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Question Paper Code: 20429

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Seventh Semester

Electronics and Communication Engineering

EC 6703 – EMBEDDED AND REAL TIME SYSTEMS

(Regulations 2013)

(Common to Biomedical Engineering, Computer Science and Engineering, Medical Electronics)

(Also common to PTEC 6703 – Embedded and Real Time Systems for B.E (Part – time) Sixth Semester – Electronics and Communication Engineering, Seventh Semester – Computer Science and Engineering – Regulations 2014)

Time: Three hours

Maximum: 100 marks

Answer ALL questions.

PART A — $(10 \times 2 = 20 \text{ marks})$

- Determine the average memory access time of a machine whose hit rate is 90% with a cache access time of 3ns and main memory access time of 70ns.
- 2. Enumerate the functions of ARM processor in supervisor mode.
- 3. What are the memory devices used in the design of embedded System?
- 4. Outline the significance of CDFG.
- 5. What is the concept of multitasking? What does it signify?
- 6. What is Rate Monotonic Scheduling?
- 7. Write the special characteristics of a CRC card.
- 8. List the difference between multistage network and direct network?
- 9. State the features of FSK detection Scheme in MODEM.
- 10. Which compression technique is used for telephone answering machine? Why?

PART B — $(5 \times 13 = 65 \text{ marks})$

11. (a) Draw and explain ARM architecture in detail.

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- (b) (i) Design a Model Train Controller with suitable diagrams, and explain. (7)
 - (ii) Give an account on CPU power consumption. (6
- 12. (a) (i) Discuss the basic types of memory components, that are commonly used in embedded systems. (7)
 - (ii) Compare and contrast the debugging techniques used in embedded system. (6)

Or

- (b) Explain energy, power and program size optimization in detail.
- 13. (a) (i) Compare RMS versus EDF. (7
 - (ii) Explain about Windows CE with a neat diagram. (6)

Or

- (b) Explain inter process communication mechanisms and evaluating operating system performance in detail.
- 14. (a) (i) With a neat diagram, describe the typical bus transactions on the I²C Protocol.
 - (ii) Discuss the role of distributed embedded architecture available for embedded systems.

Or

- (b) Explain the various design methodologies and design flows in system design.
- 15. (a) (i) Illustrate the working of engine control unit with a diagram. (7)
 - (ii) Illustrate the working of Video player. (6)

Or

(b) Write technical notes on "Applications of Embedded systems in software modem and digital still camera".

PART C — $(1 \times 15 = 15 \text{ marks})$

16. (a) Design data compressor using UML methodology. Analyse its design flow, requirements, specifications with architectural design.

Or.

(b) From design flow analysis to architectural design, illustrate video accelerator using UML methodology.