Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– I (New course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 2715401 **Date:13/05/2015**

Subject Name: ARM Processor Architecture and System Design

Time: 10:30 am to 1:00 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)** Discuss the differences between Von Neumann and Harvard memory architecture. Describe the merits and demerits in terms of pipeline stalls. **07**

(b) Answer the following questions. **07**

1) Describe the use and benefits of barrel shifter in ARM processor.
2) Explain the conditional execution of Instruction supported in ARM CPU.

Q.2 **(a)** Write an assembly language program for ARM CPU to subtract two arrays of 32 bit numbers and generate an answer array. **07**

(b) Explain all the operating modes supported in ARM CPU. **07**

OR

(b) Describe the differences between CISC and RISC CPU architectures. Explain the features supported by ARM CPU. **07**

Q.3 **(a)** Answer the following questions. **07**

1) Explain PLLCFG register with its usage for PLL.
2) Describe the requirement and usage of Pin Connect Block.

(b) Describe the benefits of Memory Accelerator Module along with the buffers supported. **07**

OR

Q.3 **(a)** Answer the following questions. **07**

1) How ARM CPU handles FQI interrupts in fast manner?
2) Explain the differences between LDR and ADR instruction.

(b) Describe the feature of PWM module to generate Dual Edge PWM Wave. **07**

Q.4 **(a)** Explain the sequential steps of boot loading process in LPC2148. **07**

(b) Explain stack operations with the help of necessary instructions and requirement of Link Register in ARM CPU. **07**

OR

Q.4 **(a)** Explain the working of Watchdog timer. Describe the use of Watchdog timer to reset the system after 1 millisecond. **07**

Q.4 **(b)** Describe the usage of Vector Interrupt Controller for handling EINT0 as vectored interrupt. **07**

Q.5 **(a)** Describe the characteristics of CAN bus with its applications. **07**

(b) Answer the following questions. **07**

1) How will you set the desired clock frequency for the SPI operation?
2) How can you set the sampling frequency for acquiring the analog signal using Analog to Digital Convertor?

OR

Q.5 **(a)** Describe the use of Interrupt for managing the software regarding I^2C bus activity. **07**

(b) Answer the following questions. **07**

1) Explain the Fractional Divider Register for Baud Rate generation.
2) Describe the use of Line Status Register in UART for data transmission and reception.

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