K.Ramakrishnan College of Technology

(An Autonomous Institution)

Samayapuram, Tiruchirappalli.

Department of Electronics and Communication Engineering

III year- VI Semester- EE8691 – Embedded Systems

Problems

Unit I	INTRODUCTION TO EMBEDDED SYSTEMS

Introduction to Embedded Systems –Structural units in Embedded processor , selection of processor & memory devices- DMA – Memory management methods- Timer and Counting devices, Watchdog Timer, Real Time Clock, In circuit emulator, Target Hardware Debugging.

Q.No.	Questions	Level	Competence
1	Explain the possible steps are involved in build process of embedded control systems.	K2	Understand
2	Discuss In-Circuit Emulator and Watch dog Timer	K2	Understand
3	Describe the structural units of embedded processor.	K2	Understand
4	Explain the following Embedded Hardware Units (i) Power Source (ii) Clock Oscillator Unit.	K2	Understand
5	What is meant by Memory? Explain the different types of memory devices (i) ROM (ii) RAM	K2	Understand
6	Explain the various form of memories present in an embedded systems	K2	Understand
7	How to select the processor based upon its architecture and applications.	K2	Understand
8	With a neat diagram explain the working of Direct Memory Access (DMA) with architecture and timing diagram	K2	Understand
9	Discuss in detail about the timer and counter devices in Embedded System .	K2	Understand
10	Explain the classification of embedded systems with examples.	K2	Understand
11	Describe the following terms (i) Embedded System versus Computing System (iii) Classification of Embedded System (iv)Basic Model of Embedded System.	K2	Understand
12	Mention the necessary hardware units that must be present in the embedded systems.	K2	Understand
13	Discuss in detail about (i) In Circuit Emulator (ii) Target Hardware Debugging	K2	Understand
14	In Embedded System how the microprocessor is distinguished with Micro Controller.	K2	Understand
15	Justify the Need of debugging and types of debugging.	K2	Understand

Unit II	EMBEDDED NETWORKING

Embedded Networking: Introduction, I/O Device Ports & Buses– Serial Bus communication protocols RS232 standard – RS422 – RS 485 - CAN Bus -Serial Peripheral Interface (SPI) – Inter Integrated Circuits (I2C) –need for device drivers.			
1	Illustrate the synchronous and asynchronous communications from serial devices	K2	Understand
2	Describe the functions of a typical parallel I/O interface with a neat diagram.	K3	Apply
3	Discuss the types of serial port devices	K2	Understand
4	Compare the advantages and disadvantages of data transfer using serial and parallel port/device	K2	Understand
5	Compare the RS232C and RS485 serial interfaces.	K3	Apply
6	Elaborate the architecture of CAN with necessary sketches	K2	Understand
7	Describe one type of serial communication bus with its communication protocol	K3	Apply
8	Explain the classification of IO devices.	K3	Apply
9	Explain the functionalities of RS 232 and RS 485 standard serial interface with neat diagram.	K2	Understand
10	Explain in detail about SPI communication protocol and its interfacing techniques?	K2	Understand
11	Demonstrate the signal using a transfer of byte when using the I2C bus and also the format of bits at the I2C bus with diagram	K2	Understand
12	Explain how serial data communication is preferred in I2C bus and CAN bus.	K3	Apply
13	What are the different I/O devices used in embedded systems. Explain it.	K2	Understand
14	Explain with all necessary sketches to enable intra communications among peripherals using I2C bus	K2	Understand
15	Compare the buses used in serial communication	K3	Understand