ASSIGNMENT-1

A.List out the semiconductor products and its corresponding companies

1.NVIDIA

NVIDIA is a gaming hardware and AI company known for its creation of the graphics processing unit in 1999. Since then, the company has developed hardware and software for gaming, laptops, data centers and apps. Its solutions are used in industries such as architecture, cybersecurity, robotics and game development.

2.AMD

AMD, well known in the gaming hardware world, produces internal processors, high-powered graphic systems and specialized gaming products for multiple use cases that make the most of silicon, hardware and software technologies.

3.Qualcomm

Qualcomm makes semiconductors and components for a variety of industries. The company has had a notable impact on mobile and smartphone applications with its Snapdragon 5G platform. Qualcomm also offers a semiconductor mentorship program where it works with startups in India to refine their semiconductor products.

4.Broadcom Inc.

Broadcom designs, develops and supplies semiconductor technology and infrastructure software solutions, covering a range of enterprise storage, networking and communications use cases. The company's line of products include storage adapters, wireless embedded solutions, RF components, processors, custom silicon devices and motion control encoders, helping power massive businesses across a range of industries.

5.Intel Corporation

Intel is used in a variety of sectors, ranging from hospitality and retail to sports, healthcare, financial services and transportation. Its product lineup includes its Pentium and Intel Core and Xeon chips; chipsets for mobile, desktop, server and embedded use; graphics processing units; single- and multi-node servers and server chassis and boards; plus FPGAs and programmable devices.

6. Samsung Semiconductors

The semiconductor-business area includes semiconductor chips such as SDRAM, SRAM, NAND flash memory; smart cards mobile application development, mobile application processors; mobile TV receivers; RF transceivers; CMOS Image sensors, Smart Card IC, MP3 IC, DVD/Blu-ray Disc/HD DVD Player SOC, and multi-chip package (MCP).

B. What are the latest laptop processors from AMD,APPLE,INTEL and their frequency and node.

1. INTEL

Intel rolled out its 13th Gen Intel Core mobile processor family, led by the launch of the new flagship **Intel Core i9-13980HX** – what the company calls "the first 24-core processor for a laptop." The new H-series processors push the computing possibilities for gamers and creators with up to 5.6GHz turbo frequency – the highest clock speed available for the laptop market.

2. AMD

AMD Ryzen™ processors and Ryzen™ PRO processors are the world's most advanced x86 processors1for an ultra-responsive PC experience. With up to 8 high performance cores, they deliver exceptional productivity for accelerated professional workflows with outstanding power efficiency. Now with Ryzen™ AI, a new integrated AI engine in select models, providing premium AI collaboration experiences with incredible battery life, speed, and quiet operation. AMD Ryzen™ PRO processors are how modern business gets done

