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E   Total Pages   **4**

Register No: .... Name: ....

SAINTGITS COLLEGE OF ENGINEERING
KOTTAYAM, KERALA
(AN AUTONOMOUS COLLEGE AFFILIATED TO
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER M.TECH. DEGREE EXAMINATION (R), MARCH 2021
VLSI AND EMBEDDED SYSTEMS

Course Code: 20ECVET121

Course Name: VLSI DESIGN AUTOMATION

Max. Marks: 60   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1.   Define characteristics required for an MST
2.   List out firing rules for a conditional node with proper diagrams.
3.   Briefly explain the importance of layout compaction in VLSI design.
4.   Differentiate standard cell placement and building cell placement.
5.   Given three graph models used in global routing.
6.   Differentiate vertical channel, horizontal channel and switch box.
7.   Mark trunk, branch, dogleg, via, terminal in the diagram given below
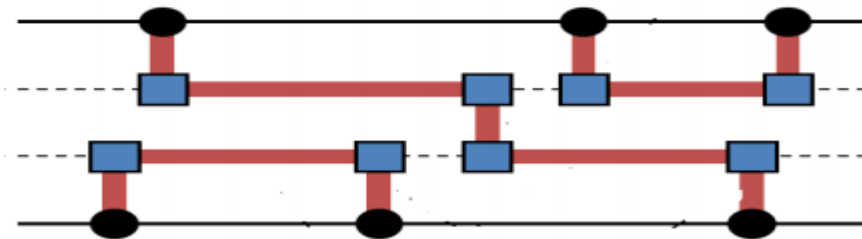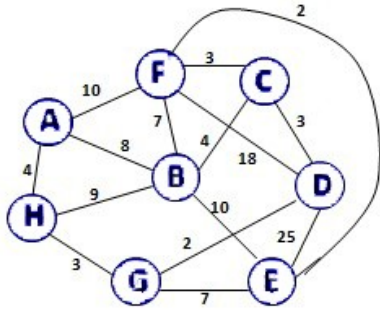

8.   Explain doglegs in routing.

PART B
(Answer one full question from each module, each question carries 6 marks)

MODULE I
9.   Calculate the cost of minimum spanning tree using Prim's algorithm   (6)
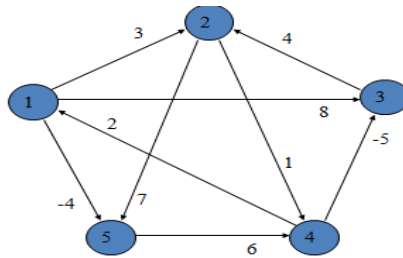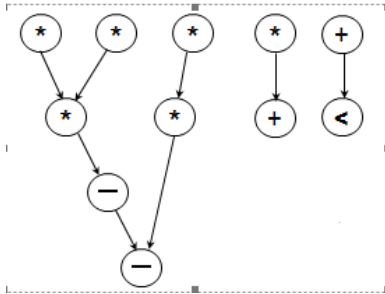
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<div align="center">

OR

</div>

10.   Calculate shortest path between all pair of vertices using matrix multiplication modeling   (6)

<div align="center">

MODULE II

</div>

11.   Perform force directed scheduling from the data flow graph given below   (6)

<div align="center">

OR

</div>

12.   Perform resource-based scheduling for the data flow graph given in Q.No. 11. Allocated   (6)
resources are as follows.

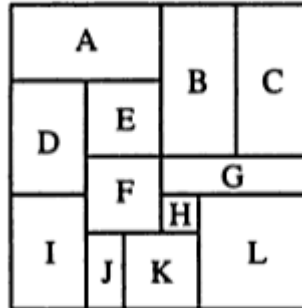| Resource	Allocation
*	2
+	1
-	1
<	1

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MODULE III

13. Explain (i) Fiduccia-Matheyses algorithm (ii) Goldberg-Burstein algorithm (6)

OR

14. Sketch floor plan tree, vertical and horizontal polar graph of the floor plan given below with suitable explanations (6)
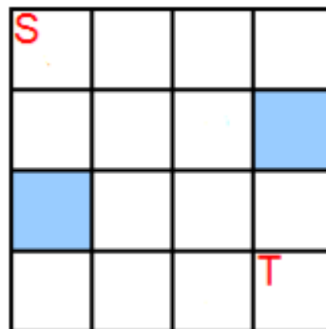

MODULE IV

15. Interpret any two techniques to perform constructive placement. (6)

OR

16. Explain Steiner tree based global routing algorithm. (6)

MODULE V

17. Find shortest path from S to T using Lee's Maze routing algorithm. Shaded region represents obstacle. (6)
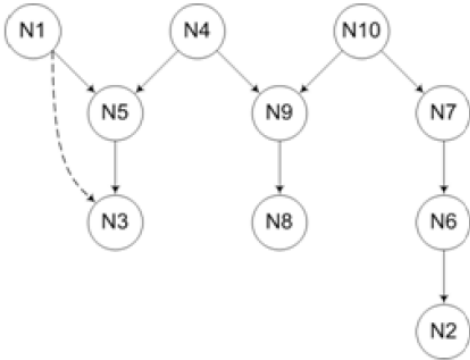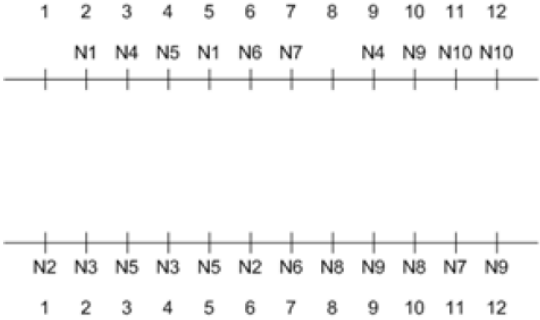

OR

18. Explain line probe algorithm. (6)

MODULE VI

19. Perform left edge algorithm from VCG given below. (6)

OR

20.   Differentiate constrained via and unconstrained via.   (6)

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