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Question Paper Code : 91463

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Seventh/Eighth Semester

Electronics and Communication Engineering

EC 6703 – EMBEDDED AND REAL TIME SYSTEMS

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

(Regulations 2013)

Also Common to PTEC 6703 – Embedded and Real Time Systems/B.E. Part-Time
Sixth Semester/Seventh Semester – Electronics and Communication Engineering/
Computer Science and Engineering – Regulations 2014)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. How traps are handled in ARM Processor ?
2. What are the factors to be considered while designing an Embedded System Process ?
3. What is the concept of Busy Wait I/O ?
4. What are the basic types of memory components that are commonly used in embedded systems ?
5. How to compute the CPU utilization of the system ?
6. Bring out the difference between multiple process and multiple task.
7. What is the significance of CRC card ?
8. What is the difference between single hop and multi hop network ?
9. What are the inputs on which the engine controller will be working upon to generate a proper control signal ?
10. What is the need for a software modem ?



PART – B

(5×13=65 Marks)

11. a) Explain how characters are copied from input to output using interrupts and buffers with the help of a program segment. (13)
- (OR)
- b) i) Analyze the data operations of an ARM processor. (4)
 ii) With neat sketches, explain the ARM address translation mechanism. (9)
12. a) i) Enumerate the factors that causes delay in peripheral interface. (4)
 ii) Explain with neat diagrams on how DMA based processor can mitigate delay in high speed processors. (9)
- (OR)
- b) i) Discuss the role of assemblers and linkers in the compilation process. (9)
 ii) Elucidate the significance of program validation and testing. (4)
13. a) i) Explain the context switch mechanism for moving the CPU from one executing process to another with an example. (9)
 ii) Explain how the Kernel determines the order of the processes to be executed. (4)
- (OR)
- b) i) Give an account on : POSIX. (4)
 ii) Discuss briefly about the various power optimization strategies in embedded system with relevant examples. (9)
14. a) Discuss the concepts of MPSoC and shared memory multiprocessor in embedded applications. (13)
- (OR)
- b) i) Explain the features of SDL specification language with suitable diagrams. (6)
 ii) Draw the architecture of Distributed Embedded System and explain its characteristics. (7)
15. a) With neat diagrams, briefly explain the role of video accelerator used in a digital video camera. (13)
- (OR)
- b) Using UML diagrams, explain the design process and characteristics of the data compressor. Analyze its design flow, requirements and specifications with architectural design. (19)

PART = C

(1×15=15 Marks)

16. a) i) Briefly explain the various techniques used in clearbox testing. (9)
 ii) Explain the need for In-circuit Emulators (ICE), JTAG for embedded system development. (6)
- (OR)
- b) With neat diagrams, briefly explain the design of a telephone answering machine with sophisticated inbuilt features. Discuss the design and characteristics of the system with the help of UML diagrams. (15)