① Derive amplification formulas for Inverting Amplifier, Non inverting amplifier, Difference amplifier and ⟨10⟩ Instrumentation Amplifier.

② Consider following truth - table

A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

⟨10⟩

Find boolean expression for S as well as C using product - of - sums method and sum - of - products method.

③ Design a boolean circuit for a security protection system. Alarm should sound if someone breaks into house through a door/window or if something is moving around in the house while the occupants are away. Write Quasi- logic statements, boolean expression, truth table and boolean circuit (using only AND gates/NOT gates).

⟨10⟩