Rješenja zadataka za deveti razred:

1) $m=4g=4\cdot10^{-3}$ kg   a)   Ek= A = $q\cdot(V_B - V_A)$ $\dfrac{m\cdot v_B{}^2}{2}$ = $q\cdot(V_B - V_A)$

     $q=5nC=5\cdot10^{-9}$ C

     V_A= 200V Ek = $\dfrac{m\cdot v_B{}^2}{2}$ $v_B{}^2$ = $\dfrac{2\,q\cdot(V_B-V_A)}{m}$

     V_B=600V v_B = $\sqrt{\dfrac{2\,q\cdot(V_B-V_A)}{m}}$

v_A=5 cm/s = 0,05 m/s v_B = $0,316\cdot10^{-1}\frac{m}{s}$

v_B=? v_B = 0,0316 $\frac{m}{s}$

b) A=ΔEk=$q\cdot(V_B - V_A)$ $v_B{}^2$ = $\dfrac{2\,q\cdot(V_B-V_A)}{m}$ + $v_A{}^2$

ΔEk= $\dfrac{m\cdot v_B{}^2}{2}$ - $\dfrac{m\cdot v_A{}^2}{2}$ v_B = $0,0316\frac{m}{s}$ + 0,0025 $\frac{m}{s}$

v_B =0,0341 $\frac{m}{s}$

2) q_1 = -5 μC   a) F_{12} = k· $q_1 \cdot q_2$ / r_1^2 - privlačna sila

   q_2=10 μC F_{13} = k·$q_1 \cdot q_3$ / r_2^2 – privlačna sila

     q_3=6 μC F_{12} i F_{13} imaju isti pravac a suprotan smjer pa je F= F_{12} - F_{13}

     r_1= r_2 = $\dfrac{d}{2}$ =5cm   F= kq_1($\dfrac{q2}{r_1^2}$ - $\dfrac{q3}{r_1^2}$) = 36 N

k=$9\cdot10^9\ \frac{Nm^2}{C^2}$ b) F_{12} = k· $q_1 \cdot q_2$ / r_1^2 - privlačna sila

     F=? F_{13} = k·$q_1 \cdot q_3$ / r_2^2 – odbojna sila

F_{12} i F_{13} imaju isti pravac a suprotan smjer pa je F= F_{12} + F_{13}

F= kq_1($\dfrac{q2}{r_1^2}$ + $\dfrac{q3}{r_1^2}$) = 252 N

3) u=4

$$u=\frac{b}{a} \rightarrow b=au$$

d=0,25 m

$$d=a + b \rightarrow d= a + au \rightarrow a=\frac{d}{1+u}$$

$$d=a + b \rightarrow d=\frac{b}{u} + b \rightarrow d=\frac{b(1+u)}{u} \rightarrow b=\frac{ud}{1+u}$$

$$Iz :\frac{1}{f} = \frac{1}{a} + \frac{1}{b} \rightarrow f=\frac{ab}{a+b} \rightarrow f = \frac{ud}{(1+u)^2} ; f = 0,04m$$

4) R= 4 Ω

C= 10 μF   Re= R+Rp+R ; Re= R+R/2+R= 2,5R=10 Ω

U= 110 V   Kroz kolo teče struja jačine I= U/Re; I= 11A

q=?   Kroz kolo teče struja dok se ne napuni pa je napon na

kondenzatoru Uc= U – IR; Uc= 110V – 11A·4Ω=66V

$$q = C \, Uc = 6,6 \cdot 10^{-4} \, c$$