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module title

code

Engineering Science II : M4X 00386

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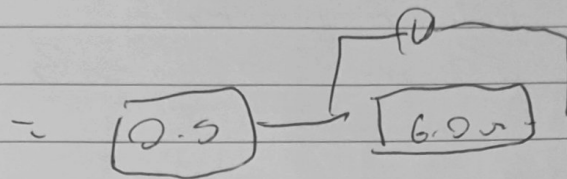
Time : 13:00

Electric Engineering

$$i) \quad \frac{1}{R_T} = \frac{1}{2} + \frac{1}{2} = 1 \Omega$$

$$R_T = \frac{2}{1} = 0.5 \Omega$$

$$V = IR = 11(0.5) = 0.5V$$



$$V = 11(6.0) = 6V$$

$$ii) \quad 4 - 6 - 0.8 = 2.5V$$

$$1) \quad V = IR$$

$$R = \frac{V}{I} = \frac{2.5}{1} = 2.5 \Omega$$

∴ The internal circuit resistance causes wasted energy. The energy is taking the charge carriers from the cell to the terminal. The lower internal resistance the power you will have.

2) The knob on square represents on the waveform as an amplitude voltage or it represents a DC waveform

$$b) V_{rms} = \frac{V_0}{\sqrt{2}}$$

$$V_0 = \sqrt{2} \times V_{rms}$$

$$= \sqrt{2} \times 230 = 325V$$

$$c) P = IV$$

$$P = (0.26) (325) = 85W$$

$$2) \frac{1}{f} =$$

$$f = \frac{1}{T} = \frac{1}{0.02 \text{ seconds}}$$

If the pitch is going up and down you increase the time base the wavelength will get longer or if decrease the wavelength it will get shorter. you get up and down wavelength line.

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3) Capacitance of a capacitor is known as a ratio of charge stored on any plates of capacitor, between potential plates.

b) $W_{\text{elec}} = Q \times V$
 $E_{\text{int}} = \frac{1}{2} Q \times V$

$$W = \frac{1}{2} + (330 \times 10^{-8}) (4.0)^2$$
$$= 13.32 \times 10^{-3} \text{ J}$$

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$$v_1 = 0.8 \text{ m/s}$$

$$p_1 = 4500 \text{ kPa} \quad 1.2 \text{ mPa}$$

$$T_1 = 120^\circ\text{C}$$

$$v = 0.024228 \text{ m}^3/\text{kg}$$

$$u_1 = 325.03 \text{ kJ/kg}$$

$$h_1 = 354.11 \text{ kJ/kg}$$

$$p_2 = 600 \text{ kPa} = 0.6 \text{ mPa}$$

$$T_2 = 40^\circ\text{C}$$

$$v_2$$

$$v = 0.046318 \text{ m}^3/\text{kg}$$

$$u = 301.51 \text{ kJ/kg}$$

$$h_2 = 324.46 \text{ kJ/kg}$$

$$h_2 = 324.46 \text{ kJ/kg}$$

$$v_1 = m_1 \cdot v_1$$

$$m_1 = v_1 \cdot v_1 = 0.8 \times 0.024228$$

$$m_1 = 14.38 \text{ kg}$$

$$23 \text{ kg} \quad 14 \text{ kg}$$

$$v_2 = m_2 \cdot v_2$$

$$m_2 = v_2 \cdot v_2 = 0.5 \times 0.046318$$

$$m_2 = 23 \text{ kg}$$

$$23 \text{ kg}$$

$$m_3 = \frac{p_1 + p_2}{2} (v_2 - v_1)$$

$$2$$

$$= \frac{1200 + 600}{2} (0.5 - 0.8)$$

$$2$$

$$= 0.220 \text{ kg}$$

$$= 2290 \text{ kg}$$

$$m_i = m = m - m'$$

$$m = m - m'$$

$$m = 14.38 - 23 = 14.38 \text{ kg} \quad 23 - 14 = 9 \text{ kg}$$

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r

$$Q - W = \int_{out} m - \int_{in} m + m_2 v_2 - m_1 v_1$$

$$Q - W_3 = m_e v_e + m_2 v_2 - m_1 v_1$$

$$\therefore Q = W_3 + m_e v_e + m_2 v_2 - m_1 v_1$$

$$Q = -270 + \frac{4}{2} \times 304.11 + 324.48 + 23 \times 801.61$$

$$- 14 \times 325.05$$

$$Q = 1459.46 \text{ kJ}$$

$$= 1.46 \text{ MJ} \quad 1.46 \text{ MJ}$$

$$u) \Delta u = 2 \cdot v_e$$

$$\begin{aligned} \text{mass } n &= 5 \text{ kg} \\ p &= 100 \text{ kPa} \end{aligned}$$

mass Balance

$$\cancel{m_1} \quad \dot{m}_1 = \dot{m}_2$$

$$\therefore m_1 - m_2 = m_3$$

$$3m_2 = m_3 \quad m_1 = m_2$$

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Energy Balance

$$2 \cdot W = \dot{m}_1 \left(h + \frac{1}{2} \cdot c^2 \right) \quad (5.2)$$

$$= \dot{m}_1 \left(h + \frac{1}{2} \cdot c^2 \right)$$

$$2 = \left(\text{water} + \text{water} \right) = \frac{c_p \Delta T}{1.005}$$

$$W_{\text{in}} = 10 \times 100 (1.005 \times 300)$$

$$= 300 \text{ or } 301.5$$