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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B. Tech Degree Examination June 2022 (2015 Scheme

Course Code: CS404 Course Name: EMBEDDED SYSTEMS

Max	. M	arks: 100 Duration: 2	3 Hours
		PART A	Monko
1		Answer all questions, each carries 4 marks.	(4)
1		List out the major store in an embedded system design process	(4)
2		List out the major steps in an embedded system design process.	(4)
3		write short note on object oriented model.	(4)
4		How mixing high level language with assembly code approach is used in	(4)
		firmware programming with an example.	
5		What is an embedded operating system based approach.	(4)
6		What is Out-of-Circuit Programming?	(4)
7		Differentiate General purpose Operating System (GPOS) with Real time	(4)
		Operating system(RTOS)	
8		Describe the memory organisation of a process.	(4)
9		What is Product Re-engineering? Explain the Product Re-engineering need.	(4)
10		Depict four reasons to build network-based embedded systems.	(4)
I		PART B	
		Answer any two full questions, each carries 9 marks.	
11		Describe the design of. hardware and software components in an embedded	(9)
		system.	
12	a)	Draw a concurrent program model for Seat Belt Warning System of an	'(5)
		automobile.	
	b)	Describe the sequence diagram for a mouse click scenario.	(4)
13	a)	Illustrate UML representation of a class, component and an association.	(5)
	b)	Write short note on Data Flow Graph with an example.	(4)
	1	PART C	
		Answer any two full questions, each carries 9 marks.	
14		How High Level Language Based Development is done for embedded	(9)

firmware. Also list its merits and demerits.

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15	a)	Explain the different types of files generated after cross – compilation.	(6)
	b)	Explain simulators.	(3)
16	a)	Illustrate the embedded system development environment with appropriate components.	(5)
	b)	Discuss about Inline Breakpoint Based Firmware Debugging method.	(4)
		PART D	

Answer any two full questions, each carries 12 marks.

- 17 a) Explain about iterative /incremental model for embedded system development.
 - b) Describe Earliest deadline first and Rate monotonic task scheduling algorithms (6) in RTOS.

(6)

- 18 Describe the various stages involved in the embedded product development (12) life cycle.
- a) Three processes with process IDS P1,P2,P3with estimated completion time (6)
 6,4,2 milliseconds respectively enters the ready queue together in the order P1,P2,P3.Calculate the waiting time and Turn Around Time for each process and average waiting time and turn around time in RR algorithm with Time slice =2ms(Assuming there is no I/O waiting for the processes).
 - b) What are the important functional and non-functional requirements that need to (6) be analysed in the selection of an RTOS for an embedded system design?
