Solution

Quiz #1
(Set A)

1. (a) FALSE
   (b) FALSE
   (c) TRUE
   (d) FALSE
   (e) TRUE

(1 × 5 = 5)

2. (a) → (v)
   (b) → (i)
   (c) → (iv)
   (d) → (iii)
   (e) → (ii)

(1 × 5 = 5)

3. Given:

At P = 200 KPa

$v_g = 0.88578\ m^3/kg$

$v_f = 0.001061\ m^3/kg$

$x = 0.75$ (since 75% of the mass of saturated liquid-vapour mixture is vapour)

$v = v_f + x(v_g - v_f)$

$= 0.001061 + 0.75(0.88578 - 0.001061)$

$= 0.0010601 + 0.75(0.884719)$

$= 0.001061 + 0.66353925$

$= 0.66460025\ m^3/kg$

Set A

$$V_{tank} = 300\ m^3$$

$$m_{tank} = \frac{V_{tank}}{v}$$

$$= \frac{300}{0.66460025}$$

$$= 451.399$$

$$\approx \boxed{451.4\ kg}$$

(5)