KUMARAGURU
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Register Number:……..…

M.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2014)

Second Semester

EMBEDDED SYSTEM TECHNOLOGIES

P14EST203**:** Embedded Processors

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. [K_1]

List I	List II
A. Direct design of filter	i. 2D filter
B. Functions of ARM processor in supervisor mode	ii. Software interrupts
C. SWI	iii. FIR filter
D. Multi-dimensional polynomials	iv. Exceptions

	A	B	C	D
a)	ii	iii	iv	i
b)	ii	iv	i	iii
c)	iii	iv	ii	i
d)	iv	iii	ii	i

2. The thumb registers that can be accessed by all thumb instructions is [K_1]

a) R0-R7 b) R8-R12

c) R13-R14 d) CPSR

3. Direct form I and direct form II exists for [K_1]

a) FIR system only b) IIR system only

c) Both a&b d) none of the above

4. A continuous image is digitized at _____ points [K_1]

a) Random b) Vertex

c) Continuous d) Sampling

5. The local memory store for all data processing operation is called as [K_1]

a) Register b) Cache

c) Memory d) Buffer

6. The functional block of a system is coordinated by [K_1]

a) Controller b) Processor

c) Interrupt d) Bus

7. The better choice for fast code is [K_2]

a) Fixed point representation b) Floating point representation

c) Logarithmetic representation d) Fixed & floating point representation

8. ARM processor is different from other processors as [K_1]

Assertion (A): It is a RISC processor

Reason (R): Arithmetic and logic operation cannot be performed directly in memory location.

a) A is true but R is false b) A is true, R is true but R is not a correct explanation for A

c) A is true, R is true, and R is correct explanation for A d) A is false but R is true

9. To realize FIR filters non-recursively [K_2]

Assertion (A):Efficient realization of FIR filters

Reason (R):Direction convolution is always stable.

a) A is true but R is false b) A is true, R is true but R is not a correct explanation for A

c) A is true, R is true, and R is correct explanation for A d) A is false but R is true

10. When interrupts occur [K_2]

1. Executes the interrupt and save the status

2. Executes the current instruction and save its result and status.

3. Retrieve the status of current program and starts execution.

4. Jumps to the ISR for the current request.

a) 2-4-1-3 b) 2-1-3-4

c) 4-3-1-2 d) 4-3-2-1

PART B (10 x 2 = 20 Marks)

11.	Mention the types of processor modes present in ARM.	[K_1]
12.	What is a coprocessor?	[K_2]
13.	Write an example for Thumb SWI instruction.	[K_1]
14.	List out the exception priority levels.	[K_1]
15.	List the two things to be considered while representing an analog signal.	[K_1]
16.	What is the advantage of FFT?	[K_1]
17.	List out the software tools for black fin processor.	[K_1]
18.	What is the scratch pad memory?	[K_2]
19.	Compare the real time and off line processing.	[K_1]
20.	How to generate reverberation effects?	[K_2]

PART C (6 x 5 = 30 Marks)

21.	Compare the ARM processor families with pipeline stages and their performance.	[K_4]
22.	Explain about load store instruction in ARM instruction set with example.	[K_2]
23.	Write a DSP code for the ARM7TDMI.	[K_2]
24.	Explain about the fixed point and fixed point extended format.	[K_2]
25.	Explain about power management in black fin processor.	[K_2]
26.	Design a 2D filter.	[K_3]

PART D (4 x 10 = 40 Marks)

27.	Explain the embedded system hardware with an example.	[K_2]
28.	Explain about ARM firmware with an example.	[K_2]
29.	Explain about the software configuration and control components in the ARM MMU.	[K_2]
30.	Design a IIR filter based graphic equalizer using black fin.	[K_3]

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