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Question Paper Code : 31515

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Sixth Semester

Computer Science and Engineering

IT 2354/IT 64/10144 IT 605/10144 CSE 26 — EMBEDDED SYSTEMS

(Common to Information Technology)

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the major levels of abstraction in the embedded system design process?
2. What is the purpose of CPSR register in an ARM processor?
3. What is Masking?
4. How does a watchdog timer help in the CPU operation?
5. Name some applications of multi-rate embedded computing systems.
6. What are the three basic scheduling states and define each of them.
7. Write a routine to change the state of an LED.
8. Write the features of an Interrupt Service Routine.
9. Draw the state chart of an AND state.
10. Suggest any simple way to test the controller of an embedded system.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the various data operations of an ARM processor. (16)

Or

- (b) Explain the architectural design of an embedded system design. (16)

12. (a) Explain the functionalities of following I/O systems with appropriate diagrams
- (i) A/D and D/A Converters (8)
 - (ii) Keyboards. (8)

Or

- (b) Elucidate the pipelining and caching operations of the CPU in embedded computing. (16)
13. (a) (i) Describe the various CPU metrics. (8)
- (ii) Explain the scheduling and its policies. (8)

Or

- (b) With appropriate diagrams, discuss about the Inter-Process Communication Mechanisms. (16)
14. (a) Discuss in detail about the Multi-state systems and function sequences. (16)

Or

- (b) Write an embedded software program to implement the traffic-light sequencing using a simple EOS. (16)
15. (a) Discuss in detail about the design flow of an embedded system. (16)
- Or
- (b) Explain the quality assurance required for an embedded system. (16)