

Mark schemes

- | | | |
|----------|--|-----|
| 1 | D | [1] |
| 2 | D | [1] |
| 3 | B | [1] |
| 4 | B | [1] |
| 5 | D | [1] |
| 6 | (a) (i) 0.86 (1)
(ii) total moles = 0.86 + 0.43 + 0.085 = 1.375 (1) | |

$$\therefore \text{mole fraction of H}_2 = \frac{0.86}{1.375} = 0.625 \text{ (1)}$$

(0.62 - 0.63)

Conseq on (i)

- (iii) $p_p = \text{mole fract}^n \times \text{total P}$ **(1)**
 $= 0.625 \times 1.75 \times 10^4$
 $= 1.09 \times 10^4 \text{ (kPa)}$ **(1)**

or 1.1(0)

Ignore units

Conseq on (ii)

5

(b) (i) $K_p = \frac{P_{\text{CH}_3\text{OH}}}{P_{\text{H}_2}^2 \times P_{\text{CO}}}$ **(1)**

Penalise []

(ii) $K_p = \frac{2710}{(12300)^2 \times (7550)} = 2.37 \text{ (2.4)} \times 10^{-9}$ **(1)**

OR 2.37 × 10⁻¹⁵

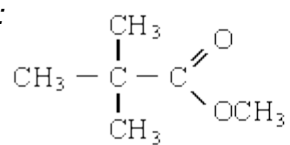
Units: kPa⁻² **(1)**

or Pa⁻²

not conseq to wrong K_p expression

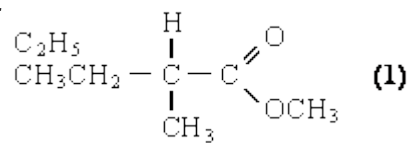
3

(c) *Isomer E:*



allow
(1) $(\text{CH}_3)_3\text{CCOOCH}_3$
or
 $(\text{CH}_3)_3\text{CCO}_2\text{CH}_3$

Isomer F:



2

[10]

7

[1]