K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

April – May 2024

B.Tech Electronics and Telecommunication Engineering   Scheme II-B / II

Examination: SY   Semester: IV

Course Code: EXC402   and   **Course Name:** Microcontrollers

Date of Exam: Duration: 2.5 Hours   Max. Marks: 60

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

Q No	Statement	Max. Marks	CO	BT level
Q.1	**Solve any six questions out of eight:**	**12**		
1	Outline the Features of 8051 microcontrollers.	2	1	U
2	Classify Primary Memory and Secondary Memory	2	2	U
3	Discuss following Pins of 8051: *ALE, PSEN'*	2	3	R
4	Discuss T state, machine cycle, instruction cycle	2	4	U
5	Explain Indirect Addressing Modes of 8051 with 2 examples with explanations.	2	5	AP
6	List 4 Arithmetic and Logical set of instruction and explain them	2	6	U
7	Distinguish between Thumb state and ARM state	2	7	AP
8	Discuss the following units: Sign Extend, Barrel Shifter, MAC	2	8	U
Q.2	**Solve any four questions out of six.**	**16**		
1	Distinguish between Von-Neumann & Harvard CPU architecture	4	1	U
2	Explain Cache Memory for a system	4	2	U
3	What is stack? How is it implemented in 8051	4	3	U
4	Compare between SJMP , LJMP and AJMP	4	4	AP
5	Explain ARM 7 CPSR and SPSR	4	5	AP
6	Explain CORTEX A, CORTEX R and CORTEX M	4	6	U

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Q.3	**Solve any two questions out of three.**		**16**		
1	Explain concept of Interrupts in 8051		8	1	U
2	Explain Virtual Memory Concept with Memory Management Unit with Segmentation and Paging.		8	2	U
3	Discuss the Special Function Registers (SFRs) of 8051		8	3	U
Q.4	**Solve any two questions out of three.**		**16**		
1	Discuss the Interfacing of 8051 with Seven Segment Display, code for common cathode configuration.		8	4	AP
2	Explain ARM 7 operating modes.		8	5	U
3	Explain Timer Mode in ARM.		8	6	U

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