

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2172001****Date: 15/11/2018****Subject Name: Microcontrollers and Embedded Systems****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) What is embedded software? What is the purpose of a watchdog timer in embedded systems?	03
	(b) Differentiate between RISC & CISC architecture.	04
	(c) Design any micro-controller based application & explain with the help of a neat block diagram.	07
Q.2	(a) Write the steps to program Timer 1 in mode 2.	03
	(b) WAP in C to count the no. of times an interrupt is generated upon pressing of a push button connected to INT0 and display it on P2 port.	04
	(c) Draw an interfacing diagram of DC motor with 8051. WAP to generate 66% PWM signal to run the motor.	07
	OR	
	(c) Interface a 3x2 matrix keyboard motor with 8051.	07
Q.3	(a) What is the significance of RI & TI flags?	03
	(b) Explain the bit configuration of TCON register.	04
	(c) WAP in C to serially transmit the string "NEXUS" at 56kbps baud.	07
	OR	
Q.3	(a) Define step angle & Holding torque. Give relation between steps per second & rpm of motor.	03
	(b) Draw & explain 8051 connections to RS-232 port using MAX232 IC.	04
	(c) WAP in C to count pulses fed externally on T0 pin & display on P1 & P2 ports.	07
Q.4	(a) Draw the programming model of PiC18f4xx.	03
	(b) State & explain instructions related to subroutines.	04
	(c) Draw & explain the memory organization in PiC18F4xx.	07
	OR	
Q.4	(a) Explain current sourcing with example.	03
	(b) State & explain any 4 machine control instructions.	04
	(c) Explain PUSH & POP instructions with a programming example.	07
Q.5	(a) Draw internal structure of PORTB.	03
	(b) Explain bit configuration of INTCON SFR.	04
	(c) Write an Assembly language program to find an average of 8 numbers stored at address starting from 0x120 & save the answer.	07

OR

- Q.5 (a) What are the types of interrupts & interrupt sources in PIC18f? **03**
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- (b) Explain bit configuration of registers T1CON SFR. **04**
- (c) Write an Assembly language program to transfer a block of 10 **07**
data bytes from program memory address 0x010110 to data
memory addresses starting from 0x100.

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