Reg. No.															

Question Paper Code	13361

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024 (JAN - 2025)

First Semester

M.E - Embedded Systems Technologies

24PESPC104 - SOFTWARE FOR EMBEDDED SYSTEMS

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Compare C and Assembly Language Programming.	2	K2	CO1
2.	Mention the different types of expressions in C, and how are they evaluated.	2	K2	CO1
3.	Name the main stages of the C programming tool chain in Linux.	2	K1	CO2
4.	How memory management functions work in GNU C Library?	2	K2	CO2
5.	Write the importance of header files in C projects.	2	K1	CO3
6.	Outline the importance of common timer mode used in embedded systems.	2	K2	CO3
7.	Define an operating system with an example.	2	K1	CO4
8.	Classify any four scheduling algorithms in Embedded OS.	2	K2	CO4
9.	What is a dictionary in Python, and how is it different from a list?	2	K1	CO5
10.	Write a python code for handle exceptions.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Write an assembly language program and C programming to turn an LED on and off with a delay and explain each step briefly	13	K2	CO1
		OR			
	b)	Compare and contrast the working of branching instructions like JMP, JE, JNE work in assembly language program and C programming	13	K2	CO1
12.	a)	Classify and describe the main stages of the C compilation process with examples.	13	K2	CO2
		OR			
	b)	Describe the purpose of the GNU configure and the role of autoconf, automake and libtool in the GNU build system, and explain how it assists in software portability.	13	K2	CO2

13.	a)	Explain the use of pointers in Embedded C programming and their importance in direct hardware manipulation. Provide an example of accessing hardware registers.	*13*	*K2*	*CO3*
		OR			
	b)	Elaborate the impact of real-time constraints on the design and implementation of timeout mechanisms in embedded systems. Include considerations for critical applications like automotive or medical devices.	*13*	*K2*	*CO3*
14.	a)	Describe the architecture and functionality of sEOS and discuss its features and the scenarios where it can be effectively utilized with suitable diagram.	*13*	*K2*	*CO4*
		OR			
	b)	Illustrate different memory allocation strategies for sEOS when implementing serial communication features. Compare static and dynamic memory allocation in terms of efficiency, fragmentation, and suitability for embedded systems.	*13*	*K2*	*CO4*
15.	a) i)	Write a Python code using a class that represents a simple bank account. Include methods for deposit, withdrawal, and checking balance. Ensure appropriate error handling for invalid operations.	*7*	*K2*	*CO5*
	ii)	Identify the main methods available in Python for dictionaries with an example.	*5*	*K2*	*CO5*
		OR			
	b) i)	Define lambda functions in Python and explain their use cases and provide examples of how to define and invoke a lambda function.	*7*	*K2*	*CO5*
	ii)	Explain the role of the Python interpreter in executing Python code. What are the main types of Python interpreters available?	*5*	*K2*	*CO5*

PART - C (1× 15 = 15 Marks)

16.	a)	Explain Recursive function. How does it work? Illustrate with an example.	*15*	*K2*	*CO6*
		OR			
	b)	Write a python program to find the missing number in an array.	*15*	*K2*	*CO6*