ERRATA

OXFORD *PHYSICS FOR QUEENSLAND* U1&2 (2025)

Module	**Error**	**Correct**
p15. Worked example 1.7A	Answer is wrong	Mean distance = 53.7 mm $\delta\bar{x} = \pm 4.5$ mm 54 (1 mark) ± 5 mm (1 mark)
p 48, module 2.1. Definition of *work* in sidebar	symbol: *W*	symbol: *E*
p 66, module 2.8, 2nd paragraph, line 4	The cooler water is less dense	The cooler water is more dense
p 72, WE 2.9A. The 100 should be 1000. Calculation is correct though.	(b) $m = \frac{6.6}{100} = 0.0066$ kg	b) $m = \frac{6.6}{\mathbf{1000}} = 0.0066$ kg
P 75, Module 2.11 Review Q 7	Option A: 263 K	Option A: 258 K (correct in the answers)
p76 Module 2.11 Review Q12	Option A: 25.1°C	Option A: 26.0°C
p76 Module 2.11 Review Q23	400 g Answer 36.2 °C	400.0 g Answer 36 °C
p76 Module 2.11 Review Q24 (answers)	Fix answer. Note: this answer may require some research	The salt, when dissolved in water, dissociates into ions (Na+ and Cl–). This adds another force of attraction between the water molecules. (1 mark) This restricts the ability of the molecules to move and use up heat energy as it is added (1 mark) This means that salty water rises in temperature more than pure water for the same addition of thermal energy. (1 mark)

p77, module 2.11B. Data Drill – line 5.	100.0 g	1000.0 g
p 88, module 3.1. Skill drill.	Questions specify 1 d. p.	Remove reference to 1 d. p. (see below)
p 88, module 3.1. Skill drill answers.	Answers have more precision than allowed for by the graph. The minor gridlines did not appear in diagram (sigh!)	Answers (see below): Q1. 15°C (allow 13°C –18°C) Q2. 110 kJ (allow 100kJ – 120 kJ) Q3. 138 kJ (allow 125 kJ – 150 kJ)
p93 module 3.3. Sample calculation.	Should be negative signs on left-hand-side of the first three lines: $-Q_{\text{lost}} =$ $-(mc\Delta T)_{\text{lost}} =$ $-m_{\text{hot copper}} \times c_{\text{copper}} \times \Delta T_{\text{hot copper}} =$ $-\left(m_{\text{hot copper}} \times c_{\text{copper}} \times (T_{\text{f}} - T_{\text{i}})_{\text{hot copper}}\right) =$	
p156. CYL 5.5 Q7c version in the interactive worksheet. All other instances are correct.	The on-line interactive worksheet has ${}^{222}_{88}Rn$	${}^{222}_{86}Rn$
p 173 Module 5.8 Review Questions, Q13	Option D: 2×10^{-3} s	Option D: 4×10^{-3} s
p 175 Module 5.8 Data Drill	Answers for Q3, 4 done correct but done with distance in mm	New answers are coming with distance in m (see below)
p198. CYL6.4 Q3 stem	The following reaction ~~has an energy output of 5.23×10^{-13} J per fusion event.~~	For the following reaction:
p198. CYL6.4 Q3 (a) (this is correct in the answers)	**a** joules per fission event	**a** joules per fusion event

<table>
<tr><td>p 204 module 6.5 Data Drill Table 1</td><td colspan="2">Table 1 has incorrect values. The correct values are:
<table>
<tr><th>Atomic number (Z)</th><th>Mass number (A)</th><th>Binding energy (MeV)</th></tr>
<tr><td>20</td><td>45</td><td>388.350</td></tr>
<tr><td>21</td><td>47</td><td>398.842</td></tr>
<tr><td>22</td><td>49</td><td>398.958</td></tr>
<tr><td>23</td><td>53</td><td>461.630</td></tr>
<tr><td>24</td><td>56</td><td>461.776</td></tr>
<tr><td>25</td><td>58</td><td>504.368</td></tr>
<tr><td>25</td><td>59</td><td>512.179</td></tr>
<tr><td>26</td><td>61</td><td>530.883</td></tr>
<tr><td>28</td><td>64</td><td>561.728</td></tr>
<tr><td>30</td><td>66</td><td>578.160</td></tr>
</table></td></tr>
<tr><td>p 204 module 6.5 Data Drill Q1 Solutions</td><td>$= \frac{482.076}{55}$ (1 mark)
$= 8.76$ MeV per nucleon (1 mark)</td><td>$= \frac{524.214}{59}$ (1 mark)
$= 8.88$ MeV per nucleon (1 mark)</td></tr>
<tr><td>p 204 module 6.5 Data Drill Q2 Solutions</td><td>$^{56}_{26}Fe$</td><td>$^{66}_{30}Zn$
(1 mark for A = 66 and Z = 30)
(1 mark for X = Zn)</td></tr>
<tr><td>p235. CYL 7.4 Q10.</td><td>…draws 1500 A from a battery for 3.0 s.</td><td>…draws 1500 A from a 400 V battery for 3.0 s.</td></tr>
<tr><td>p 239, module 7.5. Worked example 7.5B, Step 3:</td><td>$R_1 = \frac{RA_1L}{L_1A}$</td><td>$R_1 = \frac{RAL_1}{LA_1}$</td></tr>
<tr><td>p 246, WE 7.6C Step 4</td><td>Gradient $= \frac{(27.5 \times 10^{-3}) - 0}{(5 \times 10^{-3})}$</td><td>Gradient $= \frac{(27.5 \times 10^{-3}) - 0}{5}$</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

