

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3170914****Date:07-01-2023****Subject Name:Advanced 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.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|-----|--|-----------|
| Q.1 | (a) | Explain following instructions with examples.
(1) SWI (2) BKPT (3) STC | 03 |
| | (b) | Write a program to move a floating point value from register R3 to an integer register R4. | 04 |
| | (c) | Write a program to transfer block of data from one address to other address. | 07 |
| Q.2 | (a) | Explain difference between RISC and CISC architectures | 03 |
| | (b) | Write a program to divide 32 bit number by an 8 bit number. | 04 |
| | (c) | List out C data types use in programming. | 07 |
| OR | | | |
| | (c) | Explain ARM architecture | 07 |
| Q.3 | (a) | Explain Load and Store instructions. | 03 |
| | (b) | Explain ARM Time Delay and Instruction Pipeline. | 04 |
| | (c) | Briefly explain STM32F401 Nucelo board. | 07 |
| OR | | | |
| Q.3 | (a) | Explain ARM design philosophy. | 03 |
| | (b) | Describe RISC Architecture in ARM. | 04 |
| | (c) | Explain ARM development tools. | 07 |
| Q.4 | (a) | Explain following instructions with examples.
(1) MCR (2) ASR (3)MRC | 03 |
| | (b) | Explain Looping and Branch Instructions. | 04 |
| | (c) | Explain ARM Processor Exception and Modes. | 07 |
| OR | | | |
| Q.4 | (a) | Explain following instructions with examples.
(1) SWP (2) ADDEQ (3) BNE | 03 |
| | (b) | Explain Arithmetic Instructions. | 04 |
| | (c) | Explain PWM and the Interrupt on STM32F401. | 07 |
| Q.5 | (a) | Explain CPSR in details. | 03 |
| | (b) | Explain ARM addressing modes. | 04 |
| | (c) | Explain interfacing of LED and LCD. | 07 |
| OR | | | |
| Q.5 | (a) | Explain Shift and Rotate Instructions in ARM Cortex. | 03 |
| | (b) | Explain Store Instructions in ARM. | 04 |
| | (c) | Explain Signed Number Instructions and Operations. | 07 |
