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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 70019

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024

Fifth Semester

Computer Science and Technology

U19EC528 - EMBEDDED SYSTEMS DESIGN

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q. No.	Questions	Marks	KL	CO
1.	What is an embedded system? What are the components of an embedded system?	2	K2	CO1
2.	Mention the points to be considered while connecting power supply rails with embedded system.	2	K2	CO1
3.	Write the input/output ports of LPC2148.	2	K2	CO2
4.	Which functional unit of ARM family architecture upgrades the address register contents before the core reads or writes the next register value from the memory location?	2	K1	CO2
5.	Enumerate the importances of the PWM module in a microcontroller?	2	K3	CO3
6.	What is a watchdog timer?	2	K3	CO3
7.	Design a simple system using LED.	2	K3	CO4
8.	How will interfacing be done by LCD?	2	K2	CO4
9.	Define RTOS. What is its concept?	2	K1	CO5
10.	Describe in brief the types of RTOS.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q. No.	Questions	Marks	KL	CO
11. a)	i. Explain the device driver and interrupt servicing mechanism in an embedded device. ii. Explain in detail characteristics and challenges associated with embedded systems.	13	K2	CO1
	(OR)			
b)	i. Explain interrupt latency and its solutions in detail. ii. Explain with examples of small-scale, medium-scale, and sophisticated embedded systems.	13	K3	CO1
12. a)	Discuss in detail the features of LPC2148.	13	K2	CO2
	(OR)			
b)	i. How do you calculate the PLL frequency? Explain with an example. ii. Mention the associated registers with PLL.	13	K2	CO2
13. a)	Explain about UART, I2C, and SPI.	13	K3	CO3
	(OR)			
b)	Explain the concept of analog-to-digital converter and digital-to-analog converter of the microcontroller, with diagrams.	13	K2	CO3
14. a)	Explain the design concept of an Elevator control mechanism using a sequential model.	13	K3	CO4
	(OR)			
b)	Explain the HCFSM model in an elevator control system.	13	K3	CO4
15. a)	Explain cooperative scheduling and round-robin scheduling with a suitable diagram.	13	K3	CO5
	(OR)			
b)	Explain about interrupt routines in an RTOS environment, with examples.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q. No.	Questions	Marks	KL	CO
16. a)	Explain in detail the case study on IoT-based Weather monitoring with examples.	15	K3	CO4
	(OR)			
b)	Explain in detail the case study on IoT-based Smart Irrigation with examples.	15	K3	CO4