

**SAGAR INSTITUTE OF RESEARCH AND TECHNOLOGY,
Bhopal**



Faculty Name: Prof. Shruti K Dixit

Designation: AP

Department: Electronics & Communication

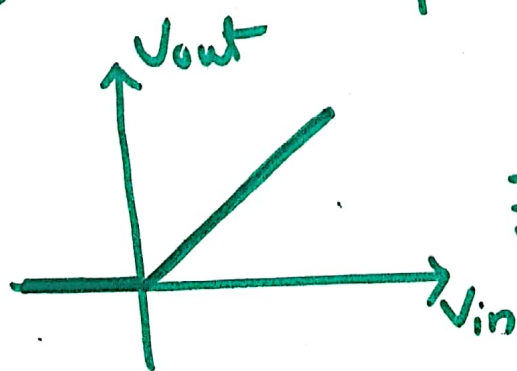
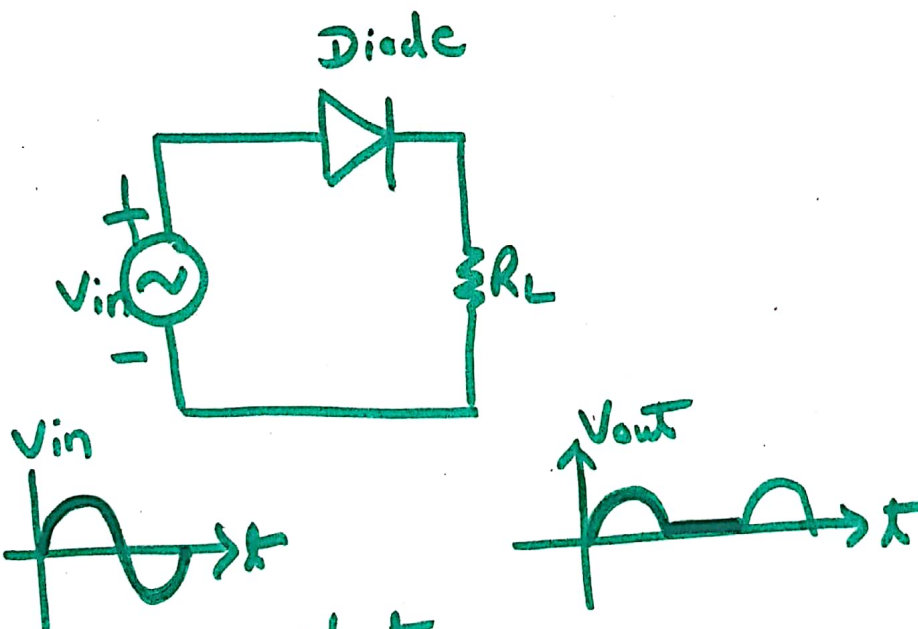
Subject: Analog Circuits EC 405

I

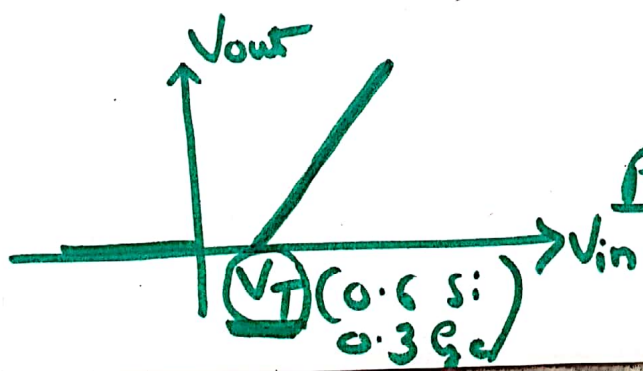


Precision Rectifier ✓

- Precision rectifier is a small signal rectifier which is capable of rectifying signals of very small peaks (of the order of a few mvolts or μvolts)



