

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2015

Electronics & Communication Engineering
(VLSI & Embedded Systems)

04 EC6511— VLSI Design Automation

Max. Marks : 60

Duration: 3 Hours

PART A

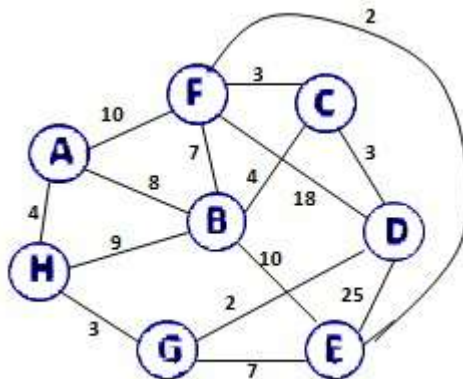
Answer All Questions. All Questions Carry 3 marks each.

1. Define a 'minimum spanning tree'
2. List out the firing rules for a conditional node with proper diagrams
3. Briefly explain layout compaction
4. Differentiate standard cell placement and building block placement
5. List out the three ways in which a Rectilinear Steiner tree can be realized in standard cell layout
6. Define total channel density
7. List out three parameters that should be considered during local routing
8. Give the significance of 'doglegs' in channel routing

PART B

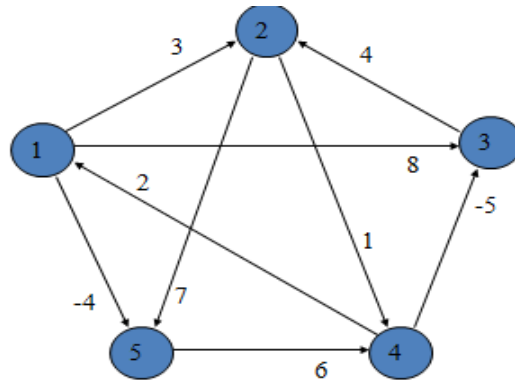
Answer All Questions. All Questions Carry 6 marks each.

9. a)



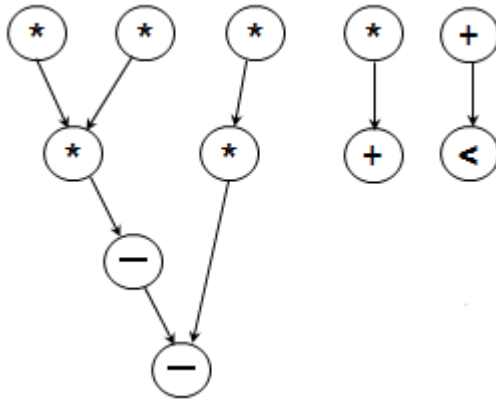
Calculate the cost of minimum spanning tree using Prim's algorithm
Or

10. a)



Calculate shortest path between all pair of vertices using matrix multiplication modeling

11. a) Perform force directed scheduling from the data flow graph given below

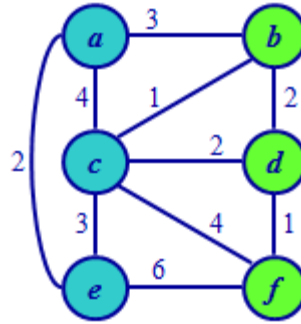


Or

12. a) Perform resource based scheduling for the data flow graph given in Q.No. 11. Allocated resources are as follows :

Resource	Allocation
*	2
+	1
-	1
<	1

13. a)



Perform K-L Partitioning (pass-1) for the graph given above

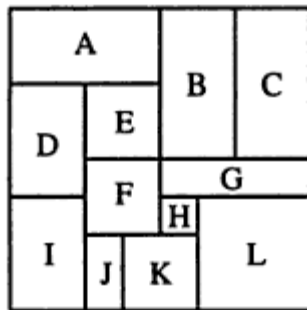
Or

14. a) Illustrate any two layout compaction algorithm based on minimum distance between features

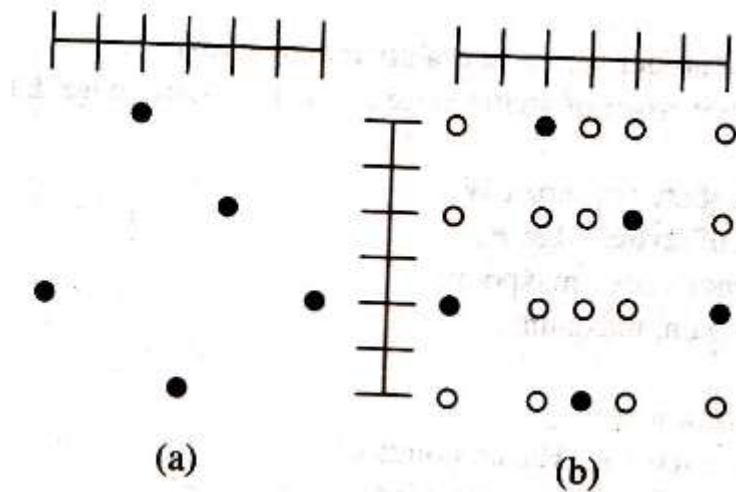
15. a) Interpret any two techniques to perform constructive algorithms in placement

Or

16. a) Sketch floor plan tree, vertical and horizontal polar graph of the floor plan given below with suitable explanations



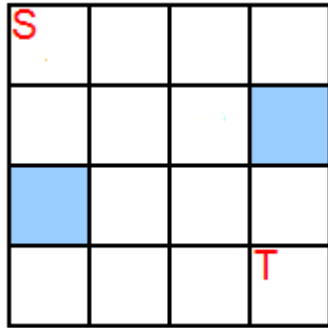
17. a) Find optimal solution using 1-Steiner heuristic method of routing. The set of points P for which the Steiner tree should be constructed (a) and its Hanan points (b) are as follows



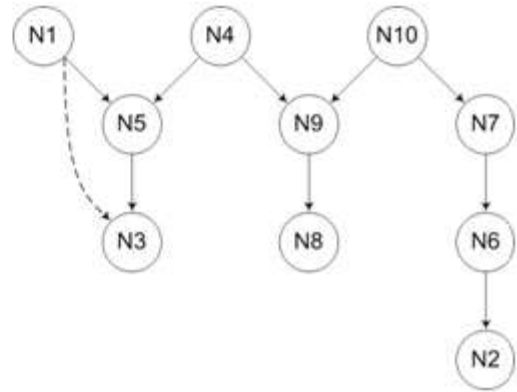
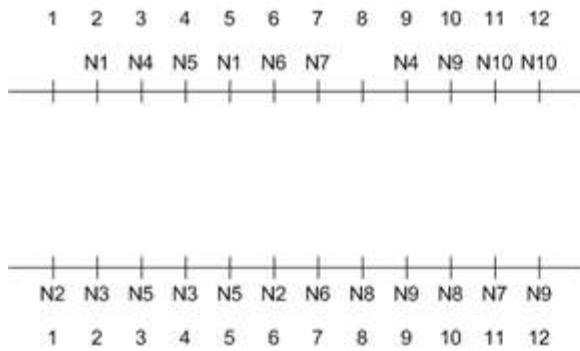
Or

18. a) Find shortest route from S to T using Lee's maze routing algorithm. Shaded region represents

obstacle .



19. a) Perform left edge channel routing algorithm from the vertical constrained graph given below



Or

20. a) Illustrate two methods for minimization of via