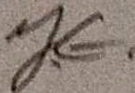
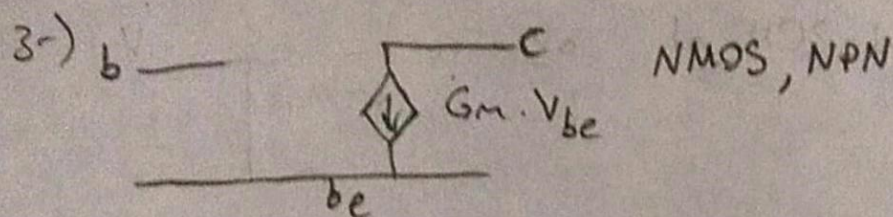


Yunus Emre ERGILMAZ 
040180704

1-) A type of amplifier that its output voltage changes according to input current.

2-) Current amplifier.



4-) $V_G = 10V \cdot \frac{300}{1000} = 3V$ $V_D = 10 - 4 = 6V$
 $V_{GD} \leq V_T \rightarrow \text{Saturation}$

$$I_D = \frac{\mu}{2} (V_{GS} - V_{th})^2 \cdot \left(1 + \frac{V_{DS}}{V_A}\right)$$

$$2 \cdot 10^{-3} = \frac{4 \cdot 10^{-3}}{2} \cdot (3 - V_S - 1)^2 \cdot \left(1 + \frac{6 - V_S}{80}\right)$$

$$1 = \frac{(2 - V_S)^2}{4 + V_S^2 - 4V_S} \cdot \left(\frac{86 - V_S}{80}\right) = \frac{(344 - 344V_S + 86V_S^2) - (4V_S + V_S^3 - 4V_S^2)}{80}$$

$$0 = V_S^3 + 90V_S^2 - 348V_S + 264$$

$$V_{S1} = 3,25 \quad V_{S2} = -94,11 \quad \boxed{V_{S3} = 0,86V}$$

$$\boxed{V_S = 0,86V}$$