Assignment-1

January 25, 2025

Notes/guidelines

- The assignment is for 30 marks
- It can be submitted as series of hand drawn sketches or in a ppt format
- Please depict the lithography steps explicity. Count how many lithography steps are involved in the entire process
- Clarity of process flow/depiction carries a weightage of 9 marks

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1. Please draw a process flow for a single well process that uses LOCal Oxidation of Silcion (LOCOS) process for deivce isolation. The final cross section is given in Fig.1

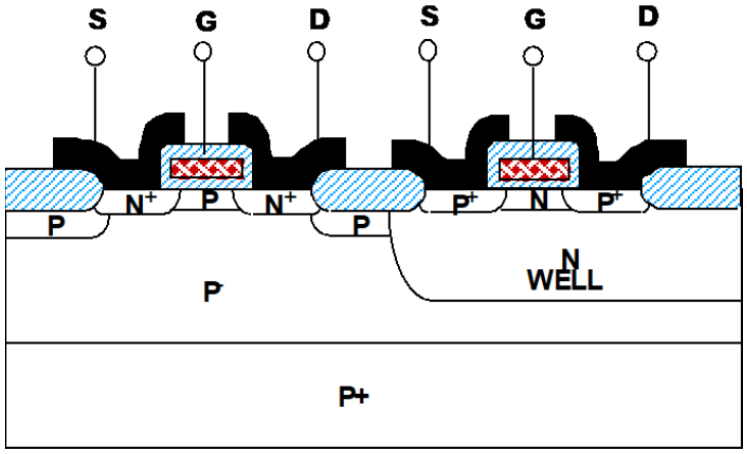

Figure 1: Single Well CMOS process

2. Please draw a process flow of NMOS transistors with Polysilicon as gate and Al as gate. The process flows are different. The process with polysilicon is self-aligned. When Al is used as gate, the gate oxide formation is the last step as it cannot withstand high temperatures. The final cross sections are depicted in Fig.2

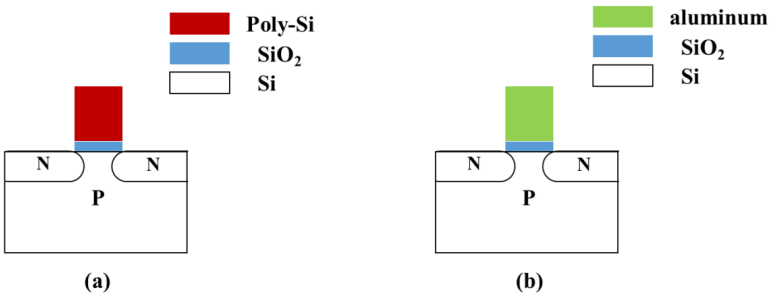

Figure 2: Gate Last and Gate First process flows

3. Along the lines of CMOS process flow, envisage a process flow for BJT fabrication.