Hall Ticket Number:

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Code No. : 21612

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
M.E. (ECE: CBCS) I-Semester Main Examinations, January-2018
(Embedded Systems & VLSI Design)
Embedded Systems Design

Time: **3** hours

Max. Marks: **60**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	List the real-time requirements of an embedded system.	2	2	1	1
2.	Name the various forms of memory in embedded system and the functions assigned to them.	2	1	1	1
3.	Interface 8051µc to the seven segment display unit.	2	3	2	2
4.	What is PWM? How it is used in DC motor control?	2	2	2	2
5.	Write the function of different conditional Flags in ARM processor.	2	1	3	1
6.	Define Pipeline. List its advantages.	2	2	4	1
7.	Outline the features of Serial Peripheral Interface (SPI).	2	2	5	1
8.	What are the modes of data transfer used in USB?	2	1	5	1
9.	Justify the use of JTAG in embedded debugging.	2	2	4	3
10.	Summarize the need of RTOS in Embedded system Design.	2	2	4	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	Explain the classification of embedded systems with examples.	5	2	1	1
b)	Compare different processor technology in embedded system design.	3	2	1	2
12. a)	Analyze the circuit of 4x3 Keyboard and show the interfacing to 8051 with necessary flow chart.	5	4	2	3
b)	Describe the 8051 connection to the stepper motor and write C program to rotate it continuously.	3	4	2	3
13. a)	Explain the hardware core extensions or the components placed next to the ARM core.	5	3	3	1
b)	Distinguish between ARM Processor families.	3	4	3	2
14. a)	Demonstrate the signal using a transfer of byte when using the I²C bus and also the format of bits at the I²C bus with diagram.	4	3	5	2
b)	Discuss the ETHERNET interface standard protocol for Embedded system Design.	4	1	5	1
15. a)	Explain hardware debugging and its tools used in embedded product development.	4	2	4	1
b)	Explain about Functional key scheduling embedded software architecture.	4	3	4	3

			M	L	CO	PO
16.	a)	Explain the architecture of CISC processor. Mention its advantages and disadvantages.	4	2	1	1
	b)	Write a program to display "ELECTRONICS" by interfacing LCD using delay routines with 8051µc.	4	5	2	2
17.		Answer any *two* of the following:				
	a)	Describe the steps how ARM processor handles the interrupts. Mention its vector table.	4	2	3	1
	b)	Explain the PCI parallel communication protocol.	4	2	5	1
	c)	With the help of an example explain the Round Robin architecture without interrupts.	4	2	4	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	62.5
2	Knowledge on application and analysis (Level-3 & 4)	32.5
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	5.0

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