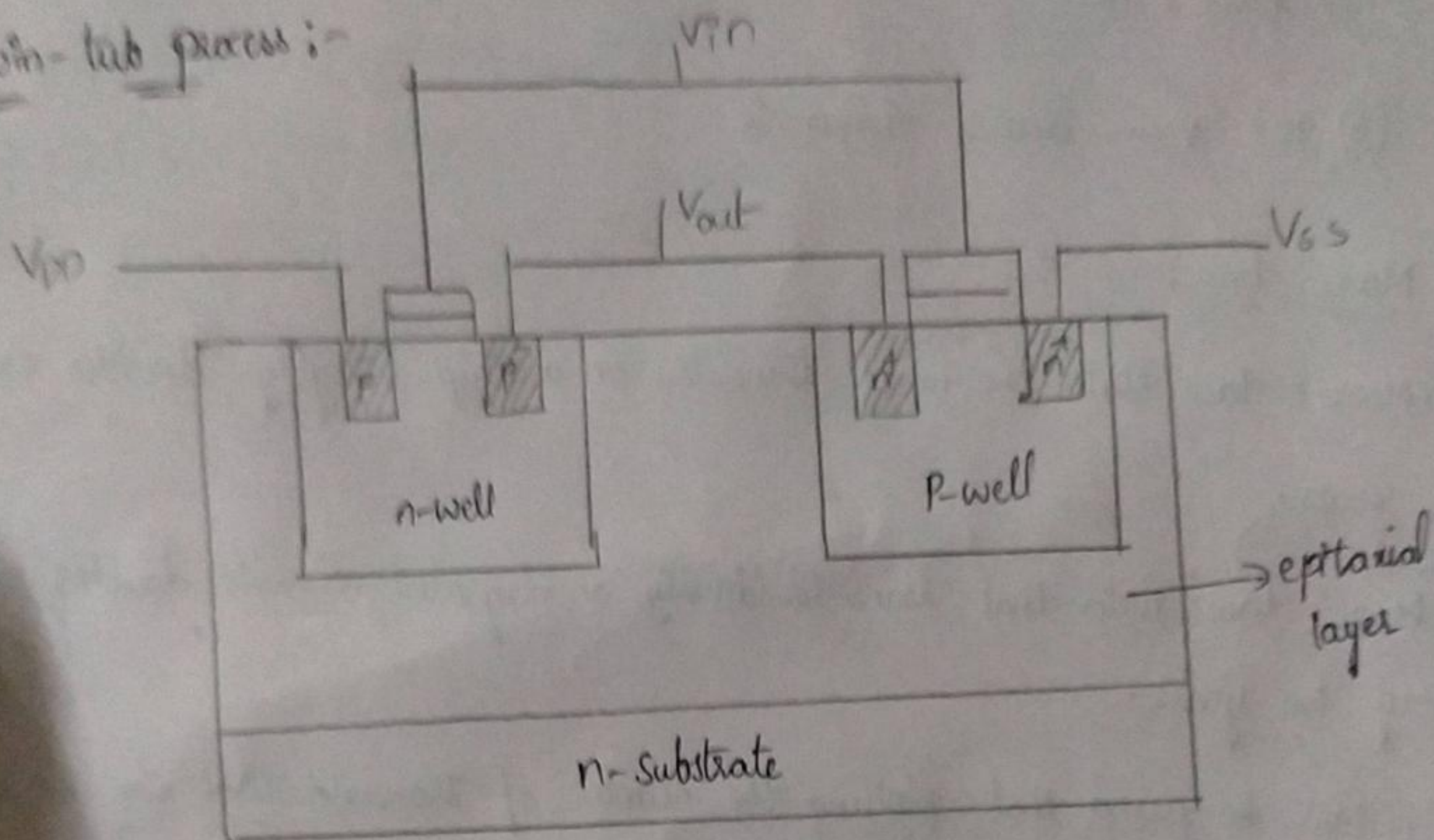


VLST

Explain CMOS fabrication steps in details with twin-tub process?

Twin-tub process:-



→ Logical extension of p-well and n-well approaches is the twin-tub fabrication process.

Step 1:- Take n-type substrate.

Step 2:- Grow a thick layer of epitaxy over n-type substrate.

Step 3:- Oxidation, photolithography, masking and etching process are continued.

Step 4:- The substrate of high resistivity n-type material is used to overcome the latch-up problems and then create n-well and p-well regions.

Step 5:- Induce \bar{P} diffusions in n-well and n^+ diffusions in p-well regions.

Step 6:- Metalization of source, drain and gate terminals are created.

By using above steps we can fabricate CMOS using twin tub process.

