**Question 5**

**Overhead absorption**

Quick-Fry Enterprises produce a number of different items of catering equipment. The factory’s machines are working at full capacity.

Estimates for Year 3 show fixed overheads of £400,000. These are currently recovered on a factory-wide basis of prime costs of £1,600,000.

1. **Calculate** the factory-wide factory overhead recovery rate. **1**

The following table analyses the fixed overheads by department.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Manufacture** | **Assembly** | **Service** | **Total** |
| Fixed Overheads | £180,000 | £140,000 | £80,000 | £400,000 |
| Labour Hours | 40,000 | 60,000 | 5,000 | 105,000 |
| Machine Hours | 80,000 | 20,000 | 1,000 | 101,000 |
| Number of Machines | 80 | 20 | 5 | 105 |

1. **Re-allocate** the service overheads to Manufacture and Assembly on the basis of the number of machines and **calculate** the total overhead of each production department. **2**
2. **Calculate fixed** overhead recovery rates for the production departments on the following basis:

Manufacture — machine hours

Assembly — labour hours **2**

The following are the unit costs of a barbecue set which has a selling price of £120.

Material cost: £12

Special component: £40

Labour cost:

Manufacture — 2 machine hours at £7 per hour

Assembly — 1 hour at £6 per hour

Direct variable cost: 20% of total labour cost

Fixed overhead cost: as appropriate

1. **Calculate** the total unit cost of a barbecue using:
2. Factory-wide recovery rate
3. Departmental recovery rates **6**

At present, the component used in the barbecue is purchased. For Quick-Fry enterprises to make this component, it would cost £30 in materials and take 1 machine hour.

1. **Calculate** whether Quick-Fry Enterprises should continue to buy or to make the component and give a reason for your answer. **4**
2. **State three** other methods for recovery of overheads and **show** their formulae. **3**
3. **Explain** why some methods of overhead recovery are considered more equitable than others. **2**

**Total marks (20)**

**Question 5 — solution**

**(a)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factory-wide  **1** | Overheads | = | £400,000 |  |
| Recovery Rate | Prime Cost | = | £1,600,000 | = 25% |

**(b)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Manufacture** | **Assembly** | **Service** |
| Factory Overheads | £180,000 | £140,000 | £80,000 |
| Share of Service  **(1)**  **(1)** | £64,000 | £16,000 | (£80,000) |
| Total Department Overheads  **2** | £244,000 | £156,000 |  |
| ½ |  |  |  |

**(c)**

|  |  |  |  |
| --- | --- | --- | --- |
| Department Recovery Rates  **(1)**  **2**  **(1)** | £244,000  = 80,000 | £156,000  = 60,000 |  |
|  | = £3·05 | = £2·60 |  |

**(d)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Total Cost of Barbecue | **Factory Rate** |  |  | **Dept Rates** |  |
| Material | £12.00 |  |  | £12.00 | **(1)** |
| Special Component | £40.00 |  |  | £40.00 |  |
| Labour Manufacture (2 x £7) | £14.00 |  |  | £14.00 | **(1)** |
| Labour Assembly (1 x £6) | £6.00 |  |  | £6.00 | **(1)** |
| Variable Cost (20% of labour) | £4.00 |  |  | £4.00 |  |
| Prime Cost  **(1)** | £76.00 |  |  | £76.00 |  |
| Fixed Overheads (25% of Prime Cost)  **(1)** | £19.00 | **(1)** | Man 2 x £3.05 | £6.10 |  |
|  |  |  | Ass 1 x £2.60 | £2.60 |  |
| Total Cost | £95.00 |  |  | £84.70 |  |

**6**

**(e)**

|  |  |  |  |
| --- | --- | --- | --- |
| To Make Component  **(1)**  ½  ½  **(1)** |  | **\* Working for 2 marks** | **Barbecue** |
| Materials | £30 | Selling Price | £120 |
| Labour – 1 Machine Hour  **(2\*)** | £7 | Variable Cost | £76 |
| Opportunity Cost – loss of 1 Machine Hour | £22 | Contribution | £44 |
| Total Cost to make | £59 | Machine Hours = (limiting factor) | 2 |
|  |  | Contribution per hour | £22 |

Continue to buy the component for £40 rather than make it for £59.

**4**

**(f)**

**(1)**

|  |  |  |
| --- | --- | --- |
| Percentage of Material Cost | Overheads | x 100 |
|  | Total Material Cost |  |
| **(1)** |  |  |
| Percentage of Labour Cost | Overheads | x 100 |
|  | Total Labour Cost |  |
|  |  | **(1)** |
| Per Unit Produced | Overheads |  |
|  | Total Units | **3** |

**(g)**

Most overheads are time based **(1)** — the longer the time taken, the more is paid **(1)** in total for   
each overhead. The methods of recovery are time based (labour hours or machine hours) **(1)**   
and are therefore considered more equitable. **(any two for 1 mark each) (1)**

**2**

**Total marks (20)**