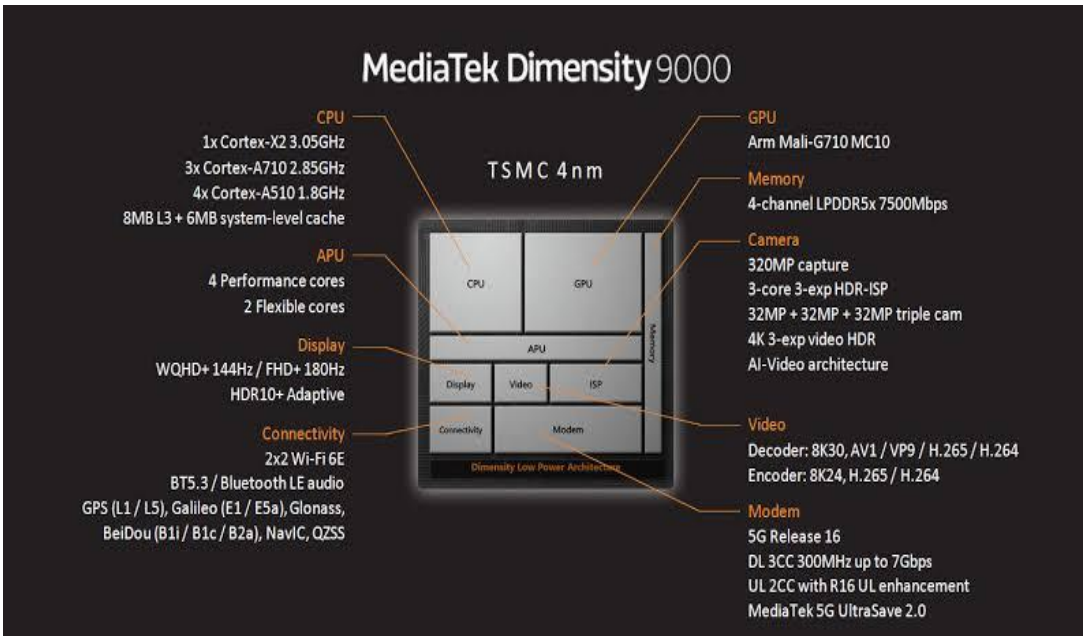
3. APPLE

The M3 chip has an 8-core CPU and up to a 10-core GPU, while the M3 Pro has up to a 12-core CPU and up to an 18-core GPU. The M3 Max has up to a 16-core CPU and up to a 40-core GPU.

C. Latest processors for mobile from Qualcomm and Mediatek:

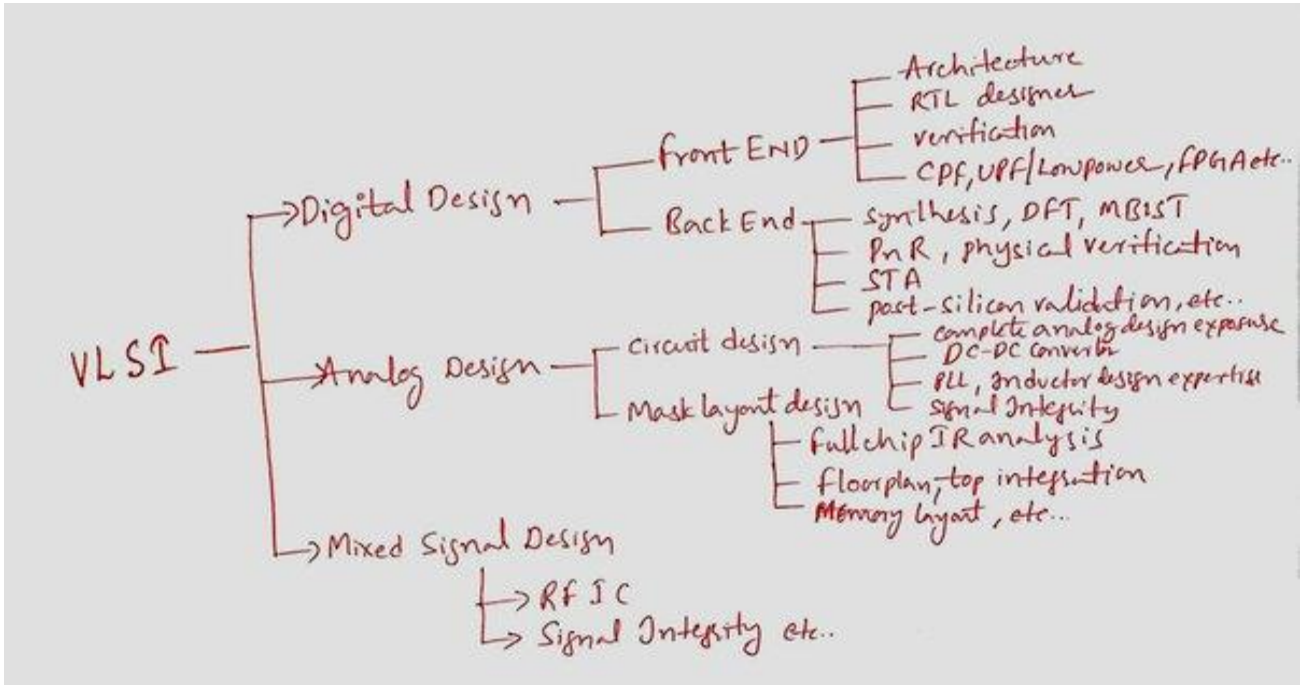
1.MEDIATEK

D.



