

ELECTRONICS & COMMUNICATION ENGINEERING
VLSI/ULSI Technology BTEC-905C-18
Question Bank

1. What are the four generations of Integration Circuits?
2. Give the advantages of IC?
3. Give the variety of Integrated Circuits?
4. Give the basic process for IC fabrication
5. What are the various Silicon Wafer Preparation steps?
6. Explain different types of oxidation?
7. What are the different layers in MOS transistors?
8. What is Enhancement mode transistor?
9. What is Depletion Mode Device?
10. When the channel is said to be pinched –off?
11. Give the different types of CMOS process?
12. What are the steps involved in twin-tub process?
13. What are the advantages of Silicon-On-Insulator process?
14. What is BiCMOS Technology?
15. What are the basic processing steps involved in BiCMOS process?
16. What are the advantages of CMOS process?
17. Define Short Channel devices?
18. What is pull down device?
19. What is pull up device?
20. Why NMOS technology is preferred more than PMOS technology?
21. What are the different operating regions for an MOS transistor?
22. What are the different MOS layers?
23. What is Stick Diagram?
24. What are the uses of Stick diagram?
25. Give the various color coding used in stick diagram?
26. Compare between CMOS and bipolar technologies.
27. Define Threshold voltage in CMOS?
28. What is Body effect?
29. What is Channel-length modulation?
30. What is Latch – up?
31. Give the basic inverter circuit.
32. Give the CMOS inverter DC transfer characteristics and operating regions
33. Define Rise time
34. Define Fall time
35. Define Delay time
36. What are two components of Power dissipation.
37. Give some of the important CAD tools.
38. What is Verilog?
39. What are the various modeling used in Verilog?
40. What is the structural gate-level modeling?

41. What is Switch-level modeling?
42. What are identifiers?
43. What are the value sets in Verilog?
44. What are the types of gate arrays in ASIC?
45. Give the classifications of timing control?
46. Give the different arithmetic operators?
47. Give the different bitwise operators.
48. What are gate primitives?
49. Give the two blocks in behavioral modeling.
50. What are the types of conditional statements?
51. Name the types of ports in Verilog
52. What are the types of procedural assignments?
53. Give the different symbols for transmission gate.
54. Give the different types of ASIC.
55. What is the full custom ASIC design?
56. What is the standard cell-based ASIC design?
57. Differentiate between channeled & channel less gate array.
58. Define Moore's Law and its implications.
59. What are the advantages of VLSI technology?
60. Explain the concept of scaling in VLSI.
61. Differentiate between analog and digital VLSI.
62. List different levels of abstraction in VLSI design.
63. Describe the evolution of VLSI technology from SSI to ULSI.
64. Explain the various design methodologies used in VLSI.
65. Discuss the challenges and trends in modern VLSI design.
66. Explain the basic steps of a typical VLSI design flow.
67. Explain the complete VLSI design flow with a neat diagram, detailing each step.
68. Discuss the future trends in VLSI technology, including emerging materials and techniques.
69. What is photolithography?
70. Explain the process of oxidation in VLSI fabrication.
71. What is doping?
72. Explain the concept of etching.
73. What is Chemical Vapor Deposition (CVD)?
74. Explain the steps involved in the photolithography process.
75. Describe the process of ion implantation in VLSI fabrication.
76. Explain the different types of etching techniques used in VLSI fabrication.
77. Explain the process of metalization in VLSI fabrication.
78. Explain the concept of clean room technology in VLSI fabrication.
79. Explain the complete CMOS fabrication process with neat diagrams.
80. Discuss the various challenges and advancements in VLSI fabrication technology.
81. Explain the different types of oxidation and CVD techniques used in VLSI fabrication.
82. What is the importance of VLSI testing?
83. What are the different types of faults in VLSI circuits?
84. Explain the concept of design for testability (DFT).
85. What is boundary scan testing?
86. What is fault simulation?
87. Explain the principles of advanced lithography techniques, such as EUV lithography.
88. Describe the challenges and solutions in interconnect fabrication for VLSI circuits.
89. Discuss the role of chemical mechanical polishing (CMP) in VLSI fabrication.
90. Explain the concept of silicon on insulator (SOI) technology.

91. Analyze the impact of material science on the future of VLSI fabrication.
92. Discuss the environmental concerns associated with VLSI fabrication and the efforts toward sustainable manufacturing.
93. Explain the process of creating multilevel metal interconnections, and the challenges that are involved.