②

Write short notes on

(a) Moore's law

(b) IC's versus discrete components

Ans:-

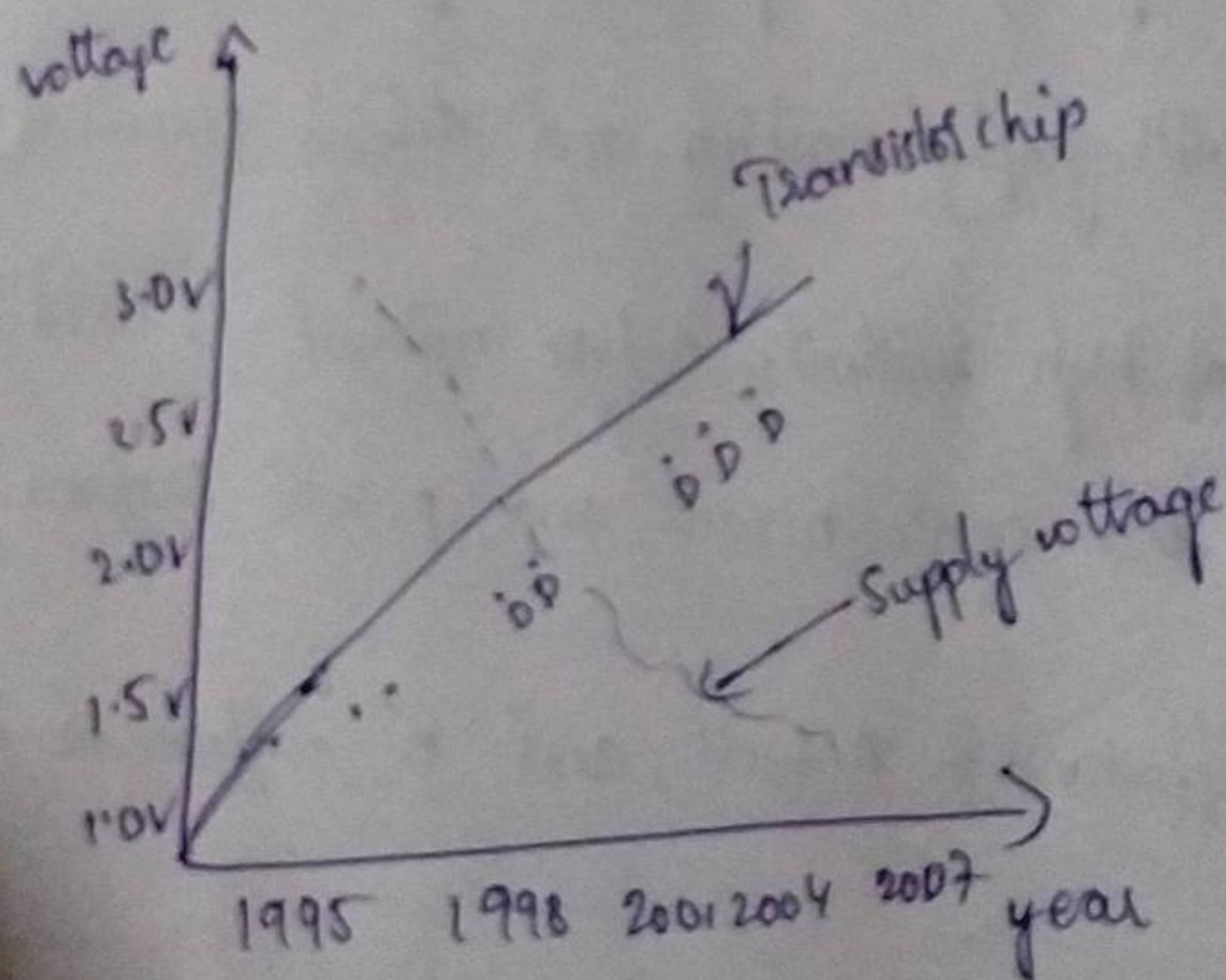
(a) Moore's law :-

→ Moore's law states the no. of transistors on a chip roughly doubles every two years.

→ "Moore's law" states that transistor density on integrated circuits doubles about every two years.

→ In 1965 he found that plotting the number of transistor that can be most economically fabricated on a chip is a straight line on a semi-log scale.

→ It also devise that lowering the supply voltage and channel length together with increasing transistor per chip ratio will make system more efficient.



IC Technology development

⑥ IC's vs discrete components :-

IC's	Discrete Components.
① IC is which all components are fabricated on a single chip.	A discrete circuit is constructed of components which are manufactured separately.
② It works on low voltages.	It requires comparatively more voltage.
③ They can handle limited amount of power.	They can handle much more power than IC.
④ They are small in size.	They circuit with discrete components acquires large space.
⑤ Performance is high.	Costly than IC's.
⑥ Single chip.	Performance is low.
⑦ Easy to replace the components.	Cannot easily replaceable.