Final study guide:

March 23:

1. Describe GALS in terms of clock domains.
2. What specific characteristic of an FPGA is required to utilize a MetaWire network?
3. Give one advantage for using a MetaWire network.
4. What simplifications are made by the simple NoC over the virtual channel NoC.
5. How does the simple NoC avoid Deadlocks?

March 25:

6. List several features/advantages of FWIRE:
7. List any disadvantages of FWIRE
8. What the benefits of Tunable (Adjustable) Body Biasing?
9. What is energy harvesting?
10. List advantages for using Supercapacitors in energy harvesting systems:
11. List some environmental sources for energy harvesting:

March 27:

12. List advantages for using MEM:
13. What is the most expensive part of designing a MEMS? How could that cost be reduced:
14. List wireless sensor application domains
15. What limiting design factors must be considered when developing WSNs?
16. What system design requirements must be considered when designing airbags and occupant classification systems?

March 30:

17. What are Instruction-Set Extension?
18. What kind of improvements to the metrics of embedded systems does the use of Instruction-Set extensions provide and why?

April 1:

19. What are the advantages of using reconfigurable computing for embedded security?
20. Why does the heuristic approach for intrusion detection work well for embedded systems?
21. What are the advantages and disadvantages of using a hardware-based monitoring system for secure embedded processors?
22. What are the specific objectives of a counter attack security mechanism?

April 3:

23. The two main area models for reconfigurable devices are 1D and 2D models. What are the advantages and disadvantages of each?
24. What are two important design constraints to consider during hardware/software partitioning:
25. What is a partial runtime reconfigurable device? What advantages do they have over standard reconfigurable devices for implementation of a HW/SW partitioned embedded system?

April 6:

26. What network features are expected so that the online HW/SW partitioning process works efficiently?
27. What is the main difference between partitioned scheduling and global scheduling with respect to where a task can be executed during its duration

April 8:

28. Name several electronic systems design metrics that are important in space exploration missions?
29. List one advantage and one disadvantage of using microvias in circuit boards layouts:
30. Name one advantage MRAM has over SRAM?

April 10:

31. What is the difference between a coarse grained FPGA and a fine grained FPGA
32. Why is measuring power dissipated during partial reconfiguration important?
33. List several advantages for using FPGAs as opposed to ASICs.

April 13:

34. How is the technique used to counter Code Injection Attack described in the IMPRES paper different from the techniques that existed prior to it (hint: IMPRES combined two previous techniques? List two advantages of this technique.
35. What are the advantages/disadvantages in trying to prevent reverse engineering?
36. How does TrustZone implement zone isolation?