



Mid – Term Examination Summer 2020
Date: 26/08/2020

Course Code: EEE413 Course Title: Microcontroller & Embedded Systems
 Prerequisite: Programming Fundamentals, Digital Logic Design Instructor: Engr. Muhammad Waqas
 Module: 6 Program: BEE Total Marks: 30 Time Allowed: 4 Hours

Note: Attempt all questions.

Q1.	(a)	Write short notes on the following with examples a) What is pull-up resistor? How do we use pull-up resistor with 8051 microcontroller? Draw the circuit diagram. b) What is pull-down resistor? How do we use pull-down resistor with 8051 microcontroller? Draw the circuit diagram. c) How many hardware timers are present in 8052? d) How many Input / Output ports are in an 89c51 microcontroller? e) What is the difference between a microcontroller and a microprocessor?	Marks 5
			CLO 1
	(b)	Convert the following to their respective bases a) $89501_{10} = ?_8$ b) $64101_{10} = ?_2$ c) $9AB3_{16} = ?_2$ d) $1110100100111_2 = ?_8$ e) $1011000011011_2 = ?_{16}$	Marks 5
			CLO 1
Q2	(a)	Code the following scenario You are asked to make an anti-burglar system using 8051 microcontroller. There must be a hidden switch on the ground which will be connected to the controller. When the switch is in OPEN state the microcontroller should have the GREEN led in the ON state and the RED led in the OFF state. When the switch is in the CLOSED state the microcontroller should have the RED led in the ON state and the GREEN led in the OFF state. Write the code in C-language and draw the circuit diagram.	Marks 7
			CLO 1
	(b)	Code the following scenario A parking lot must be automated by counting each car entering the lot and leaving the lot. The lot has a total space for 99 cars at a time. A display should be seen to the parking lot worker on how many cars are parked currently. On each entering of car into the lot must increment the display and on each leaving of car must decrement the display. Write the code in C-language and draw the circuit diagram.	Marks 7
			CLO 1
Q3	(a)	Identify errors in the following code if any <pre>#incl <reg50.h> sbit led = P2^10; void delay(unsigned int x) { unsigned int y,z for(y=0;y<=x;y++) for(z=0;z<=1275;z++) } void main(); { while(1) { Led = 0; Delay(-350); Led = 1; Delay(-350); } }</pre>	Marks 6
			CLO 1