

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018****Subject Code:2160909****Date:04/12/2018****Subject Name:Advance Microcontrollers****Time: 02:30 PM TO 05:00 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) List out difference between I2C & SPI communication protocol. **03**
 (b) Draw the block diagram & explain the feature of P89V51RD2 IC. **04**
 (c) Explain SPI port communication with MCP3304 ADC using 8 bit segment. **07**
- Q.2** (a) Compare Von Neumann and Harvard architecture. **03**
 (b) Explain the CMOD, CCON registers of P89V51RD2 in detail. **04**
 (c) List out the various operating modes of PCA timer & explain watchdog timer mode in detail **07**
- OR**
- (c) Write a program to measure frequency of unknown signal which is applied to pin P1.4 of P89V51RD2. **07**
- Q.3** (a) Explain PWM mode of P89V51RD2 PCA timer in detail. **03**
 (b) Explain thumb-2 instruction set of ARM CORTEX. **04**
 (c) List of CPU operating Modes of ARM CORTEX & explain any two mode in detail. **07**
- OR**
- Q.3** (a) Why bit banding technique is used in ARM CORTEX. **03**
 (b) Explain system Tick timer of ARM CORTEX. **04**
 (c) List of features of STM32F4XXDSC. **07**
- Q.4** (a) Explain pointer to structure with one example. **03**
 (b) Explain reset circuit of STM32F4xx. **04**
 (c) What is the Advantage of High speed out mode? Explain this mode in detail with one sample program. **07**
- OR**
- Q.4** (a) Explain SPCR & SPSR register in detail. **03**
 (b) Explain the round robin & round robin with interrupt architecture. **04**
 (c) Explain the features of GPIO in detail. **07**
- Q.5** (a) Explain GPIO mode register in detail. **03**
 (b) Explain GPIO bit set/reset register. **04**
 (c) A push button switch is connected to pin PB5 of PORT B & a LED is connected to pin PD12 of PORT D. Write a program for STM32F4XX using to toggle LED when a key is pressed. **07**
- OR**
- Q.5** (a) Explain GPIO input data register & output data register. **03**
 (b) Draw basic structure of five volt tolerant I/O port pin of GPIO. **04**
 (c) Write main features of TIM6 & TIM7 timers & give its functional description. **07**