Ideal characteristics



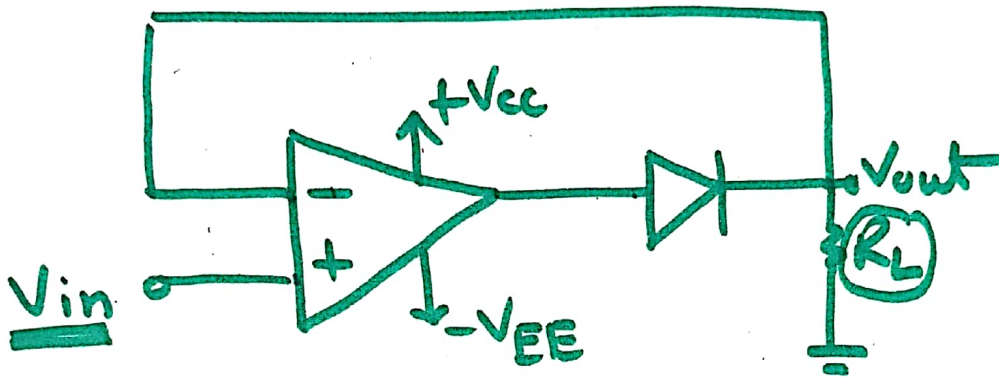
Practical characteristics



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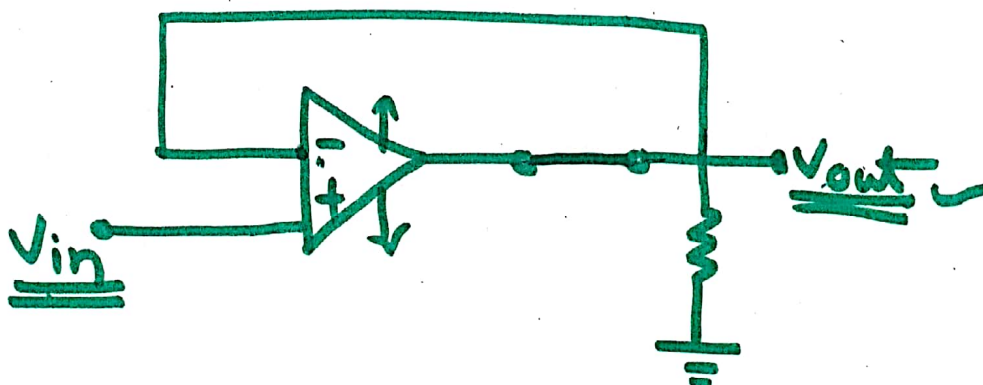
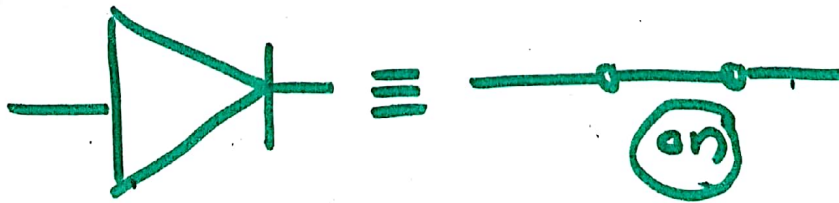
Precision rectifier

↓
Combination of op-amp + diode



① Diode is on
op-amp acts as voltage
follower configuration

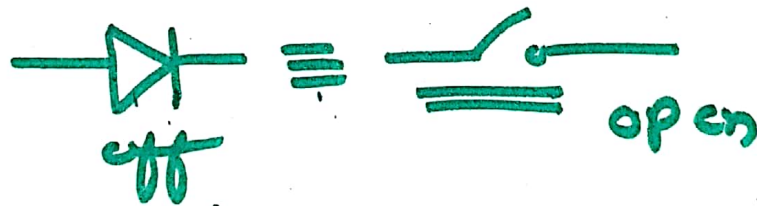
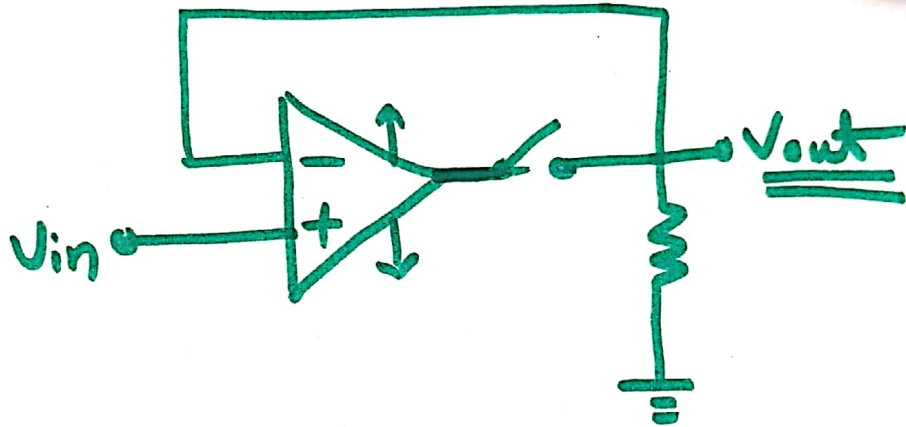
Switch