2. QUALCOMM

D.WHAT ARE THE DIFFERENT JOB ROLES AVAILABLE IN VLSI

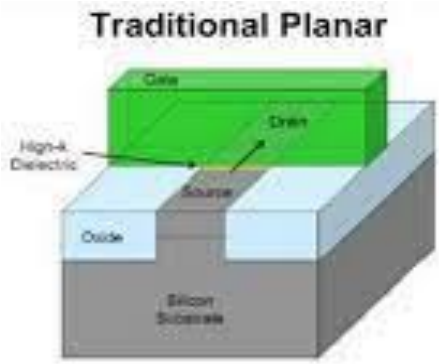


E. Comparision between transistors

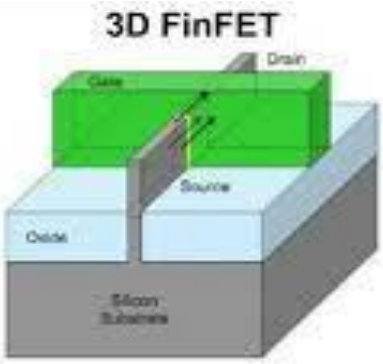
Difference between BJT and MOSFET

Sl.no	BJT	MOSFET
1.	BJT is a current controlled device	MOSFET is a voltage-controlled device
2.	BJT is a Bipolar device, current conduction is due to both electrons and holes	Mosfet is a unipolar device, current conduction is due to majority carriers only
3.	The input impedance is low (kilo ohms)	The input impedance is high (mega ohms)
4.	BJTs are more commonly used in low-current applications.	MOSFETs are ideal for high-power applications
5.	Switching frequency is low(KHZ)	Switching frequency is high(MHZ)
6.	BJT has high switching losses and low conduction losses	Mosfet has high conduction losses and low switching losses
7.	BJT exhibits a negative temperature coefficient of resistance, hence cant be operated in parallel	Mosfet exhibits positive temperature coefficient of resistance, so Mosfet's can be operated in parallel
8.	High gain , low bandwidth	Low gain , large bandwidth

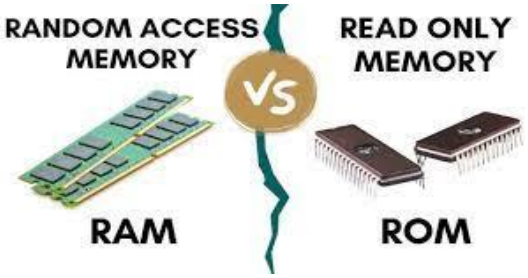
Mosfet vs finfet



Traditional 2-D planar transistor form a conducting channel in the silicon region under the gate electrode when in the "on" state



3-D Tri-Gate transistor form conducting channels on three sides of a vertical fin structure, providing "fully depleted" operation



TERMS	RAM	ROM
Definition	RAM can be defined as a temporary memory that can hold the data and instructions if there is adequate power supply.	ROM can be defined as a permanent memory holding the data even the power is switched off.
Type	The content in RAM (Random Access Memory) can be accessed and processed.	The content in ROM (Read Only Memory) can not be processed. It can only be read.
Utility	It stores immediate instructions required by the processor.	It keeps the booting instructions of a computer.
Speed & Cost	High-speed at a higher cost than ROM	Low-speed at a lesser cost than RAM

HOW MEMORIES EVOLVED: