

Gate 2022 EE 25

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PROBLEM STATEMENT

For the circuit shown below with ideal diodes, the output will be :

- (A) $V_{\text{out}} = V_{\text{in}}$ for $V_{\text{in}} > 0$
- (B) $V_{\text{out}} = V_{\text{in}}$ for $V_{\text{in}} < 0$
- (C) $V_{\text{out}} = -V_{\text{in}}$ for $V_{\text{in}} > 0$
- (D) $V_{\text{out}} = -V_{\text{in}}$ for $V_{\text{in}} < 0$

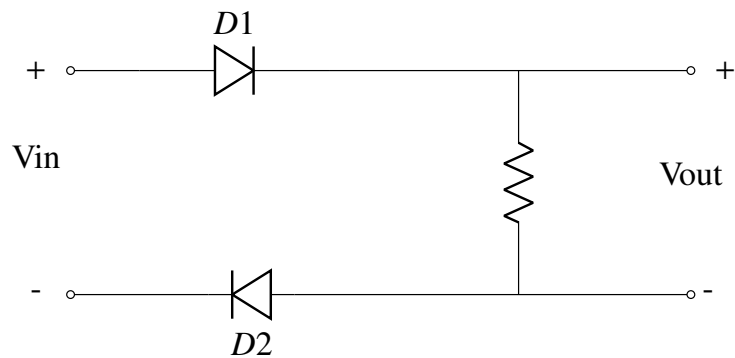


Fig. 1. Gate EE 25 fig-1

SOLUTION

(A)

