

B.E. Semester-VII (E.C.) Question Bank

(Embedded Systems)

All questions carry equal marks (10 marks)

Q.1	[A] How does Embedded System differ from normal desktop computing system? [B] List and explain various ARM processor modes.
Q.2	[A] List the advantage and disadvantage of RISC and CISC architecture. [B] Model the digital camera using detail diagram.
Q.3	Explain CAN at Physical layer; Data Link layer and Bus Arbitration. How does it differs from 12C bus.
Q-4	What are real time systems? Explain hard, soft and firm real time systems giving examples.
Q.5	[A] Explain with an example how watchdog timer can be used for implementing dependable embedded applications. [B] What are the advantages and limitations of having bus in Embedded Systems?
Q.6	[A] When do you need to have a RTOS in Embedded System? [B] Write a short note on RTOS.
Q.7	Write the short note on the following. [A] ARM Interrupt processing. [B] Bus Mastering
Q.8	Draw and explain A successive refinement development model and the spiral development model in detail.
Q.9	How do you write Device driver? Explain the steps involved in writing the device driver.
Q.10	[A] Classify the embedded systems with five examples of each class. [B] What do you understand by code density? What are the architectural features of ARM that help in increasing the code density?
Q.11	[A] How does general purpose OS differ from RTOS. [B] Write short note on ARM Register Set.
Q.12	Explain 12C at Physical layer: Data Link layer and Bus Arbitration. How does it differ from CAN bus?
Q.13	"In dynamic power management of an embedded system it is required to consider the power saving against the speed of resuming" Explain with example.
Q-14	Which bus will you prefer for each of the following systems? Give reasons for your answer. 1. Automobile with distributed sensors and actuators talking to central controller. 2. PC talking to local on board Sound card. 3. Laptop to be connected to device which requires power supply. 4. To set up Ethernet like network among devices. 5. Connecting circuits in a Television.

Q.15	[A] Write short note on Device Driver. [B] Write short note on USB Protocol.
Q.16	What are Real Time Systems? Explain with example hard. soft and firm Real Time Systems.
Q.17	[A] What are the advantages and limitations of having a Bus in an Embedded System.
Q.18	[A] Model the washing machine using block diagram and explain in detail. [B] Model the Digital Camera using block diagram and explain in detail.
Q.19	[A] What are design members of Embedded System? How are they related? [b] Explain how Power saving against speed of resuming is a major issue in embedded system design.
Q.20	You need to design a mobile phone. The phone supports following functions (i) Dials/Receives calls: (ii) Sends/Receives messages: and (iii) Allows user to maintain messages, do various settings like network selection, sound selection, set phone profile. Provide a conceptual design of the system using appropriate choice of processor and peripherals. Your design should include hardware block diagram: software algorithm and the bus requirements of the system with appropriate justification. Does the system require an OS? Justify your answer.
Q.21	You need to design a digital camera. The camera supports following functions: (i) Image/Video capture (ii) Storing/Displaying Images/Video (iii) Transferring Image/Video on storage device like PC (iv) Compressing Images/Video. Provide a conceptual design of the system using appropriate choice of processor and peripherals. Your design should include hardware block diagram: software algorithm and the bus requirements of the system with appropriate justification. Does the system require an OS? Justify your answer.
Q.22	Explain with an example the advantages of Distributed Embedded System environment.
Q.23	In each circumstance below, which will be better shared memory or message passing communication? Give reasons for your answer. [1] A cascaded set of digital filters. [2] A digital video decoder and a process that overlays user menus on the display.
Q.24	In each circumstance below, which will be better shared memory or message passing communication? Give reasons for your answer. [1] A software modem process and a printing process In a fax machine. [2] A home automation system for controlling home appliances like light. fan. oven etc.
Q.25	Explain periodic and aperiodic process. Give examples of two embedded system that require both these processes.
Q.26	Write short note on semaphores. How they are helpful for embedded systems?
Q.27	Draw and explain 3-stage pipe line structure for ARM Processor.
Q.28	Draw and explain 5-stage pipe line structure for ARM Processor.
Q.29	What is pipeline structure? How they are helpful for embedded system? Explain with example.

Q.30	List and explain Thumb data processing instructions with examples.
Q.31	Draw and Explain ARM programmer's model.
Q.32	List and explain ARM data processing instructions with examples.
Q.33	List and explain ARM data transfer instructions with examples.
Q.34	List and explain ARM control flow instructions with examples.
Q.35	List and explain all Branch instructions available in ARM processor with examples.
Q.36	Draw and Explain Thumb programmer's model.
Q.37	List and explain Thumb single register and multiple registers data transfer instructions with examples.
Q.38	Explain all types of system buses used for an embedded systems.
Q.39	[A] Compare and Contrast: RMS and EDF scheduling policies for Real Time systems. [B] Compare and Contrast: USB and CAN Protocol
Q.40	[A] Explain giving an example Hardware-Software partitioning in Embedded System Design. [B] Compare and Contrast: USB and I2C Protocol
