M. Tech. Distributed & Mobile Computing Examination, 2018

(1st year) (~~1st~~/ 2nd Semester/~~Repeat/Supplementary/Annual/Bi-Annual~~)

SUBJECT: - Embedded Systems

Time: ~~Two hours~~/Three hours/ ~~Four hours~~/ ~~Six hours~~   Full Marks: 100

No. of Questions	Answer any *five* questions.	Marks
1.	a) Explain the characteristics of embedded computing applications.	6
	b) Why do we use microprocessor for designing embedded system? What are the goals of embedded computing system?	3+3
	c) What are the challenges in embedded computing system design?	8
2.	a) Explain with an example the various stages of a pipeline architecture.	5
	b) Differentiate between superscalar and VLIW architecture.	4
	c) Write an ARM assembly code to copy a block of memory.	6
	d) Explain the various processors modes of ARM.	5
3.	a) What is the sufficient condition for EDF? Check whether the following tasks are schedulable using EDF on uniprocessor system. Explain your answer. $T_1(e_1=10,p_1=20)$, $T_2(e_2=5,p_2=50)$, $T_3(e_3=10,p_3=35)$.	4+4
	b) Explain the terms "safe", "reliable" and "critical" in context of real time embedded system with proper example.	6
	c) Explain the characteristics of Real time embedded systems.	6
4.	a) Differentiate between supervisory mode, exception and trap.	6
	b) Explain with an example the difference between temporal and spatial locality.	4
	c) Explain the various types of cache misses.	3
	d) Explain set associative mapped caching schemes. Discuss the advantages of the scheme.	4+3
5.	a) What are the two most common control methods in bus? Explain daisy chaining arbitration with respect to bus.	4+4
	b) Differentiate between: parallel and serial communication	4
	c) Explain the steps of peripheral to memory transfer with DMA.	4
	d) Discuss the disadvantages of ISA bus.	4
6.	a) What is vectored interrupt? What are the disadvantages of busy wait I/O?	3+4
	b) Differentiate between segmentation and paging.	4
	c) What is a page fault? How is a page fault handled?	2+4
	d) What are the sources of basic CPU power consumption that are	3

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		identified?	
7.		Write short note on : (any four) a) Watch dog timer b) Universal asynchronous receiver transmitter c) Centralized parallel arbitration d) Various compare instructions in ARM. e) Various modes of stack operations in ARM. f) LCD controller	5x4