

(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER BTECH. (INFORMATION TECHNOLOGY) END SEMESTER EXAMINATIONS, DECEMBER 2021 – JANUARY 2022 SUBJECT: EMBEDDED SYSTEMS [ICT 3158] REVISED CREDIT SYSTEM

(28/12/2021)

Instructions to candidates

TIME: 75+10 minutes

MAX. MARKS: 20

- Answer **ALL** questions.
- Missing data, if any, may be suitably assumed.

		Μ	С	Α	B
1A.	Write an embedded C program using interrupts to generate a square waveform of	5	CO3	1,2,	3
	frequency 10 kHz and duty cycle 75% on P2.3 using TIMER-0 while simultaneously		,	3,4,	
	generating a sine waveform with peak-to-peak amplitude of 2.5 volts and frequency of		CO4	5,6	
	10 KHz at A_{OUT} (P0.26, function-3). (PCLK = 3 MHz)				
1B.	Differentiate between single edge and double edge PWM. Explain how the intensity of	3	CO3	1.2.	3
	a LED can be controlled using single edge PWM.			3	
1C.	Explain the following ARM instructions with an example for each:	2	CO3	1.2.	2
	(i) RSBGT (ii) RRX			3	
2A.	Write an assembly language program to convert a 4-digit BCD number available in the	5	CO4	1,2,	3
	code memory into hexadecimal, using a function which converts a 2-digit BCD number			3,4,	
	into hexadecimal. Store the result in the data memory.			5,6	
2B.	Write an ambedded C program to simulate a 4.2 anoder assuming P0.0 P0.3 as inputs	3	CO3	1,2,	3
	and P0 4 P0 5 as output lines		,	3,4,	
	and r 0.4-r 0.5 as output lines.			5,6	
2C.	What is "Double Buffering" in DAC? Explain the role of various Special Function	2	CO3	1,2,	2
	Registers in double buffering.			3	