Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2160909 **Date:17/05/2016**

Subject Name: Advance Microcontrollers

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.**

Q.1	**(a)**	Draw block diagram and enlist features of P89V51RD2.	**07**
	(b)	Which are the different modes of operation of the PCA timer? Explain PWM mode in detail with block diagram.	**07**
Q.2	**(a)**	Draw and explain block diagram of MPC 3304(ADC).	**07**
	(b)	Explain SPI control and status register and draw the machine cycle of SPI data transfer with CPHA=0	**07**
		OR	
	(b)	Write a program to design PCA module of 89V51RD2 to calculate the width of a detected pulse. The pulse must begin with a rising edge and end with a falling edge on the CEX0 pin.	**07**
Q.3	**(a)**	Enlist Advanced Interrupt Handling Modes of NVIC in P89V51RD2 and explain them in detail.	**07**
	(b)	Why Watch-dog timer is necessary for embedded systems? Explain the watchdog timer of P89V51RD2 in detail	**07**
		OR	
Q.3	**(a)**	Explain Bit-Banding Technique with suitable example.	**07**
	(b)	Write features of STM32F4xx.	**07**
Q.4	**(a)**	Explain 3stage pipelining in cortex CPU.	**07**
	(b)	Explain the comparison of round robin and round robin with interrupt software Architecture in detail.	**07**
		OR	
Q.4	**(a)**	List out different modes in which GPIO can be configured and also draw basic structure of I/O port bit.	**07**
	(b)	A push button switch is connected to pin PA0 of Port-A and a LED is connected to pin PD12 of Port-D. Write a program for STM32F4xx using CMSIS library to toggle led when a key is pressed.	**07**
Q.5	**(a)**	Explain CCON - PCA and CCAPMn - PCA registers.	**07**
	(b)	Give brief introduction of GPIOs in STM32F4xx and write features of GPIOs.	**07**
		OR	
Q.5	**(a)**	Draw and explain Multi-AHB bus matrix.	**07**
	(b)	What do you mean by enumerators? Explain its application with suitable example.	**07**

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