Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 71746

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Eighth/Seventh Semester

Electronics and Communication Engineering

EC 6703 — EMBEDDED AND REAL TIME SYSTEMS

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

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention the various methods for reading from or writing to an I/O Port.

2. What is bus protocol?

3. List the types of Co-verification techniques.

4. What is the disadvantage of nested loops in embedded programs?

5. Define Semaphore.

6. What is Priority Inversion?

7. List out some of the verification requirements and specifications related to the design flow.

8. What is the role of CRC bits in CAN bus.

9. Write the requirement form for an Alarm clock.

10. What is the advantage of video accelerator?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Name three mechanisms by which a CMOS microprocessor consumes power and also specify several power saving strategies are used in CMOS CPU's.   (8)

    (ii) What are the several requirements of an embedded computing system design?   (8)

Or

(b) (i) How does branching and procedural has been performed in ARM Processor? (8)

(ii) What are ways of programming the input and output devices in an embedded system design? (8)

12. (a) (i) Explain in detail about the compilation process in high level languages. (8)

(ii) What are the program level performance analysis of embedded computing system design? (8)

Or

(b) (i) Discuss in detail the optimization of program size of an embedded system. (8)

(ii) Discuss in detail various programming models. (8)

13. (a) (i) Explain with a neat diagram inter process communication. (8)

(ii) Explain in detail earliest deadline first scheduling. (8)

Or

(b) (i) Explain the example real time operating system called POSIX in detail. (8)

(ii) Explain in detail the power optimization strategies in embedded system. (8)

14. (a) Briefly explain about the quality assurance process taken place in the embedded computing system design. (16)

Or

(b) (i) With neat diagram explain the working of I^2C. (8)

(ii) With neat diagram explain the working of CAN bus. (8)

15. (a) Explain the hardware and software design of digital still-camera designed with automation of camera functions. (16)

Or

(b) Write in detail about the embedded concepts in the design of engine control unit. (16)

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