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Reg. No. :

**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 × 2 = 20 marks)

1. 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 × 13 = 65 marks)

11. (a) Draw and explain ARM architecture in detail.
- Or
- (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 I<sup>2</sup>C 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 × 15 = 15 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.