1) List out the semiconductor products and its corresponding companies

	Company	Semiconductor product
(i)	Intel corporation	– microprocessors, chipsets and other components for computing devices.
(ii)	Samsung Electronics	– memory chips, microprocessor
(iii)	Taiwan semiconductor manufacturing company	– microprocessors, graphic processors
(iv)	SK Hynix	– dynamic random-access memory (DRAM) and NAND flash memory.
(v)	Micron technology	– DRAM, NAND flash memory
(vi)	Broadcom Inc	– microprocessors, chipsets.
(vii)	Texas instruments Inc	– microcontrollers, amplifiers and components for a wide range of applications
(viii)	Qualcomm Inc	– microprocessors, modems
(ix)	NXP semiconductors	– microcontrollers, automotive chips
(x)	Infineon technologies	– power management chips automotive chips
	Nvidia corporation	– Graphic processor, gaming GPU

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(2) What are the latest laptop processors from AMD Intel and Apple : Frequency and node

Ans: (i) Intel - version 13th - Generation core i9-13900K processor
frequency - 6.8 to 6.0 GHz
node - 10 nm - 24 cores.

(ii) AMD Ryzen™ 9 7940HS - By AMD - frequency - 4.0 GHz
nodes - 8 nodes or cores

(iii) Apple - M1 max - frequency - 3228 GHz
node - 10 cores.

(3) What are the latest mobile processor available from Qualcomm and mediatek : Frequency and nodes.

(i) Qualcomm - snapdragon 8 Gen 3
frequency - 3.3 GHz
nodes - 4nm
- snadragon 8+ 5G
frequency - 3.1 GHz
nodes - 4nm

(ii) Mediatek Dimensity 9300 - by mediatek
- frequency - 3.25 GHz
- nodes 4nm

- mediaTEK Dimensity 9000 - frequency
- nodes - 4nm
- 3 GHz.

(4) What are the different job roles available in vlsi field.

Ans: (i) VLSI Design Engineer

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(iii) physical Design Engineer
(iv) Verification Engineer
(v) ASIC Design Engineer
(vi) Digital Design Engineer
(vii) Layout Engineer
(viii) FPGA Design Engineer
(ix) IC Design Engineer
(x) DFT (Design For Test) Engineer

⑤ Difference between MOSFET and FINFET and why shift from BJT to MOSFET TO FinFET

FinFETs	MOSFETs
• FinFETs are three dimensio -nal structures with vertical fins forming a drain and source	• MOSFETs are planar devices with metal, oxide and semiconductors involved in their basic structure.
• In FinFET we are using a double pattern	• In MOSFET double pattern is not necessary.
• FinFETs have a higher gate-to-source voltage	• MOSFETs have a low gate-to source voltage.
• FinFETs use less electricity because their gate capacitance is lower than ~~than~~ that of MOSFETS	• MOSFETS use high electricity.
• FinFET fabrication is difficult	• MOSFET fabrication is easy compare to ~~fab~~ FINFET

• As chips are downsized, transistors also shrink. this compactness brings the drain and source closer and reduces the gate control over the channel carrier this type of short channel effect can cause

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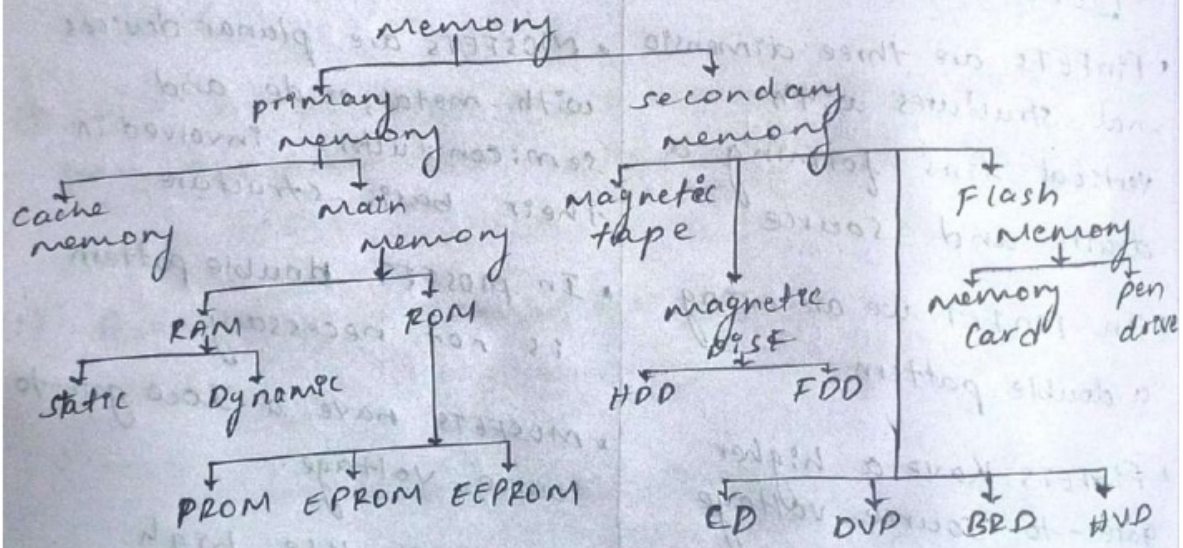
serious issues in MOSFETS. The presence of fins gives FinFETs better short-channel behaviour.

⑥ Evolution of memory technology:

Ans: The single transistor DRAM cell was developed in 1966. followed by a MOS developed in 1966, followed by a MOS semiconductor device used to create ROM in 1964. From 1968 to the early 1970s, N-type MOS (NMOS) memory also started to become popularized. By the early 1970s, MOS based memory started becoming much more widely used as a form of memory.



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