CBCS Scheme

USN | | | | | | | | | |

16/17ESP/ECS/EVE/EIE/ELD13

# First Semester M.Tech. Degree Examination, Dec.2017/Jan.2018
## Advanced Embedded System

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 various purposes of embedded system in detail with illustrative examples. **(08 Marks)**

b. What is difference between RISC and CISC processors? Give an example for each. **(04 Marks)**

c. What is sensor and actuator? Explain how the LED and opto coupler are used as an I/O subsystem in embedded system. **(04 Marks)**

**OR**

2 a. Explain the different on-board communication interfaces in brief. **(10 Marks)**

b. Mention some of the important characteristics of embedded system and write about the different operational quality attributes. **(06 Marks)**

### Module-2

3 a. Describe the assembly language to machine language conversion process and high level language to machine language conversion process with neat diagram. **(10 Marks)**

b. What are the commonly used computational models in embedded system and explain any two model with example. **(06 Marks)**

**OR**

4 a. Explain the out of circuit programming and in system programming used in the integration of hardware and firmware. **(10 Marks)**

b. Write short notes on simulators, emulators and debuggers. Also mention the advantages and limitations of simulator based debugging. **(06 Marks)**

### Module-3

5 a. Discuss the relationship between the thumb instruction set in thumb-2 technology and the traditional thumb. Mention the various applications of Cortex-M3 processor. **(06 Marks)**

b. Construct ARM Cortex-M3 processor architecture and explain its various units. **(10 Marks)**

**OR**

6 a. Give detailed description about general purpose registers in the Cortex-M3 processor. **(08 Marks)**

b. Explain how stack memory operations are carried out automatically in the Cortex-M3 processor and discuss two stack model also. **(08 Marks)**

### Module-4

7 a. Construct CORTEX-M3 predefined memory map and explain with complete details. **(12 Marks)**

b. Explain briefly about basic syntax and use of suffixes in assembler language. **(04 Marks)**

**OR**

8 a. Describe the pipeline architecture and bus interfaces based on the implementation of CORTEX-M3 processor. **(12 Marks)**

b. Discuss briefly about memory system features in CORTEX-M3 system. **(04 Marks)**

## Module-5

9 a. How SYSTIC TIMER is controlled by four registers? Explain with necessary tables. **(08 Marks)**

b. Write the salient features of NVIC. **(08 Marks)**

**OR**

10 Explain the details about background, standardization, organization and benefit of CMSIS with neat diagram. **(16 Marks)**

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