

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.

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| 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.
1.MOVEQ 2.MLA 3.BLX 4.LDR | 07 |
| 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.
1.CMP 2.TEQ | 04 |
| | (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 |