CBCS SCHEME

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15EC62

Sixth Semester B.E. Degree Examination, June/July 2019
ARM Micro Controller and Embedded Systems

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the architecture of ARM cortex – M3 processor with neat diagram. **(08 Marks)**
b. With neat diagram, explain operation mode and privilege levels in cortex M3. **(08 Marks)**

OR

2 a. What is stack? Explain push and pop operation. With the help of a neat diagram. **(07 Marks)**
b. Explain in detail special registers used in ARM cortex M3 processor. **(09 Marks)**

Module-2

3 a. Write an ALP to calculate the sum of 1 to 10 numbers. **(08 Marks)**
b. Explain the following instruction set : i) BFC ii) SBFX iii)ASR iv) MRS. **(04 Marks)**
c. Explain how CMSIS provides standard access. Interface for Embedded software. **(04 Marks)**

OR

4 a. Write a program to blink a LED using 'C' language. **(08 Marks)**
b. Explain the following assembler directives AREA, ENTRY, DCB, ALIGN. **(04 Marks)**
c. Explain different bus interfaces supported by cortex M3. **(04 Marks)**

Module-3

5 a. Explain how embedded system are classified. **(08 marks)**
b. With neat block diagram, explain the element of embedded system. **(08 Marks)**

OR

6 a. Differentiate between RISC and CISC. **(04 Marks)**
b. Explain how program memory are classified. **(08 Marks)**
c. Explain how brown-out protection circuits works. **(04 Marks)**

Module-4

7 a. What are the operational and nonoperational attributes of an embedded systems. **(10 Marks)**
b. Explain different types of serial interface bus used in automotive communication. **(06 Marks)**

OR

8 a. Explain fundamental issues in hardware software co-design. **(06 Marks)**
b. Explain with a neat block diagram how source file to object file translation take place. **(06 marks)**
c. Explain super loop based approach of embedded firmware design. **(04 Marks)**

Module-5

9 a. With neat diagram explain operating system architecture. (08 marks)

b. Explain how operating systems are classified. (04 marks)

c. Differentiate between hard real time system and soft real time system with an example for each. (04 Marks)

OR

10 a. With neat diagram, explain embedded system development environment. (08 marks)

b. For the following jobs calculate the turnaround time, waiting time using preemptive SJF scheduling algorithm. (04 Marks)

Jobs	CPU bust time	Arrival time
1	10	0.0
2	2	3.0
3	1	4.0
4	4	5.0

c. Write a note on IAP [In Application Programming] and in system programming. (04 Marks)

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