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Code No. : 6213

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**M.E. I Year (ECE) II-Semester (Main) Examinations, July-2016**  
(Embedded Systems & VLISI Design)

**VSLI Physical Design**

Time: 3 hours

Max. Marks: 70

Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B**

**Part-A (10 × 2 = 20 Marks)**

1. Compare BJTs with MOSFETs with respect to area and operation.
2. Why Inductors occupy larger area on a chip?
3. What is the role of vias in Layouts?
4. What is meant by positive and negative masks?
5. Draw the stick diagram of CMOS inverter.
6. List any two design rules for NMOS layout.
7. What is the advantage of Cell based design?
8. Define clock skew.
9. Write the significance of LVS in IC Design.
10. What is the role of compiler in chip design?

**Part-B (5 × 10 = 50 Marks)**

11. a) Compare and analyze various technologies with respect to performance and area. [5]  
b) Explain the structure of MOSFETs with neat sketch. [5]
12. a) Explain how common centroid layout is applied for a differential pair. [7]  
b) Discuss Mask characterization and overlays for any one structure. [3]
13. a) Why there is a need of design rule? List out the design rule for polysilicon, active area and metal-1 layers. [5]  
b) Draw the schematic and layout of an EX-OR gate. [5]
14. a) What is Clock Tree synthesis in physical design flow? Explain in detail. [5]  
b) Briefly explain about Weinberger image array and write its advantage. [5]
15. a) Discuss briefly about automatic layout tools. [5]  
b) Explain briefly about Hierarchical circuit extractors. [5]
16. a) How are resistors implemented in IC? Explain with example. [7]  
b) Illustrate the importance of Interconnects in Integrated circuits. [3]
17. Answer any **two** of the following:
  - a) Draw the schematic and stick diagram for the following Boolean expression: [5]  
$$Z = \overline{A.B + C}$$
  - b) Explain the importance of Routing in IC. [5]
  - c) Explain the modeling and extraction of circuit parameters. [5]

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