VLSI Design

Assignment - 1

ANUNAY
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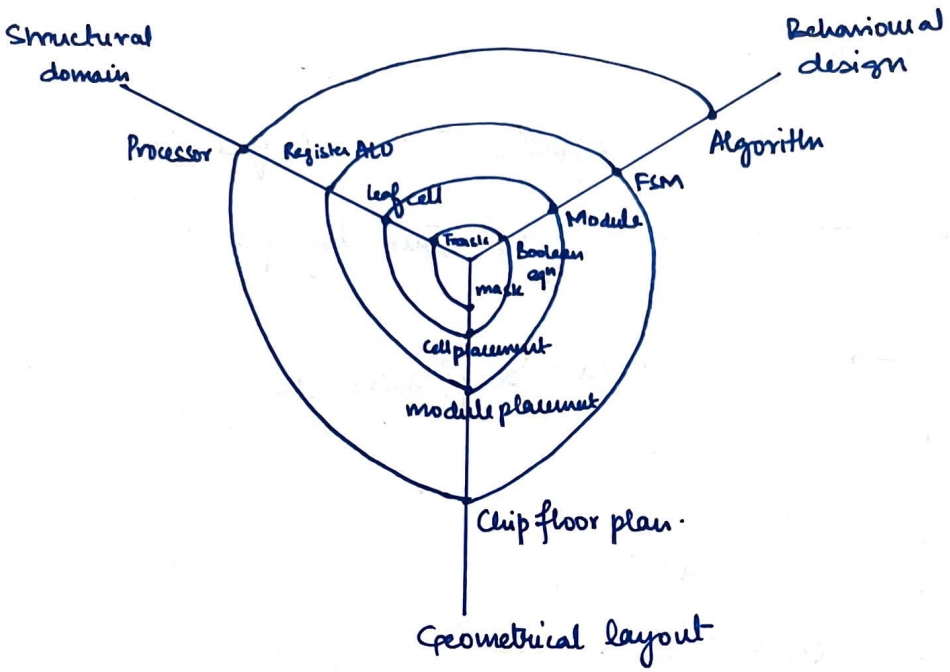
E2

Q1.



#Structural domain

1) Processor → The architecture of the processor is 1st defined performs arthematic, logical, basic function.

2) Register ALU → fundamental block of CPU, structurally implemented with leaf cell or logic gates.

3.) Leaf cell → Individual module implemented with leaf cell or logic gates.

4.) Transistor → CMOS logic circuit in implement at transistor level.

Behavioural domain

1) Algorithm → The behaviour of a chip.

2) Finite State machine → A mathematical model of computation structurally implemented with functional module such as registers.

3) Module description → Module is described and then connected to chip.

4) Boolean equation → Logical eqn which gives the functionality to system.

#Geometrical layout design.

1) Chip floor plan → Processor is mapped onto the surface by floor planning

2) Module placement → Module are geometrically placed on a chip using CAD tools.

3) Cell placement → Leaf cell can be placed using placement and routing algorithm.

Q2) $V_{to} = -0.4V$, $\gamma = -0.4\ V^{1/2}$

$|2\phi_f| = 0.6V$, $V_{SB} = -2.5V$

$$V_T = V_{To} + \gamma\left(\sqrt{|2\phi_F + V_{SB}|} - \sqrt{|2\phi_F|}\right)$$

$V_T = -0.64\ V$.