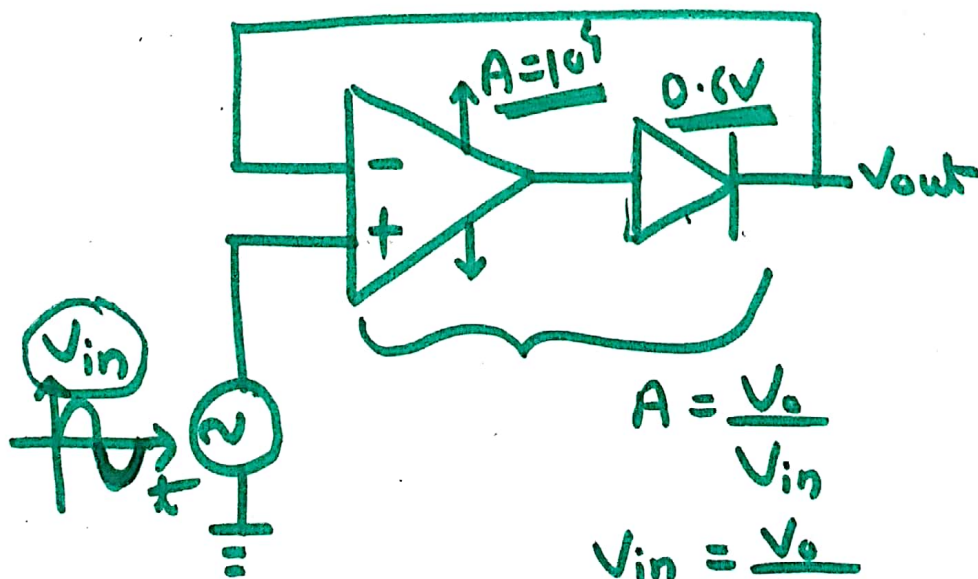


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② Diode is ~~off~~ ✓
op-amp acts as open loop
Configuration



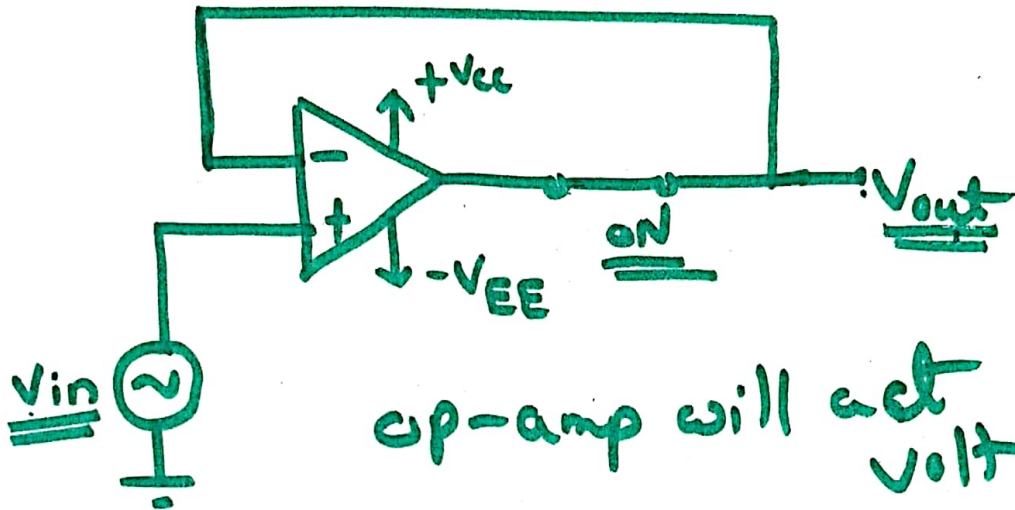
Example



$$A = \frac{V_o}{V_{in}}$$
$$V_{in} = \frac{V_o}{A}$$
$$= \frac{0.6}{10^4} = \underline{\underline{60 \mu V}}$$

