

15/12/22

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)
End Semester Exam

B.Tech: Electronics and Telecommunication *Nov/Dec 2022*
 Examination: SY Semester: IV

Course Code: IUEXC402
 Duration: 03 Hours

Course Name: Microcontrollers
 Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

| Q. No | Questions | Max Marks | CO | BT level |
|------------|---|-----------|----|----------|
| Q 1 | Solve any six questions out of eight: | 12 | | |
| i) | Outline the features of 8051. | 2 | 1 | R |
| ii) | What is a cache memory? | 2 | 2 | R |
| iii) | What is the function of \overline{EA} pin in 8051? | 2 | 3 | R |
| iv) | What is the function of 'SWAP' instruction in 8051? | 2 | 4 | R |
| v) | What does 'ARM7-TDMI' represent as per the naming convention of ARM? | 2 | 5 | U |
| vi) | What are the application domains of Cortex A, Cortex R and Cortex M? | 2 | 6 | U |
| vii) | What is the function of DPTR register? | 2 | 3 | R |
| ii) | Explain use of 'CJNE' instruction with example. | 2 | 4 | U |
| Q.2 | Solve any four questions out of six. | 16 | | |
| i) | Define interrupt. What are different types of interrupts? What is interrupt priority? | 4 | 1 | U |
| ii) | What are different types of semiconductor memory? Explain each type in brief. | 4 | 2 | U |
| iii) | Explain serial data input and output concept in 8051 | 4 | 3 | U |
| iv) | Explain addressing modes in 8051. | 4 | 4 | U |

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| v) | Draw and explain ARM7 programmer's model. | 4 | 5 | U |
| vi) | Explain the conditional execution of instructions in ARM 7. List different conditional codes in ARM 7. | 4 | 6 | U |
| Q.3 | Solve any two questions out of three. | 16 | | |
| i) | Differentiate between a) RISC and CISC architecture. b) Von-Neumann and Harvard architecture | 8 | 1 | U |
| ii) | Explain the concept of virtual memory with memory management unit, segmentation and paging. | 8 | 2 | U |
| iii) | Draw and explain architecture of following register. Also write significance of every bit of the register. a) PSW b) PCON | 8 | 3 | U |
| Q.4 | Solve any two questions out of three. | 16 | | |
| i) | Write a program to transfer the message "Microcontroller" serially at 4800 baud, 8-bit data, 1 stop bit. | 8 | 4 | Ap |
| ii) | Explain different processor modes in ARM 7. | 8 | 5 | U |
| iii) | Explain what following instructions of ARM 7. a) ADC R3,R2,R1 b) CMN R1,R2 c) MLA R4,R3,R2,R1 d) LDR R0, [R1,#4] | 8 | 6 | U |