

Q. P. Code: 26548

Time: 3 hours

Marks: 80

1. Solve the following questions for 5 marks

- a. Explain the significance of letters and numbers in - 'ARM7TDMI'.
- b. Explain thumb mode of ARM7TDMI core and compare it with normal mode.
- c. Explain pipelining feature in ARM7TDMI architecture. Justify advantages and disadvantages.
- d. Explain a watchdog and explain its uses.

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a. Design a car control embedded system with the following specifications / features:-
Draw Block Diagram, Flowchart and Real time challenges

- i. It is an electric car
- ii. Steering angle, acceleration, direction (R/F) are inputs from driver
- iii. It control speed, Left/Right steering, Forward/Backward direction
- iv. Displays speed

b. Explain the following ARM7TDMI architecture based instructions as well as their implications.

- i. BL Square
- ii. ADD R0, R1,R2,LSL#3
- iii. MOVEQS R1,R0
- iv. LDR R8,[R3,#4]
- v. STR R2,[R1,#0x100]

a. Explain the programmer's model (register structure) in ARM7TDMI architecture.

b. Explain priority inversion problems and solutions

a. What is the Role of RTOS in embedded systems? Describe some functions of FreeRTOS to implement the functions.

b. Write a C code to initialize the ADC of LPC2148 and send it through the UART

a. Explain the timer module of LPC2148

b. Explain Semaphore, mutex, MessageBox and Queue

a. Explain Interrupt handling in ARM7TDMI

b. Explain the ARM9 architecture
