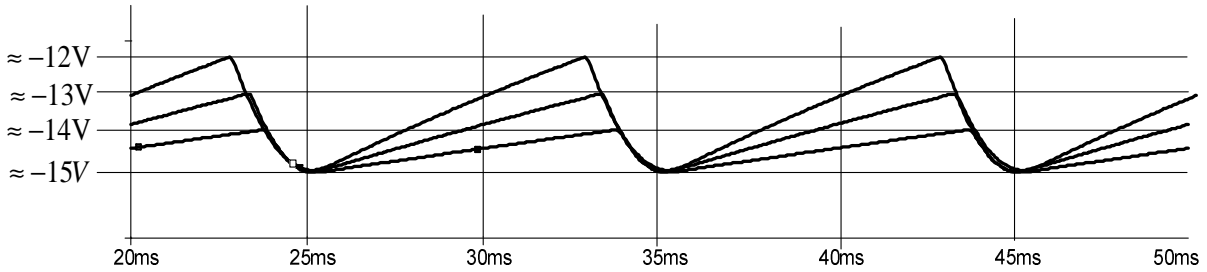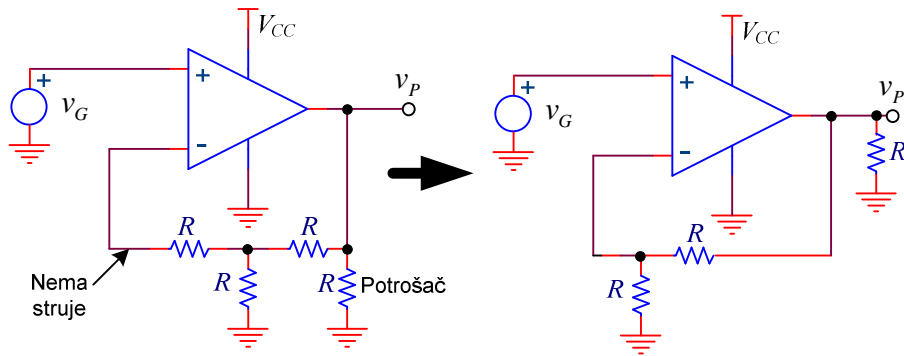**REŠENJA**

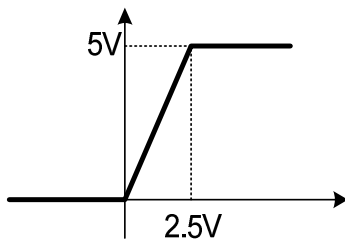**1.** a) $v_g = 220\sqrt{2} \times \sin \omega t = n\, v_s = n \cdot 14.82V \cdot \sin \omega t$, $=> n = 21$.
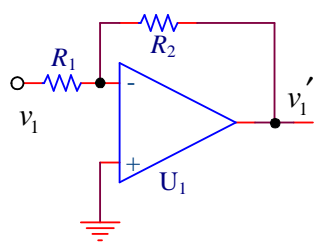
b)

c)

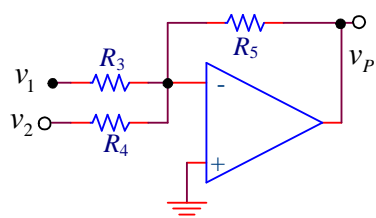Radi se o neinvertujućem pojačavaču sa pojačanjem 2!

2.

a)

Invertujuci pojacavac

$$v_1' = -(R_2 / R_1) \cdot v_1 \Rightarrow -5\text{V} = -(R_2 / 100\text{k}\Omega) \cdot 100\text{V} \Rightarrow R_2 = 5\text{k}\Omega$$

Sabirac

$$v_P = -\frac{R_5}{R_3}v_1' - \frac{R_5}{R_4}v_2 = \frac{R_5}{R_3}\frac{R_2}{R_1}v_1 - \frac{R_5}{R_4}v_2$$

$$a_s = k1 + k2 = 0 = \frac{R_5}{R_3}\frac{R_2}{R_1} - \frac{R_5}{R_4}$$

$$\frac{1}{R_3}\frac{R_2}{R_1} - \frac{1}{R_4} = \frac{1}{R_3}\frac{R_2}{1} - \frac{1}{1} = 0 \Rightarrow R_3 = R_2 = 5\text{k}\Omega$$
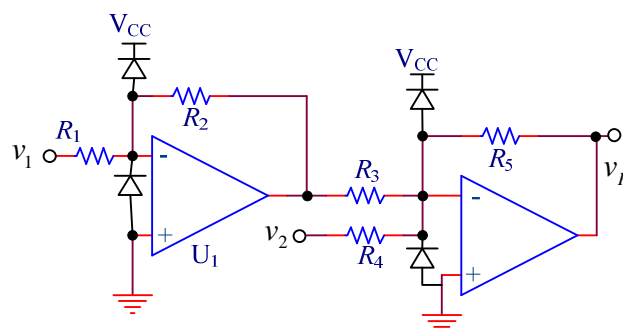
b)

$$v_P = \frac{R_5}{R_3}\frac{R_2}{R_1}v_1 - \frac{R_5}{R_4}v_2$$

$$a_s = k1 + k2 = \frac{300}{100} - \frac{300}{101} \approx 0.03$$

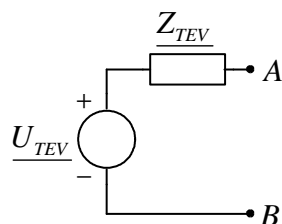$$a_D = \frac{k1 - k2}{2} = \frac{150}{100} + \frac{150}{101} \approx 3$$

$$\left.\right\} \rho \approx 100$$
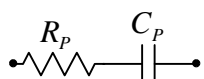
C)

3. a) $\underline{U}_{TEV} = -j3\text{V}$, $\underline{Z}_{TEV} = (1 + j)\Omega$

b) $\underline{Z}_P = (4 - j5)\Omega$

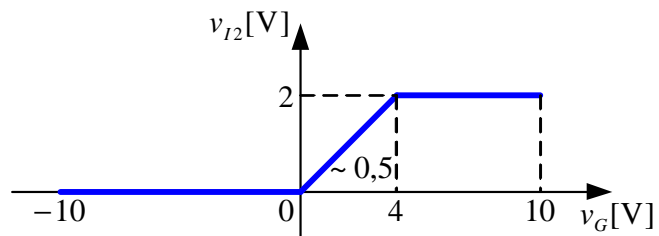$R_P = 4\Omega$, $C_P = 1{,}06\mu\text{F}$

c) $i_P(t) = 0{,}53\text{A} \cdot \sin(2\pi f t)$

4. a)

Za $-10\text{V} \le v_G \le 0$: $D - OFF$, $DZ - direktno\ polarisana$, $v_{I2} = 0 = const.$

Za $0 \le v_G \le 4\text{V}$: $D - ON$, $DZ - OFF$, $v_{I2}[\text{V}] = 0{,}5 v_G[\text{V}]$

Za $4\text{V} \le v_G \le 10\text{V}$: $D - ON$, $DZ - proboj$, $v_{I2} = 2\text{V} = const.$

b)