

MODEL QUESTION PAPER
EMBEDDED SYSTEM AND REAL TIME OPERATING SYSTEM
(5131)

[Maximum Marks: 75]

[Time: 3 Hours]

PART-A

I. Answer *all* the following questions in one word or one sentence. Each question carries 'one' mark.

(9 x 1 = 9 Marks)

Module Outcome Cognitive level

1.	The data type in AVR C that takes a value in the range 0 to 255 is -----	M2.01	U
2.	----- is used by the CPU to point to the address of the next instruction to be executed.	M1.03	U
3.	Write the AVR C statement to set port B to function as output.	M2.02	A
4.	----- register is used for setting the modes of operation of a timer.	M2.06	A
5.	Give the instruction used to enable and clear interrupts globally.	M2.08	A
6.	In reading the columns of a keyboard matrix, if no key is pressed we should get all values as.....	M3.01	R
7.	LM34 is a -----.	M3.02	R
8.	Name different types real time Operating System	M4.02	R
9.	Define Process.	M4.03	R

PART-B

II. Answer any *eight* questions from the following. Each question carries 'three' marks.

(8 x 3 = 24 Marks)

Module Outcome Cognitive level

1.	Differentiate microprocessor and microcontroller	M1.01	U
2.	Explain about real time embedded systems. Also give its classification.	M4.02	U
3.	Write about AVR Status Register and specify the function of each bit in the status register..	M1.03	U
4.	Write an AVR C program to toggle only PORTB.4 bit continuously with a delay.	M2.02	A
5.	Draw TIFR register and mention the function of each bit.	M2.05	U
6.	Compare and Contrast interrupt and polling.	M2.07	U
7.	Draw the block diagram of interfacing LM34 temperature sensor with ATmega32.	M3.02	U
8.	Explain ADC and its major characteristics.	M3.02	R
9.	Explain the structure of a process in operating system.	M4.03	U
10.	Explain the role of device drivers in embedded operating systems.	M4.07	U

PART-C

Answer all questions. Each question carries 'seven' marks

(6 x 7 = 42 Marks)

Module Outcome Cognitive level

III.	Write the different criteria for choosing a microcontroller. OR	M1.01	U
IV.	Describe the basic block diagram of AVR microcontroller.	M1.03	U
V.	Toggle all the bits of Port B 200 times using delay function (_delay_ms). OR	M2.02	A
VI.	Write an AVR C program to send out the value 44H serially one bit at a time via port C, pin 3. The MSB should go out first.	M2.03	A
VII.	Describe the purpose of ISR and explain the steps in executing an Interrupt. OR	M2.07	U
VIII.	Describe about the registers associated with AVR timer.	M2.05	U
IX.	Explain the interfacing keyboard with AVR with the help of diagram. OR	M3.01	U
X.	Describe the interfacing of temperature sensor LM34 to AVR.	M3.02	U
XI.	Explain the features of General Purpose Operating System (GPOS) and Real Time Operating System (RTOS) OR	M4.02	U
XII.	Explain any four functionalities of real time operating system.	M4.01	U
XIII.	Outline the key concepts of Task, Process and threads OR	M4.03	U
XIV.	Explain the functional requirements for choosing RTOS.	M4.08	U
