2) La température ?

simple vitrage :

$$\Phi = h_i \, s \, (T_i - T_1) \Rightarrow T_1 = T_i - \frac{\Phi}{h_i \cdot S} = 19 - \frac{2486 \times 0{,}11}{15} = 0{,}77°C$$

double vitrage :

$$T_2 = T_i - \frac{\Phi}{h_{si} \cdot S} = 19 - \frac{1365 \times 0{,}11}{15} = 9°C .$$

3) * simple vitrage

$$\Phi_v = \frac{Q}{t} \Rightarrow Q = \Phi_v \times t = k \, s \, (T_i - T_e) \times t = \frac{1}{0{,}195} \times 15 \, (19 - 5) \times 150 \times 24$$

$$= 1200 \times 150 \times 24 = 4{,}32 \times 10^6 \, J$$

* double vitrage $\Phi_v = \frac{Q}{t} \Rightarrow Q = \Phi_v \times t = K . S . (T_i - T_e) \times t =$

$$\frac{1}{0{,}3186} \, (19 - 5) \times 15 \times 150 \times 24$$

$$= 658{,}94 \times 150 \times 24$$

$$= 2{,}37 \times 10^6 \, J$$