



## Module – 3

Q.5	a.	Explain the data types available in 8051 C programming.	6	L2	CO3
	b.	List the steps to program the Timer-0 in mode-2.	6	L1	CO3
	c.	Assume XTAL = 11.0592 MHz, develop an ALP to generate a square wave of 2 kHz frequency on pin P1.5 using Timer-1 in 16-bit mode.	8	L3	CO3

## OR

Q.6	a.	Explain TMOD register with its bit format.	6	L2	CO3
	b.	Develop a 8051 C program to toggle all the bits of Port-0 and Port-2 continuously with 250 ms delay.	6	L3	CO3
	c.	Generate a square wave with an ON time of 3 msec and an OFF time of 10 msec on all pins of Port-0. Show the calculations by assuming XTAL = 22 MHz.	8	L3	CO3

## Module – 4

Q.7	a.	List the 8051 microcontroller interrupts with their ROM locations.	5	L1	CO4
	b.	What is the difference between RET and RETI instructions? Explain why we cannot use RET instead of RETI.	5	L2	CO4
	c.	Develop an Assembly Language Program (ALP) to : i) Take data from Port-2 and send it serially and continuously. ii) Generate a square wave at P1.2 using Timer-0 in mode-1, interrupt mode. iii) When INTO is activated, Port-0 is mode 0 for a short time, to switch OFF the LEDs connected to it. The LEDs will also remain OFF if the switch connected to INTO pin (P3.2) is kept pressed.	10	L3	CO4

## OR

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Q.8	a.	Explain in detail TCON register with its bit format.	8	L2	CO4
	b.	Assume that after reset, the interrupt priority is set by the instruction "MOV IP, #00001100B". Explain the sequence in which the interrupts are serviced.	5	L2	CO4
	c.	Develop an ALP to generate two square waves: one of 5 kHz frequency at pin P1.3, and another of frequency 25 kHz at pin P2.3. Assume XTAL = 22 MHz.	7	L3	CO4

## Module – 5

Q.9	a.	A door sensor is connected to the pin P1.1 pin, and a buzzer is connected to P1.7. Develop an 8051 C program to monitor the door sensor and when it opens, sound the buzzer. Hint : You can send the buzzer by sending a square wave of a few hundred Hz.	6	L3	CO5
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	<b>b.</b>	A switch is connected to pin P1.5. Develop a C program to interface DC motor to 8051 and to monitor switch (SW) status to perform the following: i) If SW = 0, the DC motor moves with 50% duty cycle pulse. ii) If DC = 1, the DC motor moves with 25% duty cycle pulse.	6	L3	CO5
	<b>c.</b>	Develop a C program to send the letters 'V', 'T' and 'U' to LCD by interfacing it to the 8051 microcontroller. Also write the interfacing diagram.	8	L3	CO5
<b>OR</b>					
<b>Q.10</b>	<b>a.</b>	With an interfacing diagram, explain the connections of ADC-0804 to the 8051 microcontroller.	6	L2	CO5
	<b>b.</b>	The switch SW is connected to pin P0.0. Develop a 8051 C program to do the following: i) When SW = 0, the DAC output gives a triangular waveform ii) When SW = 1, the DAC output gives a ramp waveform.	6	L3	CO5
	<b>c.</b>	A switch is connected to pin P2.7. Develop a C program to monitor the status of switch (SW) and perform the following: i) If SW = 0, the stepper motor rotates in clockwise direction. ii) If SW = 1, the stepper motor rotates in counter clockwise direction.	8	L3	CO3

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