## GUJARAT TECHNOLOGICAL UNIVERSITY ME - SEMESTER-I(New course)• EXAMINATION – WINTER- 2015

Subjec Subjec	ct Code: 2714202	Date: 04/01/2016		
Time:	2:30 pm to 5:00 pm	Fotal Marks: 70		
Instruct	<ul> <li>ions:</li> <li>1. Attempt all questions.</li> <li>2. Make suitable assumptions wherever necessary.</li> <li>3. Figures to the right indicate full marks.</li> </ul>			
Q.1 (a)	<ul> <li>Define the followings:</li> <li>(i) Space Complexity (ii) Time Complexity (iii) Hard Problem</li> <li>(iv) Deterministring (v) Cell (vii) Net (viii) Dia</li> </ul>	<b>07</b>		
(b)	<ul> <li>(iv) Polynomial Time (v) Cell (vi) Net (vii) Pin</li> <li>Partition the given circuit using Fiduccia Mattheyses (FM) Algor</li> </ul>	ithm 07		



(b) Define Routing Regions and its different representations.

OR

- (b) Compare Floorplan v/s Placement
- Q.3 (a) The placement P shown in figure corresponds to the circuit whose signal nets are 07 given below. Weights  $w_i$  refers to the number of wires required for each net. Compute X(P), Y(P) and L(P).

Nets	Weight
$N_1 = (A, B, C)$	$w_1 = 1$
$N_2 = (C, D, E)$	$w_2 = 3$
$N_3 = (D, F, G)$	$w_3 = 4$



(b) Explain: Hadlock's Algorithm.

(a) Explain: Lee Algorithm.

Q.3

OR

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- (b) What is polish expression? Explain with an example how it can be useful in **07** Floorplan.
- Q.4(a) Explain Mikami-Tabuchi's Algorithm.07(b) Discuss the methods to reduce running time of Lee Algorithm.07

## OR

- Q.4 (a) Discuss in detail Simulated Annealing Algorithm and its importance in VLSI. 07
  - (b) What is difference between Shortest Path and Desired Path.? How to find more 07 desirable path?
- Q.5 (a) Discuss in brief: Channel Routing, Problem Definition and its objectives. 07
  - (b) Consider a chip of size 3 rows by 3 columns. Given below are 5 signal nets and 07 their corresponding weights (A<sub>i</sub> corresponds to pin i of cell A). For the placement P Shown in figure where each cell occupies one grid unit, compute L(P).

Nets	Weight	F		н			
$N_1 = (A_1, B_1, H)$	$w_1 = 2$	'		11			
$N_2 = (B_2, C_1)$	$w_2 = 4$				F		
$N_3 = (C_2, D)$	$w_3 = 3$			٨	+	De	
$N_4 = (E_1, F)$	$w_4 = 1$			A			
$N_5 = (A_2, E_2, G)$	$w_5 = 3$			-•			
		G	5	D		С	

OR

- **Q.5** (a) Explain followings
  - (i) HCG
  - (ii) VCG
  - (b) Explain following terms with respect to Floorplan:
    - (i) Rectangular Dissection
    - (ii) Slicing Structure
    - (iii) Slicing Tree
    - (iv) Wheel
    - (v) Skewd and Non-Skewd Floorplan and Polish Expression

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