Skill drill 3.1 page 88

Practise your skills

1 **Identify** the melting point temperature of benzene (in °C). (1 mark)

15°C. Accept 13-18°C (1 mark)

2 **Calculate** the minimum amount of energy (in kJ) required for benzene to melt completely. Show your working. (2 marks)

The melting is represented by the first flat section of the graph and occurs from approximately 60 s to 170 s. The description above tells us every second 1,000 J is absorbed by the benzene from the heater.

This means the number of joules absorbed by the benzene = (170-60) × 1, 000 (1 mark)

= 110, 000 J

= 110 kJ (allow 100 kJ to 120 kJ (1 mark)

3 **Calculate** the latent heat of fusion of benzene (in kJ kg^{-1}). Show your working. (2 marks)

$$Q = mL_f$$

$$L_f = \frac{Q}{m} (1\,\text{mark})$$

$$= \left(\frac{110,000}{\frac{800}{1,000}} \right)$$

$$= 137500\,\text{J}$$

$$= 138\,\text{kJ (allow 125 kJ to 150 kJ) (1 mark)}$$

4 **Predict** the temperature of benzene (in °C) at t = 400 s, given that the latent heat of vaporisation is 350,000 J kg^{-1}. **Justify** your answer. (2 marks)

The temperature of benzene at t = 400 s is 90°C. (1 mark) The second horizontal section of the graph shows the state change from liquid to gas. We know this because it is the second occasion (at a higher temperature) where energy is absorbed by benzene but its temperature remains constant (1 mark). This horizontal section aligns with T = 90 °C.

Module 5.8 Data Drill page 175

Apply understanding

1 **Calculate** the average intensity at a distance of 25.0 mm (1 d.p.). (1 mark)

$$\text{Average} = \frac{14.9 + 20.8 + 17.8}{3}$$
$$= 17.8 \text{ cps (1 mark)}$$

2 **Calculate** the absolute uncertainty in the average intensity at a distance of 25.0 mm (1 d.p.). (1 mark)

$$\text{Absolute uncertainty} = \pm\frac{20.8 - 14.9}{2}$$
$$= 3.0 \text{ cps (1 mark)}$$

Analyse data

3 **Identify** the absolute uncertainty in the gradient and *y*-intercept of the linear trendline. (2 marks)

$$\text{gradient of maximum trendline (to be drawn)} = \frac{32 - 1}{2500 - 0} = 0.0124 \text{ (1 mark) accept 0.012-0.013}$$

$$\text{absolute uncertainty in the gradient} = \pm\frac{\max - \min}{2}$$
$$= \pm\frac{0.0124 - 0.0084}{2}$$
$$= \pm 0.0020 \text{ (1 mark) accept } \pm 0.002$$

$$\text{absolute uncertainty in the } y\text{-intercept} = \pm\frac{\max - \min}{2}$$
$$= \pm\frac{5.0 - 1.0}{2}$$
$$= \pm 2.0 \text{ (1 mark) accept } \pm 2 \text{ to } \pm 3$$

Interpret evidence

4 **Draw** a quantitative conclusion about the relationship between the radiation intensity and distance. Include the absolute or percentage uncertainty and show your reasoning. (4 marks)

$$\text{percentage uncertainty in the gradient} = \pm\frac{0.0020}{0.0103} \times 100$$
$$= \pm 19.4\% \text{ (1 mark) accept 17-22\%}$$

$$\text{percentage uncertainty in the } y\text{-intercept} = \pm\frac{2.0}{2.8} \times 100$$
$$= \pm 71.4\% \text{ (1 mark) accept 70\%-90\%}$$

$$I = \left(\left(0.0103 \pm 19\%\right)\frac{1}{r^2} + \left(2.0 \pm 70\%\right) \right) \mathrm{A}\ \text{(2 marks) accept values from above}$$

If you find any more, contact Richard Walding at: waldingr49@gmail.com