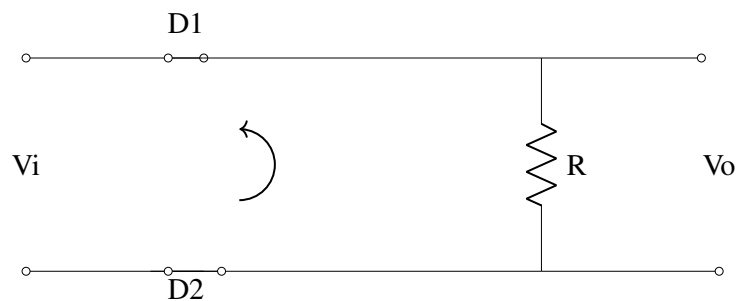


Fig. 2. Gate EE fig-2

Postive Half Cycle- D_1 and D_2 will be ON

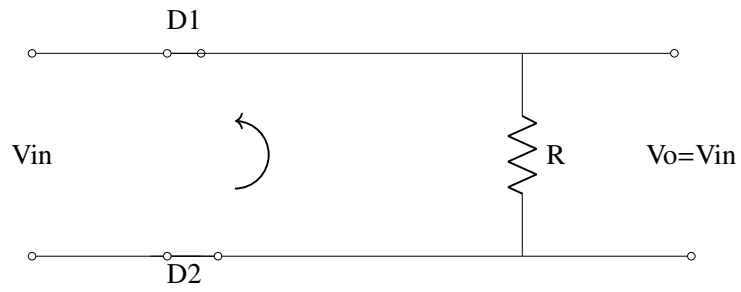


Fig. 3. Gate EE fig-3

Negative Half Cycle- D_1 and D_2 will be OFF, $V_o = 0$ at $V_{in} < 0$

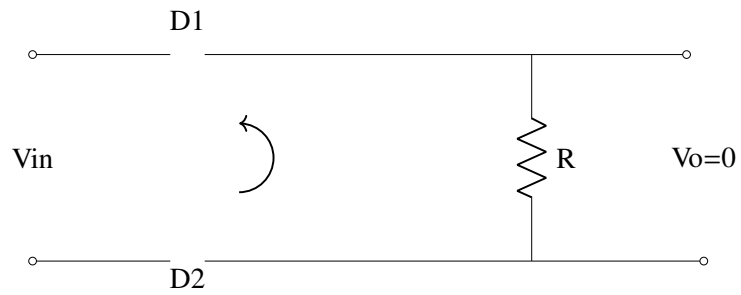


Fig. 4. Gate EE fig-4

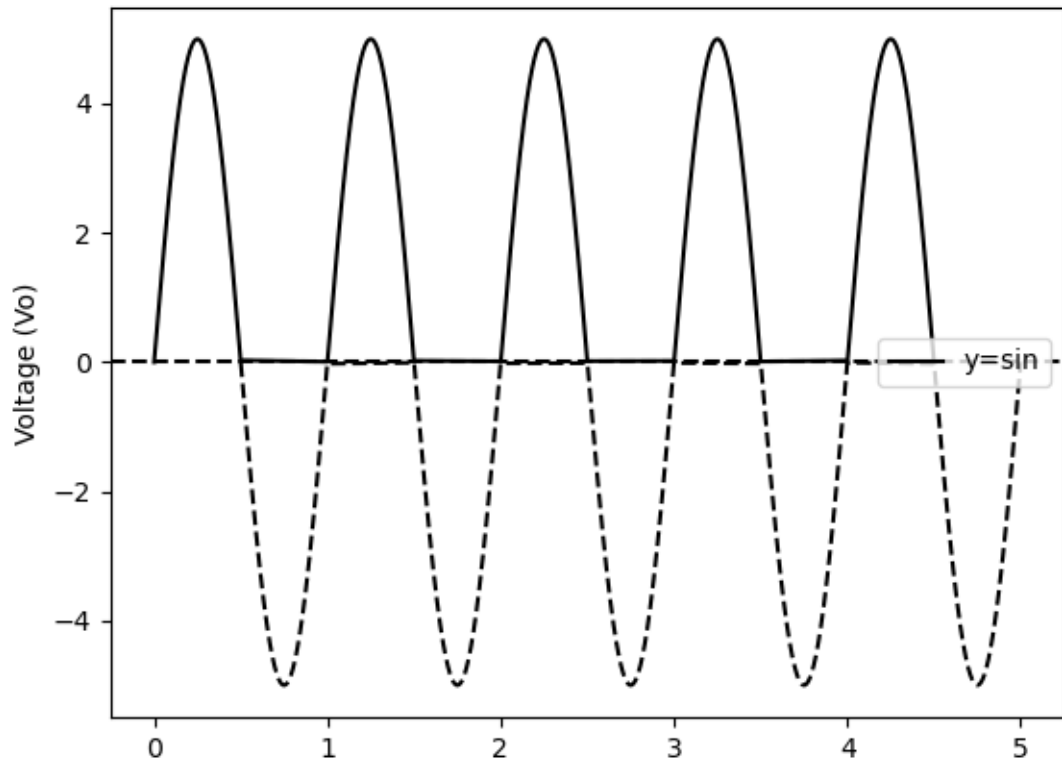


Fig. 5. Output Waveform

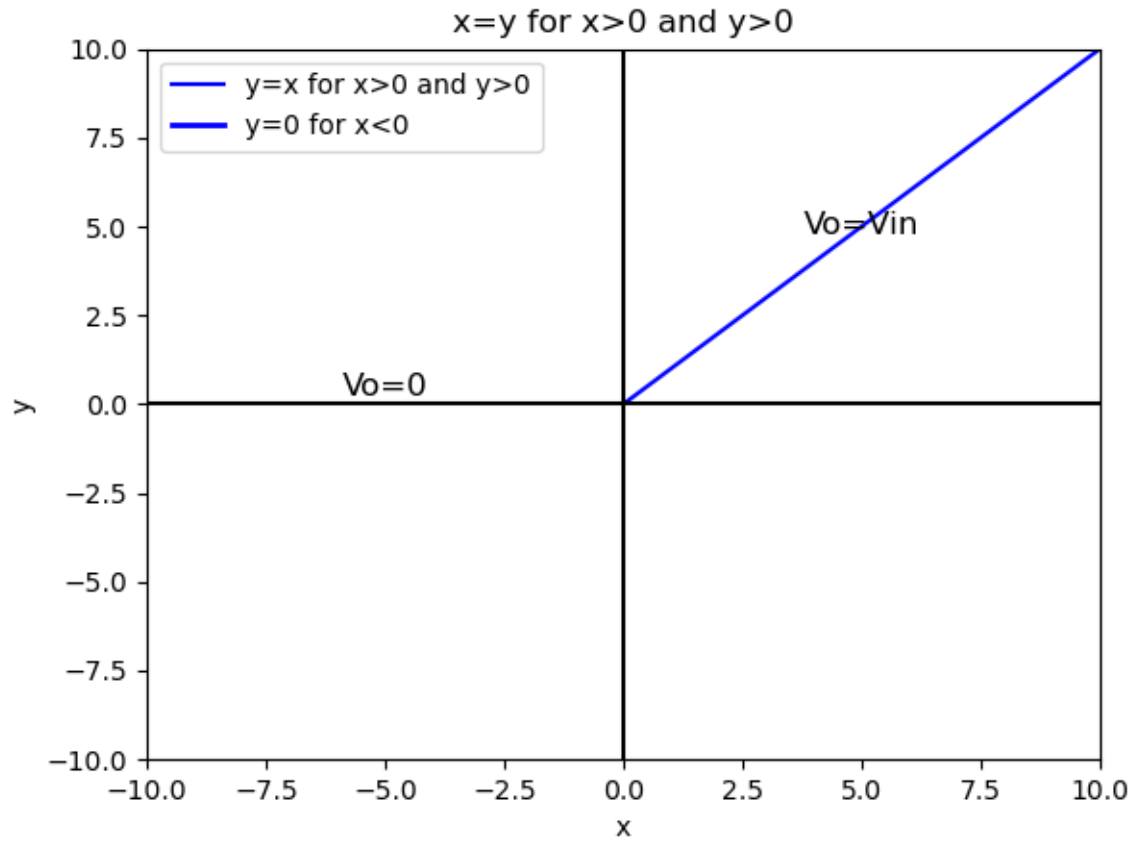


Fig. 6. charecterstic graph