SIDDHARTH INSTITUTE OF ENGINEERING AND TECHNOLOGY: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: EMBEDDED SYSTEM DESIGN (19EC4101)
Branch &Specialization: M.Tech –(ES& VLSI)
Year & Sem: M.Tech & I-Sem

UNIT –I
INTRODUCTION

1. (a) Explain about the details of other hardware units available in embedded system. [6M]
   (b) Describe in detail about embedded system on-chip with necessary sketch. [6M]
2. (a) Discuss about the factors to be considered for selection of processor in embedded system. [6M]
   (b) Illustrate with example the techniques used for memory devices. [6M]
3. (a) Write the need for software in embedded systems. [6M]
   (b) What do you mean by system-on-chip (SOC)? [6M]
4. (a) What are the different memory devices used in embedded systems? [6M]
   (b) Explain input output devices used in embedded systems. [6M]
5. (a) What is system on chip? Explain embedded systems change with system on chip. [6M]
   (b) What is processor architecture? What are the different processor architectures available for processor design? [6M]
6. (a) Explain the design process of embedded systems. [6M]
   (b) What are the programming languages used in embedded systems? [6M]
7. (a) Explain about the components used as core of an embedded system. Also mention their commonly used application. [6M]
   (b) Explain the need for software in embedded systems. [6M]
8. (a) Explain the classification of embedded systems. [6M]
   (b) Explain the input and output devices used in embedded systems. [6M]
9. (a) What is an embedded system? List out its applications. Explain why the processors play a vital role in embedded systems. [6M]
   (b) How the software is embedded on to the system? Explain. [6M]
10. (a) Explain the techniques used for selection of memory in embedded systems. [6M]
    (b) Discuss the functions of CPU bus. [6M]

UNIT –II
EMBEDDED COMPUTING PLATFORM& SURVEY OF SOFTWARE ARCHITECTURE

1. a) Explain the concept of system bus based and IO bus based IO's for real time interfacing. [6M]
   b) Explain the concept of IO addresses of ports and devices in real time world interfacing. [6M]
2. a) Discuss the memories used in embedded systems. [7M]
   b) Explain selection of processor in embedded systems. [5M]
3. Explain the interfacing of hardware components with examples. [12M]
4. Explain the following
   a) SHARC [4M]
   b) DSP [4M]
   c) ARM processors [4M]
5. a) Explain about networked embedded systems. [7M]
   b) What are the uses of networks in embedded systems? [5M]
6. Explain the following communication protocols.
   a) RS232 &RS485 [4M]
   b) IEEE488 bus [4M]
   c) UART [4M]
7. Explain following concepts with example program.
   a) Round robin Architecture [6M]
   b) Round robin with interrupts [6M]
8. Explain following concepts with example
   a) Function queue scheduling architectures [6M]
   b) Real Time operating systems (RTOS) [6M]
9. Explain the concept of selection of architecture for saving the memory space. [12M]
10. a) Compare the software architectures. [8M]
    b) What are the advantages & disadvantages of software architectures. [4M]

UNIT –III
EMBEDDED SOFTWARE DEVELOPMENT TOOLS & RTOS CONCEPTS

1. Describe functions of compiler, linker, locator, loader, interpreter, Cross compiler & IDE. [12M]
2. Define kernel? What are the different functions handled by a general purpose kernel? [12M]
3. a) Write short notes on functions of device programmer. [7M]
   b) Explain development process and hardware and software. [5M]
4. a) Write a short note on source code engineering tool. [6M]
   b) Explain about integrated development environment (IDE). [6M]
5. Explain the target and host machines with examples. [12M]
6. a) Explain concept of linking and locating software in embedded systems. [6M]
   b) Compare files, addressing, file format. [6M]
7. Explain the concept of getting embedded software into the target system. [12M]
8. Explain the issues in hardware –software design and co-design. [12M]
9. a)Explain the architecture of the kernel. [6M]
   b) Explain the Interrupt service routines (ISRs). What are the advantages of ISR? [6M]

10. Explain the operation of following in detail
a)Semaphore. [4M]
b) Message queues [4M]
c) Pipes [4M]

UNIT –IV
INSTRUCTION SETS & DESIGNING TECHNIQUES

1. (a) Discuss the instruction set available in ARM processor with example. [6M]
   (b) Discuss about the special features of SHARC processor as compared with ARM processor. [6M]
2. (a) Write a short note on processor and memory organization. [6M]
   (b) Briefly explain about different data operations used in ARM processor. [6M]
3. (a) Explain the operation of BL instruction. Also mention the state of ARM registers before and after its operation. [6M]
   (b) Explain the general purpose registers in SHARC programming model. [6M]
4. (a)Explain the instruction set simulator. [6M]
   (b) Briefly explain about different data operations used in ARM processor. [6M]
5. (a) Compare Von-Neuman and Harvard architecture. [6M]
   (b) Discuss about various data operations of the SHARC processor with example. [6M]
6. (a) Write about the preliminaries in detail. [6M]
   (b) Write about the classification of instruction. [6M]
7. (a) Explain RAM instruction set architecture. [6M]
   (b) Differentiate ARM and SHARC processors. [6M]
8. (a) What is meant by design methodology? Explain any two methodologies. [6M]
   (b) Explain design methodology requirements analysis. [6M]
9. (a)Explain system analysis and architecture design. [6M]
   (b) Write about the applications of design methodologies. [6M]
10. (a) Explain the specifications of system design techniques. [6M]
    (b)Write in detail about system design technique. [6M]

UNIT –V
DESIGN EXAMPLES

1. (a) Explain the specifications of telephone PBX [4M]
   (b) Write in detail about telephone PBX. [4M]
   (c) What are the advantages of telephone PBX? [4M]
2. (a)Explain ink jet printer [4M]
   (b) What are the advantages of ink jet printer. [4M]
3. Write in detail about GPRS& mention its advantages & disadvantages. [12M]
4. Explain how a personal digital assistant is making our life easier. [12M]
5. Explain about water tank monitoring system in real time with neat block diagram. [12M]
6. Write the pros and cons of following
   a) Water tank monitoring system
   b) PDA's
   c) Ink Jet printer
7. What is set top box? Explain in detail about set top boxes. [12M]
8. Explain the following:

(i) Telephone PBX. [4M]

(ii) Inkjet printers. [4M]

(iii) Set top boxes. [4M]

9. With help of neat block diagram explain the design technique of Ink jet printer. [12M]

10. a)With help of neat block diagram explain the design technique of PDA. [6M]

b) With help of neat block diagram explain the design technique of Set Top boxes & mention different types. [6M]

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