

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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