Total No. of Questions – [3]

Total No. of Printed Pages: 2

G.R. No.	

PAPER CODE	U223-252 (EOR)

MAY 2023 (ENDSEM) EXAM

S.Y. B. TECH. (E&TC) (SEMESTER - II)

COURSE NAME: Microcontroller and Applications

COURSE CODE: ETUA22202

(PATTERN 2020)

Time: [1Hr] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Use of scientific calculator is allowed**
2) **Use suitable data where ever required**
3) **All questions are compulsory**

NOTE BT levels -1: Remember, 2: Understand, 3: Apply, 4. Analyze, 5. Create

Question No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Sketch the interfacing of 4x4 matrix keyboard with 8051 microcontrollers with the explanation.	[4]	[CO4]	BL-2 (Understand)
	b) Interface stepper motor which runs at 12 V and 1 Amp with 89c51. Write an ALP to rotate the motor in Full step mode.	[6]	[CO4]	BL-3 (Apply)
	OR			
	c) Interface 16x2 LCD with 8051 microcontrollers in 8-bit mode and write an ALP to display **"WEL-COME"** on the 1st line initial position and **"TO VIIT"** on the second line of LCD. Assume the strings are stored in Program memory.	[6]	[CO4]	BL-3 (Apply)
Q.2	a) Compare I2C, SPI protocols with respect to speed and hardware implementation.	[4]	[CO5]	BL-2 (Understand)
	b) Write an ALP to transfer serially 'WELCOME TO E&TC DEPT' continuously with baud rate of 4800. Inspect the use of SMOD bit to calculate Baud rate.	[6]	[CO5]	BL-4 (Analyze)
	OR			

	c) Interface RTC using IIC protocol with ATmega32, and Illustrate various steps to initialization of hours, minutes, and seconds for initialization of result 12:45:45.	**[6]**	[CO5]	BL-4 (Analyze)
Q.3	a) Justify how Atmega32 power down modes are useful for the battery operated safe locker application to retain battery for longer time.	**[4]**	[CO6]	BL-2 (Understand)
	b) Draw the interfacing diagram of the temperature sensor LM35 with AVR microcontroller and display the result on 16X2 LCD. Write the algorithm for measuring the temperature in fahrenheit.	**[6]**	[CO6]	BL-3 (Apply)
	OR			
	c) Assuming XTAL=8MHz, phase correct PWM, no prescaler, non-inverting mode, write the program in C that generate the wave for duty cycle of 50% using timer 0.	**[6]**	[CO6]	BL-3 (Apply)