MANIPAL INSTITUTE OF TECHNOLOGY
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A Constituent Institution of Manipal University

IV SEMESTER B.TECH. (COMPUTER AND COMMUNICATION ENGINEERING)
MAKEUP EXAMINATIONS, JUNE 2017

SUBJECT: EMBEDDED SYSTEM DESIGN [ICT 2253]

REVISED CREDIT SYSTEM
19/06/2017

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

❖ Answer ALL the questions.

❖ Missing data, if any, may be suitably assumed.

1A.	Define the term "Addressing mode". Explain various addressing modes of ARM microcontroller with suitable examples.	05
1B.	Write a C program to generate a cosine waveform with peak to peak amplitude of 2 volts and frequency 2 KHz at A_{OUT} (P0.26, function-3).	03
1C.	How do you to set the baud rate for serial communication in ARM microcontroller?	02

2A.	Write an assembly language program to find the GCD of two 32-bit binary numbers available in the code memory and store the result in the data memory.	05
2B.	Explain the necessity of LER and Shadow registers in PWM programming.	03
2C.	Differentiate between	
	i) Stepper motor and DC motor.	02
	ii) Interrupt and Polling	

3A.	With a neat diagram, explain how 4x4 matrix keyboard can be interfaced to ARM microcontroller.	05
3B.	What is multiplexed seven segment display? What are its advantages?	03
3C.	Compare and contrast	
	i) Burst and software mode of an ADC	02
	ii) Carry flag and overflow flag	

4A.	Write an embedded C program using interrupts to generate a square waveform of frequency 200 kHz on P2.11 using TIMER-0 while simultaneously displaying the number of pulses received at EINT0 (P2.10, function 2) on the seven segment display. (PCLK = 3 MHz)	02

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4B. What do you mean by "fully ascending stack"? Explain the role of LDMDB and STM instructions in implementing a fully descending stack with an appropriate example.   03

4C. Bring out the differences between CISC and RISC family of microcontrollers.   02

5A. Explain how the speed of a DC motor can be controlled using Pulse Width Modulation.   05

5B. For the circuit of Fig.Q.5B shown below, write an embedded C program using interrupts (Function-01) to turn ON the LED whenever the switch is pressed and turn OFF the LED whenever the switch is released.
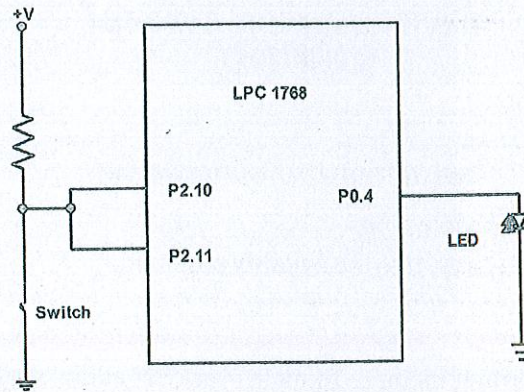

Fig.Q.5B   03

5C. Differentiate between level triggered and edge interrupts. How is it configured?   02