## C.U.SHAH UNIVERSITY **Summer Examination-2020**

## Subject Name: Embedded Systems

<ul> <li>a) What is a device driver?</li> <li>b) What is interrupt latency?</li> <li>c) What is the need for an infinite loop in embedded systems?</li> <li>d) Mention what are buses used for communication in embedded system?</li> <li>e) What happens when recursion functions are declared inline?</li> <li>f) What are Recursive Functions?</li> <li>g) What is the role of Segment Register?</li> <li>h) What is a Segmentation Fault?</li> <li>i) What is Starvation?</li> <li>k) Write instruction to set first 12 pins of PORT 0.</li> <li>l) Mention the applications of GPIO.</li> <li>m) Which addressing mode is used in instruction LDR R0,[R1]?</li> <li>n) List any two features of RISC architecture.</li> </ul> Attempt all questions <ul> <li>(a) Explain different approaches for designing and implementing the embedded software.</li> <li>(b) Explain the differences between programmed I/O, interrupt and direct memory access approaches.</li> </ul> Q-3 Attempt all questions <ul> <li>(a) Explain the role of TCB in task switching.</li> <li>(b) Describe the mailbox functions supported in Real Time Operating System.</li> </ul>	S	Subject	Code: 4TE	07ESY1	Branch: B.Tech (EC)		
<ul> <li>(1) Use of Programmable calculator &amp; any other electronic instrument is prohibited.</li> <li>(2) Instructions written on main answer book are strictly to be obeyed.</li> <li>(3) Draw neat diagrams and figures (if necessary) at right places.</li> <li>(4) Assume suitable data if needed.</li> <li>(1) Answer the following questions.</li> <li>(1) What is a device driver?</li> <li>(1) What is interrupt latency?</li> <li>(2) What is the need for an infinite loop in embedded systems?</li> <li>(3) Mention what are buses used for communication in embedded system?</li> <li>(4) Mention what are buses used for communication in embedded system?</li> <li>(5) What is the recursive Functions?</li> <li>(6) What is a Cogmentation Fault?</li> <li>(7) What is a Cogmentation Fault?</li> <li>(7) What is Loop Unrolling?</li> <li>(7) What is Starvation?</li> <li>(8) Write instruction to set first 12 pins of PORT 0.</li> <li>(9) Mention the applications of GPIO.</li> <li>(1) Which addressing mode is used in instruction LDR R0,[R1]?</li> <li>(1) List any two features of RISC architecture.</li> </ul> Attempt all questions <ul> <li>(1) Explain the differences between programmed I/O, interrupt and direct memory access approaches.</li> </ul> Q-3 Attempt all questions <ul> <li>(1) Explain the role of TCB in task switching.</li> <li>(1) Describe the mailbox functions supported in Real Time Operating System.</li> </ul>	S	Semeste	r:7	Date : 29/02/2020	Time : 10:30 To 01:30	Marks :70	
<ul> <li>a) What is a device driver?</li> <li>b) What is interrupt latency?</li> <li>c) What is the need for an infinite loop in embedded systems?</li> <li>d) Mention what are buses used for communication in embedded system?</li> <li>e) What happens when recursion functions are declared inline?</li> <li>f) What are Recursive Functions?</li> <li>g) What is the role of Segment Register?</li> <li>h) What is a Segmentation Fault?</li> <li>i) What is Loop Unrolling?</li> <li>j) What is Starvation?</li> <li>k) Write instruction to set first 12 pins of PORT 0.</li> <li>l) Mention the applications of GPIO.</li> <li>m) Which addressing mode is used in instruction LDR R0,[R1]?</li> <li>n) List any two features of RISC architecture.</li> </ul> Attempt any four questions from Q-2 to Q-8 Q-2 Attempt all questions <ul> <li>(a) Explain the differences between programmed I/O, interrupt and direct memory access approaches.</li> </ul> Q-3 Attempt all questions <ul> <li>(a) Explain the role of TCB in task switching.</li> <li>(b) Describe the mailbox functions supported in Real Time Operating System.</li> </ul>	]	(1)   (2)   (3)	Use of Prog Instructions Draw neat c	written on main answer liagrams and figures (if r	book are strictly to be obeyed.	bited.	
Q-2Attempt all questions(1(a)Explain different approaches for designing and implementing the embedded software.(b)(b)Explain the differences between programmed I/O, interrupt and direct memory access approaches.(1Q-3Attempt all questions Explain the role of TCB in task switching. (b)(1Q-4Attempt all questions(1Q-4Attempt all questions(1		b) c) d) e) f) g) h) i) j) k) l) m) n)	What is a What is in What is th Mention w What hap What are What are What is th What is a What is S Write inst Mention to Which ad List any t	device driver? nterrupt latency? ne need for an infinite loo what are buses used for c pens when recursion fun Recursive Functions? ne role of Segment Regis Segmentation Fault? .oop Unrolling? tarvation? truction to set first 12 pin the applications of GPIO dressing mode is used in wo features of RISC arch	op in embedded systems? communication in embedded system? ctions are declared inline? ter? as of PORT 0. instruction LDR R0,[R1] ?	(1	4)
Q-3Attempt all questions (a) (b)(1)Q-4Attempt all questionsQ-4Attempt all questionsQ-4Attempt all questions		(a)	Attempt Explain of software. Explain t	all questions different approaches for he differences between			4)
	Q-3		<b>Attempt</b> Explain the	all questions ne role of TCB in task sw	6	( <b>1</b> 4	4)
(b) Describe the importance of timer and watchdog timer individually in system Page 1 of 2	Q-4		Write sho	ort note on DMA controll	er and watchdog timer individually i	-	4)



design.

Q-5	(a) (b)	Attempt all questions Explain the reasons for Priority Inversion along with solution for it. Describe the significance of File and I/O management along with supported functions in RTOS.	(14)
Q-6	(a) (b)	Attempt all questions Describe the features associated with several ARM Buses. Describe the features associated with Bluetooth and Zigbee protocols. Discuss the application areas for both the protocols.	(14)
Q-7	(a) (b)	Attempt all questions What is Multithreading? Explain the concept of Multithreading in Real Time Operating System with the help of an application. Describe the characteristics associated with Earliest Deadline First Scheduler stating its merits and demerits.	(14)
Q-8	(a) (b)	Attempt all questions List and explain the protocols used for wireless and mobile system communication. What is meant by P and V semaphores? Discuss semaphore as event signaling variable.	(14)