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

Subject with Code : Embedded System Design (20EC4101)   **Course & Branch**: M.Tech-VLSI

Year & Sem: I-M.Tech & I-Sem   **Regulation:** R20

UNIT –I
INTRODUCTION

1	a) Explain about the details of other hardware units available in embedded system.	[L2][CO1]	**[6M]**
	b) Explain about embedded system on-chip with necessary sketch.	[L2][CO1]	**[6M]**
2	a) Discuss the factors to be considered for selection of processor in embedded system.	[L6][CO1]	**[6M]**
	b) Illustrate with example the techniques used for memory devices.	[L2][CO1]	**[6M]**
3	a) Explain the need for software in embedded systems.	[L2][CO1]	**[8M]**
	b) What do you mean by system-on-chip (SOC)?	[L1][CO1]	**[4M]**
4	a) What are the different memory devices used in embedded systems?	[L1][CO1]	**[6M]**
	b) Explain input output devices used in embedded systems.	[L2][CO1]	**[6M]**
5	a) What is system on chip? Explain embedded systems change with system on chip.	[L1][CO1]	**[6M]**
	b) What is processor architecture? What are the different processor architectures available for processor design?	[L1][CO1]	**[6M]**
6	a) Explain the design process of embedded systems.	[L2][CO1]	**[7M]**
	b) What are the programming languages used in embedded systems.	[L1][CO1]	**[5M]**
7	a) Explain about the components used as core of an embedded system. Also mention their commonly used application.	[L2][CO1]	**[6M]**
	b) Explain the need for software in embedded systems.	[L2][CO1]	**[6M]**
8	a) Explain the classification of embedded systems.	[L2][CO1]	**[6M]**
	b) Explain the input and output devices used in embedded systems	[L2][CO1]	**[6M]**
9	a)What is an embedded system? List out its applications. Explain why the processors play a vital role in embedded systems.	[L1][CO1]	**[6M]**
	b) How the software is embedded on to the system? Explain.	[L1][CO1]	**[6M]**
10	a) Explain the techniques used for selection of memory in embedded systems.	[L2][CO1]	**[6M]**
	b) Discuss the functions of CPU bus.	[L6][CO1]	**[6M]**

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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.	[L2][CO2]	**[6M]**
	b) Explain the concept of IO addresses of ports and devices in real time world interfacing.	[L2][CO2]	**[6M]**
2	a) Discuss the memories used in embedded systems.	[L6][CO2]	**[7M]**
	b) Explain selection of processor in embedded systems .	[L2][CO2]	**[5M]**
3	Explain the interfacing of hardware components with examples.	[L2][CO2]	**[12M]**
4	Explain the following i) SHARC ii) DSP iii) ARM processors	[L2][CO2]	**[12M]**
5	a) Explain about networked embedded systems.	[L2][CO2]	**[8M]**
	b) What are the uses of networks in embedded systems?	[L1][CO2]	**[4M]**
6	Explain the following communication protocols. i) RS232 &RS485 ii) IEEE488 bus iii) UART	[L2][CO2]	**[12M]**
7	Explain following concepts with example program i) Round robin Architecture ii) Round robin with interrupts	[L2][CO2]	**[12M]**
8	Explain following concepts with example i) Function queue scheduling architectures ii) Real Time operating systems (RTOS)	[L2][CO2]	**[12M]**
9	Explain the concept of selection of architecture for saving the memory space.	[L2][CO2]	**[12M]**
10	a) Compare the software architectures.	[L4][CO2]	**[6M]**
	b) What are the advantages & disadvantages of software architectures?	[L1][CO2]	**[6M]**

