Q1) A current of 7.4 A flows through a conductor. Calculate how much charge passes through any cross-section of the conductor in 20 s.

Q2) The charge entering the positive terminal of an element is $q = 5\sin 4\pi t$ mC

while the voltage across the element (plus to minus) is $v = 3\cos 4\pi t$ V

(a) Find the power delivered to the element at t=0.3s.

(b) Calculate the energy delivered to the element between 0 and 0.6 s.

Q3) The current entering the positive terminal of a device is $i(t)=6e^{-2t}$ mA and the voltage across the device Is v(t)=10 di/dt V.

(a) Find the charge delivered to the device between t=0 and 2 s.

(b) Calculate the power absorbed.

(c) Determine the energy absorbed in 3 s.

Q4) The charge flowing in a wire is plotted in Fig. 1 Sketch the corresponding current.

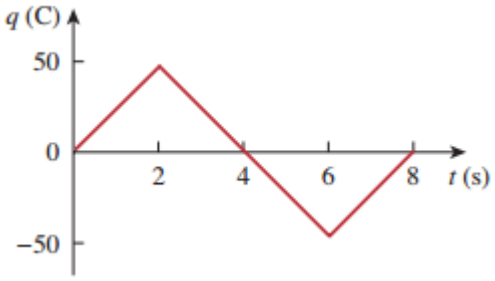

Fig.1

Q5) Find v_0 and the power absorbed by each element in the circuit of Fig. 2

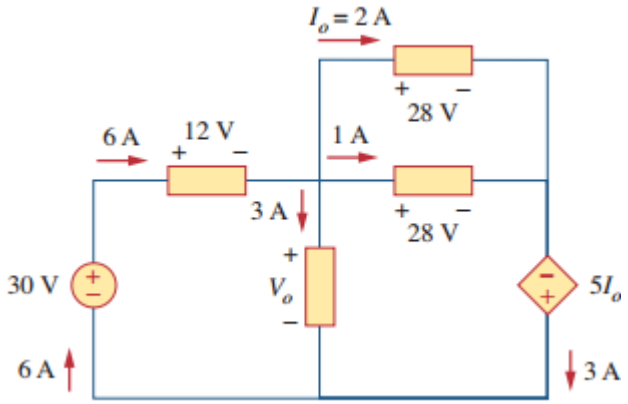

Fig.2