Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : X10375

B.E./B.Tech. DEGREE EXAMINATIONS – NOV / DEC 2020 AND APRIL / MAY 2021

Seventh/ Eighth Semester

Electronics and Communication Engineering

EC8791 - EMBEDDED AND REAL TIME SYSTEMS

(Common to: Medical Electronics/ Biomedical Engieering)

(Regulations 2017)

Time: 3 Hours   Answer ALL Questions   Max. Marks: 100

PART- A (10 x 2 = 20 Marks)

1. Mention the need of microprocessor in embedded system.

2. Summarize the challenges in embedded computing system design.

3. List the three different profiles of ARM cortex Processor.

4. Distinguish between single and double edged PWM.

5. Differentiate compiler and cross compiler.

6. Mention the different components for embedded programs.

7. Define Performance measures for real time systems.

8. Outline the definition for a schedule as a function.

9. List the advantages and limitations of Priority based process scheduling.

10. What is priority inheritance and priority inversion?

PART- B (5 x 13 = 65 Marks)

11. a) Design a model train controller with suitable diagram and explain.   (13)

OR

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b) Demonstrate the goal of design methodology in detail. (13)

12. a) Classify the ARM instruction set and explain any one type of instruction set with example. (13)

OR

b) Discuss about the types of stacks and subroutines supported by ARM processor. (13)

13. a) With the help of a flow chart describe the basic compilation process. (13)

OR

b) Outline the Program level energy and power analysis and optimization. (13)

14. a) Criticize on reliability models for hardware redundancy. (13)

OR

b) Discuss in detail about the structure of a real time system. (13)

15. a) Explain the concepts of Multiprocessor System-On-Chip (MPSoC) and Shared memory multiprocessors used in embedded applications. (13)

OR

b) Illustrate in detail about

i) Characteristics of distributed embedded System. (6)

ii) Architecture of Distributed Embedded System with neat sketches. (7)

PART- C (1 x 15 = 15 Marks)

16. a) Write a program to find the sum of $4X + 9Y + 4Z$, where $X = 2$, $Y = 3$ and $Z = 4$ using ARM Processor instruction set. (15)

OR

b) Illustrate video accelerator using UML methodology, from design flow analysis to architectural design. (15)

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