6.1

Joint and by-product costing

1. Joint products are not identifiable as different individual products until split-off point. Therefore, joint costs cannot be traced to individual products.
2. By-products emerge incidentally from the production of the major products and have relatively minor sales value.

6.2b

Physical measures method

<table>
<thead>
<tr>
<th>Output (units)</th>
<th>Joint costs</th>
<th>Sales</th>
<th>Profit (loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product A</td>
<td>4,000</td>
<td>50,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Product B</td>
<td>2,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Product C</td>
<td>6,000</td>
<td>30,000</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Sales value method

<table>
<thead>
<tr>
<th>Sales (£)</th>
<th>Joint costs</th>
<th>Profit (loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product A</td>
<td>30,000 (20%)</td>
<td>10,000</td>
</tr>
<tr>
<td>Product B</td>
<td>50,000 (33%)</td>
<td>20,000</td>
</tr>
<tr>
<td>Product C</td>
<td>110,000 (36%)</td>
<td>30,000</td>
</tr>
</tbody>
</table>

6.3

Net realizable value (NRV) method

- Where further processing costs are incurred sales values at split-off point may not be available.
- Further processing costs are deducted from sales value to estimate NRV at split-off point.

Example

<table>
<thead>
<tr>
<th>Sales</th>
<th>Further process costs</th>
<th>NRV</th>
<th>% Joint cost allocated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product A</td>
<td>30,000</td>
<td>8,000</td>
<td>29,000</td>
</tr>
<tr>
<td>Product B</td>
<td>60,000</td>
<td>10,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Product C</td>
<td>24,000</td>
<td>2,000</td>
<td>22,000</td>
</tr>
<tr>
<td>117,000</td>
<td>30,000</td>
<td>109,000</td>
<td></td>
</tr>
</tbody>
</table>

6.4

Constant gross profit percentage method

- Based on the assumption that the gross profit should be identical for each product.
- Joint costs are therefore allocated so that the gross profits at split-off point are identical for each product.
- Using the example on sheet 3 and assuming that joint costs are £60,000 the gross profit is £40,000 (120,000 sales less £80,000 total costs). Therefore, the total gross profit is 33.33%.

<table>
<thead>
<tr>
<th>Sales value</th>
<th>Cost of goods sold</th>
<th>Less further processing costs</th>
<th>Allocated joint costs (balance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000</td>
<td>20,000</td>
<td>2,000</td>
<td>10,000</td>
</tr>
<tr>
<td>60,000</td>
<td>40,000</td>
<td>2,000</td>
<td>10,000</td>
</tr>
<tr>
<td>24,000</td>
<td>16,000</td>
<td>2,000</td>
<td>10,000</td>
</tr>
</tbody>
</table>

6.5 Comparison of methods

- Cause-and-effect criterion cannot be applied so allocation should be based on benefits received.
- If benefits received cannot be measured allocation should be based on the principle of equity or fairness.
- Literature tends to advocate the net realizable method.
- Also note that with the physical units method the joint cost allocation bears no relationship to the revenue producing power of the individual products.

Accounting for by-products

- The major objective is to produce the joint products. Therefore the joint costs should be charged only to the joint products.
- Further processing costs should be charged to the by-product.
- Net revenues from the sale of the by-product should be deducted from the cost of the joint process.

6.6 Example

Joint product costs £3,020,000
Output of the joint products
A – 30,000 kgs
B – 50,000 kgs
C – 5,000 kgs
By-product C requires further processing at a cost of £1 per kg after which it can be sold for £5 per kg.

- The accounting entries are:
  Dr. By-product stock (5,000 × £4) £20,000
  Cr. Joint process WIP account £20,000
  With the net revenue due from the production of the by-product:
  Dr. By-product stock £5,000
  Cr. Cash £5,000
  With the separable manufacturing costs incurred:
  Dr. Cash £25,000
  Cr. By-product stock £25,000
  With the value of the by-product sales for the period.

6.7 Relevant costs for decision-making

Joint cost allocations are necessary for financial accounting, but they should not be used for decision-making.

Example

Joint product costs £100,000
Sales value at split off point:
Product X (5,000 units at £16) £80,000
Product Y (5,000 units at £8) £40,000
If additional costs of £6,000 are incurred on product Y it can be converted into product Z and sold for £10 per unit.
- Note that the joint costs are irrelevant for this decision since they will be incurred irrespective of which decision is taken.
- The decision should be based on a comparison of relevant costs with relevant revenues:
  Relevant revenues (additional revenues of 5,000 × £2) £10,000
  Relevant costs (additional costs of processing) £6,000
  Additional profit from conversion £4,000

Thanks for your attention!