ASSIGNMENT - 1

1.List out the semiconductor products and its corresponding companies.

- ✓ Integrated Circuits (ICs): Texas Instruments, STMicroelectronics.
- ✓ Microcontrollers: STMicroelectronics, NXP Semiconductors.
- ✓ Microprocessors: Intel, AMD, Qualcomm, Apple Power
- ✓ Semiconductors: STMicroelectronics, Infineon Technologies
- ✓ Field-Programmable Gate Arrays (FPGAs): Intel, Xilinx Power Management
- ✓ ICs: Texas Instruments, ON Semiconductor.

2. What are the latest laptop processors from AMD, Intel and Apple:frequency and node

- AMD
  AMD Ryzen 9 5900x desktop processor
  Frequency – 3.7 GHz to 4.8 GHz
  Node – 7nm
- INTEL
  Intel core i9-14900k
  Frequency – 6GHz
  Node – 10nm
- APPLE
  Apple M1 Max
  Frequency-3.2GHz to 3.8GHz
  Node – 5nm

3. State the difference between RAM and ROM

Difference	Random Access Memory (RAM)	Read Only Memory (ROM)
Data-Retention	RAM is a volatile memory that could store the data as long as the power is supplied.	ROM is a non-volatile memory that could retain the data even when the power is turned off.
Read/Write	Read and write operations are supported.	Only read operations are supported.
Speed	It is a high-speed memory.	It is much slower than the RAM

CPU Interaction	CPU can easily access data stored in RAM.	CPU cannot easily access data stored in ROM.
Accessibility	The data stored is easily accessible.	The data stored is not as easily accessible as in the concerning RAM.
Chip Size	A RAM chip can store only a few gigabytes (GB) of data.	A ROM chip can store multiple megabytes (MB) of data.
Function	Used for the temporary storage of data currently being processed by the CPU.	Used for the temporary storage of data currently being processed by the CPU.

4. State the difference between mosfet and finfet.

- Drive strength: The drive strength of a planner MOSFET is determined by the channel width, whereas the drive strength of a FinFET can be increased by incorporating multiple or longer fins.
- For starters, MOSFETs have faster switching speeds and lower switching losses than BJTs.
- BJTs have switching frequencies of up to hundreds of kHz, while MOSFETs can easily switch devices in the MHz range. So, for high-frequency applications where switching losses have a major role in the total power loss, MOSFET is preferred.

5. What are the latest mobile processors available from Qualcomm and mediatek : frequency and node?

- Qualcomm
  Snapdragon 888 5G
  Frequency – 3GHz
  Node – 5nm
- MediaTek
  MediaTek Dimensity 9300
  Frequency – 3.25GHz
  Node – 6nm

6. What are the different job roles available in vlsi field?

VLSI field is highly technical and completely based on electronics engineering. Usually, only candidates with a background in electronics engineering can get into semiconductor industries because it requires a minimum of BE/BTech/BS in ECE/EEE as a necessary qualification.

Few job roles in VLSI are:

- Design Engineer.
- Verification Engineer.
- Physical Design Engineer.
- Process Integration Engineer.
- Test Engineer.
- Product Validation Engineer.
- CAD engineer