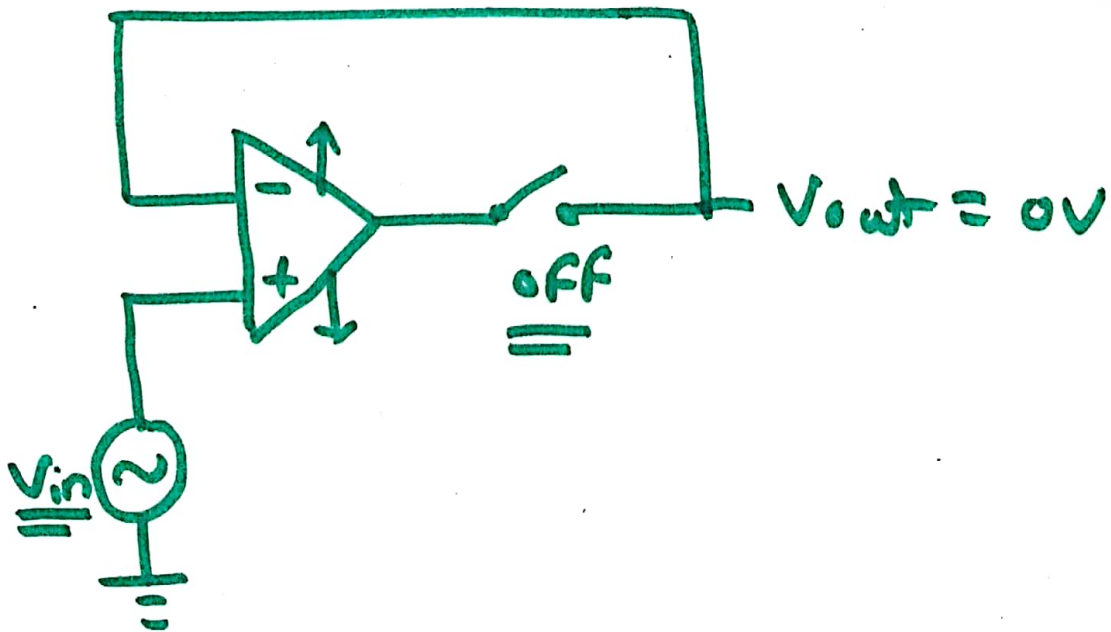


1) $V_{in} > 60mV$ \leftrightarrow diode Forward Biased (9)
ON



op-amp will act as voltage follower

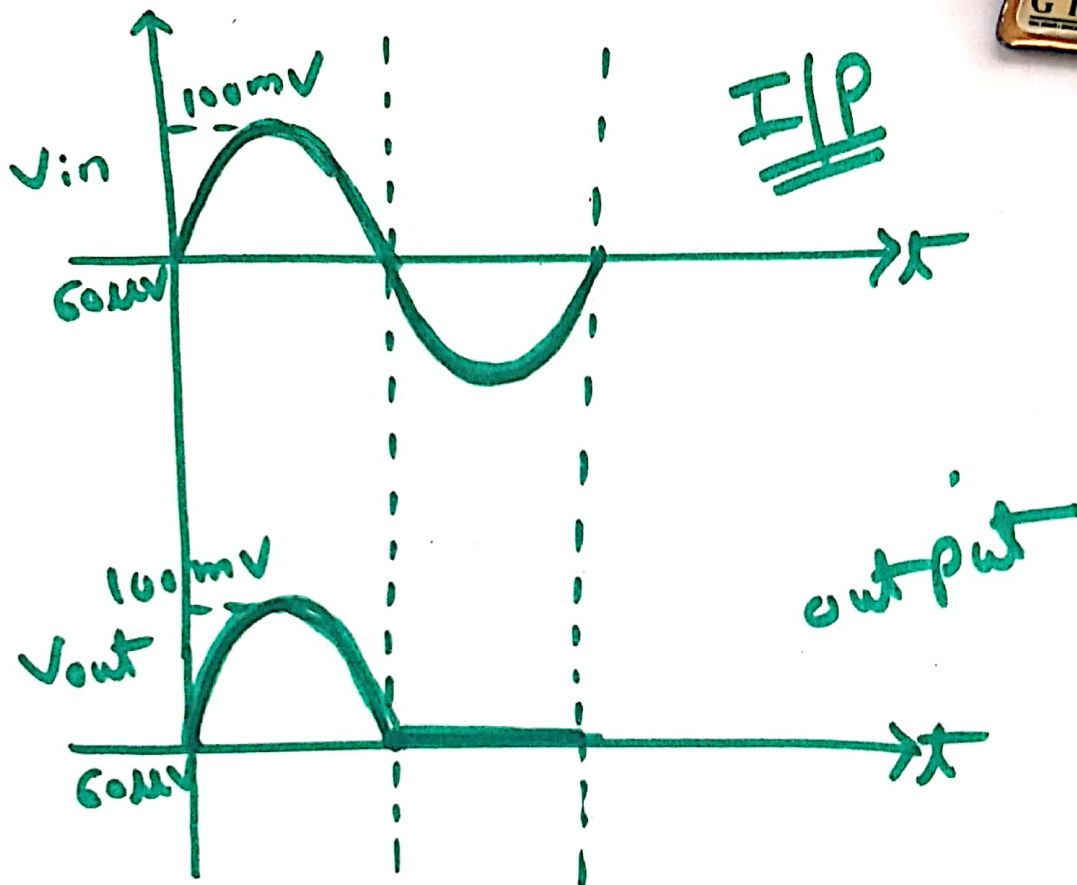
2) $V_{in} < 60mV$ \leftrightarrow diode reverse biased
off





Precision rectifier

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Advantage

- It can rectify signals of very low amplitude (mV) as well as μV