

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3151107****Date:27/01/2021****Subject Name:Advance Microcontroller****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is CPSR? Draw an approximate format of SPSR register. **03**  
 (b) Describe the principle features of the ARM architecture. **04**  
 (c) Compare RISC architecture and CISC architecture. **07**
- Q.2** (a) What is difference between FIQ and IRQ? Why FIQ response is fast than IRQ? **03**  
 (b) Explain all registers of ARM7TDMI architecture. **04**  
 (c) Explain the following ARM instructions with an example. **07**  
 1.MOVEQ 2.MLA 3.BLX 4.LDR
- Q.3** (a) Describe the rules defined in ARM-Thumb Procedure Call Standard for calling a function. **03**  
 (b) Draw and explain arm multi cycle instruction 3 stage pipeline operation. **04**  
 (c) Write a program to find number of 1's in a given number. **07**
- Q.4** (a) Discuss the thumb programmer's model in brief. **03**  
 (b) Explain the following ARM instructions with an example. **04**  
 1.CMP 2.TEQ  
 (c) Explain Stack operation in ARM with its types in detail. Also explain instructions used for Stack. **07**
- Q.5** (a) Explain any three assembler directives used for ARM assembly programming. **03**  
 (b) Write C program for HEX to ASCII conversion. **04**  
 (c) Write a program for finding largest and smallest numbers of given 10 numbers. **07**
- Q.6** (a) List the properties of Thumb Instruction Set. **03**  
 (b) Explain the importance of cache bit and buffer bit. **04**  
 (c) What is the use of paging mechanism? Show how paging is done in any of ARM families of processors. **07**
- Q.7** (a) Write down the advantages of MMU. **03**  
 (b) List down arm development tools and explain uses of them. **04**  
 (c) Explain Addressing Modes used for ARM data transfer Operation. Explain the types of Base plus offset addressing used for ARM data transfer operation with examples **07**
- Q.8** (a) List out the steps required to switch between tasks. **03**  
 (b) Explain the function of Translation look aside buffers in virtual memory system. **04**  
 (c) Describe AMBA Arbitration with the help of a diagram for AMBA based system. **07**