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

April – May 2023

B.Tech Electronics and Telecommunication Engineering Scheme II
Examination: SY Semester: IV
Course Code: EXC402 and **Course Name**: Microcontrollers

Date of Exam: 16/05/23 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**	
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
viii)	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)	List and explain the different types of semiconductor memory?	4	2	U
iii)	Explain Internal RAM organization of 8051	4	3	C
iv)	Explain addressing modes in 8051.	4	4	U
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

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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 c) TMOD	8	3	U	
Q.4	**Solve any two questions out of three.**	**16**			
i)	Write a program to transfer the message "HELLO" serially at baud rate of 4800, using 8-bit UART.	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	

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