UNIT-III

EMBEDDED SOFTWARE DEVELOPMENT TOOLS & RTOS CONCEPTS

1	Describe functions of compiler, linker, locator, loader, interpreter, Cross compiler & IDE	[L1][CO3]	**[12M]**
2	Define kernel? What are the different functions handled by a general purpose kernel? Explain it.	[L1][CO3]	**[12M]**
3	a) Explain about functions of device programmer. b) Explain development process and hardware and software.	[L2][CO3] [L2][CO3]	**[6M]** **[6M]**
4	a) Explain about source code engineering tool. b) Explain about integrated development environment (IDE).	[L2][CO3] [L2][CO3]	**[6M]** **[6M]**
5	Explain the target and host machines with examples .	[L2][CO3]	**[12M]**
6	a) Explain concept of linking and locating software in emebedded systems. b) Compare files, addressing, file format.	[L2][CO3] [L4][CO3]	**[6M]** **[6M]**
7	Explain the concept of getting embedded software into the target system.	[L2][CO3]	**[12M]**
8	Explain the issues in hardware –software design and co-design.	[L2][CO3]	**[12M]**
9	a) Explain the architecture of the kernel. b) Explain the Interrupt service routines (ISRs). What are the advantages of ISR?	[L2][CO3] [L2][CO3]	**[6M]** **[6M]**

10	Explain the operation of following in detail
	  i) Semaphore.
	  ii) Message queues
	  ii) Pipes
		[L2][CO3]	**[12M]**

UNIT-IV

INSTRUCTION SETS & DESIGNING TECHNIQUES

1	a) Discuss the instruction set available in ARM processor with example.	[L6][CO4]	**[6M]**
	b) Discuss about the special features of SHARC processor as compared with ARM processor.	[L6][CO4]	**[6M]**
2	a) Write a short note on processor and memory organization.	[L1][CO4]	**[6M]**
	b) Explain about different data operations used in ARM processor.	[L2][CO4]	**[6M]**
3	a) Explain the operation of BL instruction. Also mention the state of ARM registers before and after its operation.	[L2][CO4]	**[6M]**
	b) Explain the general purpose registers in SHARC programming model.	[L2][CO4]	**[6M]**
4	a) Explain the instruction set simulator.	[L2][CO4]	**[5M]**
	b) Explain about different data operations used in ARM processor.	[L2][CO4]	**[7M]**
5	a) Compare Von-Neumaan and Harvard architecture.	[L4][CO4]	**[6M]**
	b) Discuss about various data operations of the SHARC processor with example.	[L6][CO4]	**[6M]**
6	a) Write about the preliminaries in detail.	[L1][CO4]	**[6M]**
	b) Write about the classification of instructions.	[L1][CO4]	**[6M]**
7	a) Explain RAM instruction set architecture.	[L2][CO4]	**[6M]**
	b) Differentiate ARM and SHARC processors.	[L4][CO4]	**[6M]**
8	a) What is meant by design methodology? Explain any two methodologies	[L1][CO4]	**[4M]**
	b) Explain design methodology requirements analysis	[L2][CO4]	**[8M]**
9	a) Explain system analysis and architecture design.	[L2][CO4]	**[6M]**
	b) Write about the applications of design methodologies.	[L1][CO4]	**[6M]**
10	a) Explain the specifications of system design techniques.	[L2][CO4]	**[6M]**
	b) Write in detail about system design technique.	[L1][CO4]	**[6M]**

UNIT-V

DESIGN EXAMPLES

1	a) Explain the specifications of telephone PBX. b) Write in detail about telephone PBX. c) What are the advantages of telephone PBX ?	[L2][CO5] [L2][CO5] [L1][CO5]	**[4M]** **[4M]** **[4M]**
2	a) Explain ink jet printer b) What are the advantages of ink jet printer?	[L2][CO5] [L1][CO5]	**[6M]** **[6M]**
3	Explain about GPRS & mention its advantages & disadvantages.	[L2][CO5]	**[12M]**
4	Explain how personal digital assistants is making our life easier.	[L2][CO5]	**[12M]**
5	Explain about water tank monitoring system in real time with neat block diagram.	[L2][CO5]	**[12M]**
6	Write the pros and cons of following a) Water tank Monitoring system b) PDA's c) Ink Jet printer	[L1][CO5]	**[12M]**
7	What is set top box? Explain in detail about set top boxes.	[L1][CO5]	**[12M]**
8	Explain the following: (i) Telephone PBX. (ii) Inkjet printers. (iii) Set top boxes.	[L2][CO5]	**[12M]**
9	Explain the design technique of Ink jet printer with help of neat block diagram.	[L2][CO5]	**[12M]**
10	a) Explain the design technique of PDA with help of neat block diagram. b) Explain the design technique of Set Top boxes & mention different types with help of neat block diagram.	[L2][CO5] [L2][CO5]	**[6M]** **[6M]**

Prepared by:

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