5M]

    (b) What is meant by DEBUG? Write any one method in detail. [5M]

10. (a) Illustrate the debugging technique in embedded systems. [5M]

    (b) Explain selecting an architecture saving memory space. [5M]

UNIT III
RTOS CONCEPTS

1. (a) Explain interrupt service mechanism. How priority interrupts can be handled? [5M]

    (b) Discuss about the special features of SHARC processor as compared with ARM processor. [5M]

2. (a) Write a short note on processor and memory organization. [5M]

    (b) Briefly explain about pipes used in embedded systems. [5M]

3. (a) Explain the operation of semaphore in detail. [5M]

   (b) Explain pipe management function calls. [5M]

4. (a) Write about embedded system networks. [5M]

   (b) Briefly explain about different data operations used in ARM processor. [5M]

5. (a) Compare Von-Neumaan and Harvard architecture. [5M]

   (b) Discuss about various functions in semaphore. [5M]

6. (a) Explain Message Queue with an example. [5M]

   (b) How system development process can be achieved in H/W and S/W co-design? [5M]

7. (a) What is meant by kernel? Explain the kernel architecture in detail. [5M]

   (b) How many general purpose registers are in the SHARC programming model? [5M]

8. Explain the following:

   (i) Interrupt service routines. [4M]

   (ii) Semaphores. [3M]

   (iii) Message queues. [3M]

9. (a) Explain different styles of computer architecture and the nature of assembly language. [5M]

   (b) Write about the architecture of kernel in brief. [5M]

10. (a) Explain in detail about the interrupt service routine. [5M]

    (b) Write about the message queues in depth. [5M]

UNIT –IV
INSTRUCTION SETS

1. (a) Discuss the instruction set available in ARM processor with example. [5M]

   (b) Discuss about the special features of SHARC processor as compared with ARM processor. [5M]

2. (a) Write a short note on processor and memory organization. [5M]

   (b) Briefly explain about different data operations used in ARM processor. [5M]

3. (a) Explain the operation of BL instruction. Also mention the state of ARM registers

      before and after its operation. [5M]

   (b) Explain the general purpose registers in SHARC programming model. [5M]

4. (a) Explain the instruction set simulator. [5M]

   (b) Briefly explain about different data operations used in ARM processor. [5M]

5. (a) Compare Von-Neumaan and Harvard architecture. [5M]

   (b) Discuss about various data operations of the SHARC processor with example. [5M]

6. (a) Explain RAM instruction set architecture. [5M]

    (b) Differentiate ARM and SHARC processors. [5M]

7. (a) Explain any five instructions with an example. [5M]

    (b) How many general purpose registers are in the SHARC programming model? [5M]

8. (a) Explain different styles of computer architecture and the nature of assembly language. [5M]

    (b) Write in detail about the instruction set. [5M]

9. (a) Write about the preliminaries in detail. [5M]

    (b) Write about the classification of instruction. [5M]

10. (a) Explain in detail about the types of ARM processors. [5M]

    (b) Write a short note on inter process communication in embedded programming. [5M]

UNIT V
SYSTEM DESIGN TECHNIQUES & DESIGN EXAMPLES

1. (a) Explain the basic constraints of embedded system project management. [5M]

    (b) Discuss about the design issues in embedded system development process. [5M]

2. (a) Explain the need for project management in embedded system and write its advantages. [5M]

    (b) Explain how the hardware testing is performed in embedded systems by using logic analyser. [5M]

3. (a) Write the difference between target system and final embedded system. [5M]

    (b) Explain telephone PBX. [5M]

4. (a) What is meant by design methodology? Explain any two methodologies. [5M]

    (b) Explain inject printer. [5M]

5. (a) (a) Explain the various issues involved in embedded system design. [5M]

    (b) What is target system? How does the target system differ from embedded system? [5M]

6. (a) Explain system analysis and architecture design. [5M]

    (b) Write about the applications of design methodologies. [5M]

7. (a) Explain water tank monitoring system. [5M]

    (b) Write in detail about GPRS. [5M]

8. (a) Explain any one of design examples of embedded systems. [5M]

    (b) Explain design methodology requirements analysis. [5M]

9. (a) Explain personal digital assistants. [5M]

    (b) Write in detail about system design technique. [5M]

10. Explain the following:

    (i) Telephone PBX.   [4M]

    (ii) Inkjet printers.   [3M]

    (iii) Set top boxes.   [3M]

Prepared by: **P.M.VIJAYAN**.