

化学工学（3年・2単位）休校時における課題

- 教科書「化学工学」P30～P34

P33 例題1・2を参考にして、問1・2をノートにやり、後日学校再開の際提出すること。

2 単位の換算 (p. 33)

問1の答(p. 34) (1) $1255 \text{ cm}^2 = 1255 \times (10^{-2} \text{ m})^2 = 0.1255 \text{ m}^2$

(2) $5.18 \times 10^5 \text{ mL} = 5.18 \times 10^5 \times 10^{-6} \text{ m}^3 = 0.518 \text{ m}^3$

(3) $636 \text{ m/min} = 636 \times \frac{\text{m}}{60 \text{ s}} = 10.6 \text{ m/s}$

(4) $95.5 \text{ m/min} = 95.5 \times \frac{10^{-3} \text{ km}}{\frac{1}{60} \text{ h}} = 5.73 \text{ km/h}$

(5) $800 \text{ L/s} = 800 \times \frac{10^{-3} \text{ m}^3}{\frac{1}{3600} \text{ h}} = 2880 \text{ m}^3/\text{h}$

(6) $7.25 \text{ m}^3/\text{h} = 7.25 \times \frac{\text{kL}}{\frac{1}{24} \text{ d}} = 174 \text{ kL/d}$

(7) $5.58 \text{ t/h} = 5.58 \times \frac{1000 \text{ kg}}{3600 \text{ s}} = 1.55 \text{ kg/s}$

(8) $0.871 \text{ g/cm}^3 = 0.871 \times \frac{10^{-3} \text{ kg}}{(10^{-2} \text{ m})^3} = 871 \text{ kg/m}^3$

問2の答(p. 34) (1) $1 \text{ h } 40 \text{ min} = (1 \times 3600 + 40 \times 60) \text{ s} = 6000 \text{ s}$

(2) $8720 \text{ s} = (3600 \times 2 + 60 \times 25 + 20) \text{ s} = 2 \text{ h } 25 \text{ min } 20 \text{ s}$

(3) $5 \times 10^4 \text{ mL} = 5 \times 10^4 \times 10^{-6} \text{ m}^3 = 5 \times 10^{-2} \text{ m}^3$

(4) $216 \text{ km/h} = 216 \times \frac{10^3 \text{ m}}{3600 \text{ s}} = 60.0 \text{ m/s}$

(5) $10 \text{ kN/cm}^2 = 10 \times \frac{\text{kN}}{(10^{-2} \text{ m})^2} = 1.0 \times 10^5 \text{ kN/m}^2 = 1.0 \times 10^5 \text{ kPa}$

(6) $150 \text{ L/s} = 150 \times \frac{10^{-3} \text{ m}^3}{\frac{1}{3600} \text{ h}} = 540 \text{ m}^3/\text{h}$

(7) $1780 \text{ kg/m}^3 = 1780 \times \frac{10^3 \text{ g}}{(10^2 \text{ cm})^3} = 1.78 \text{ g/cm}^3$

(8) $7.74 \text{ m}^3/\text{h} = 7.74 \times \frac{10^3 \text{ L}}{3600 \text{ s}} = 2.15 \text{ L/s}$