G 6031

M.E. DEGREE EXAMINATION, MAY/JUNE 2007.

Second Semester

Applied Electronics

AN 1654 — EMBEDDED SYSTEMS

(Common to M.E. VLSI Design, M.E. Computer and Communication and M.E. Communication Systems)

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the challenges in embedded computing system.

2. Distinguish between structural description and behavioural description.

3. List the memory devices of SHARC processor.

4. Draw the flow of control in ARM processor.

5. Distinguish between 12 C and CAN Bus.

6. What is a myrinet? Give example.

7. Define effective release time.

8. What are the advantages of on-line scheduling of real-time systems?

9. List the specification for PBX system.

10. What is Quality Assurance? How is it achieved?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the step by step design process of embedded system. (8)

(ii) What are embedded computers? Discuss the structural description and behavioural description of an embedded system. (2 + 6)

Or

(b) Explain how the hardware and software components are integrated into an embedded system. (16)

12. (a) (i) Discuss the memory organization of SHARC processor. (8)

(ii) Explain the Bus configuration of CPU. (8)

Or

(b) (i) Discuss the designing of Alarm clock with microprocessor development and debugging. (12)

(ii) Distinguish between ARM bus and SHARC bus. (4)

13. (a) (i) Explain the purpose of communication analysis in a distributed embedded system. How is it performed? (8)

(ii) Explain how Hardware Platform is designed in the case of an elevator controller. (8)

Or

(b) (i) How is allocation and scheduling done in a network based embedded system design? Explain. (8)

(ii) Discuss the hardware architectures of network embedded system. (8)

14. (a) (i) Explain the earliest deadline first (EDF) algorithm. Check with a specific example. (8)

(ii) Distinguish between the Dynamic and Static Realtime systems. (4)

(iii) What is offline scheduling? Give example. (2 + 2)

Or

(b) (i) Explain in detail the three approaches of real time embedded systems. (12)

(ii) What are the challenges in validating timing constraints in priority driven systems? (4)

15. (a) (i) Explain the telephone PBX system architecture with necessary sketches. (8)

(ii) Explain the software design of Ink Jet Printer. (8)

Or

(b) Discuss the various design techniques involved in the hardware and software design of set-top boxes. (16)