# Solutions

Q. 1. (b) **Journal**

| Date | Particulars | | L.F. | Dr. (₹) | Cr. (₹) |
|---|---|---|---|---|---|
| (i) | Stores Ledger Control A/c | ...Dr. | | 3,00,000 | |
| | To Cash A/c | | | | 1,50,000 |
| | To Sundry Creditors A/c | | | | 1,50,000 |
| | (Being purchase of raw materials—50% on credit) | | | | |
| (ii) | Work-in-Progress Control A/c | ...Dr. | | 2,00,000 | |
| | To Stores Ledger Control A/c | | | | 2,00,000 |
| | (Being materials issued to production) | | | | |
| (iii) | Wages Control A/c | ...Dr. | | 1,00,000 | |
| | To Cash A/c | | | | 1,00,000 |
| | (Being wages paid to workers) | | | | |
| (iv) | Factory Overheads Control A/c | ...Dr. | | 40,000 | |
| | To Cash A/c | | | | 40,000 |
| | (Being factory overheads incurred) | | | | |
| (v) | Work-in-Progress Control A/c | ...Dr. | | 50,000 | |
| | To Factory Overheads Control A/c | | | | 50,000 |
| | (Being factory overheads charged to production) | | | | |
| (vi) | Finished Goods Control A/c | ...Dr. | | 24,000 | |
| | To Administrative Overheads Control A/c | | | | 24,000 |
| | (Being administrative overheads charged to job) | | | | |
| (vii) | Finished Goods Control A/c | ...Dr. | | 2,50,000 | |
| | To Work-in-Progress Control A/c | | | | 2,50,000 |
| | (Being finished goods at cost) | | | | |
| (viii) | Sundry Debtors A/c | ...Dr. | | 1,87,500 | |
| | Cash A/c | ...Dr. | | 1,87,500 | |
| | To Sales A/c | | | | 3,75,000 |
| | (Being sales—50% on credit) | | | | |

*Or*

(b) (i) **Statement of Cost and Profit**

| Particulars | | ₹ |
|---|---|---|
| Direct Materials | | 20,000 |
| Direct Labour | | 10,000 |
| | **Prime Cost** | 30,000 |
| Factory Overheads (100% of direct wages) | | 10,000 |
| | | 40,000 |
| *Less:* Work-in-Progress | | 1,300 |
| | **Works Cost** | 38,700 |
| *Add:* Administrative Overheads (10% of works cost) | | 3,870 |
| | **Cost of Production** | 42,570 |
| *Less:* Closing Stock $\left(\frac{₹42,570}{4,257} \times 257\right)$ | | 2,570 |
| | **Cost of Goods Sold** | 40,000 |
| *Add:* Selling and Distribution Overheads (4,000 × ₹1) | | 4,000 |
| | **Cost of Sales** | 44,000 |
| | **Profit** | 1,000 |
| | **Sales** | 45,000 |

**Working Note:** Number of units produced = Closing stock + Units sold = 4,000 + 257 = 4,257 units.

(b) (ii) **Reconciliation Statement**

| **Particulars** | | ₹ |
|---|---|---|
| Profit as per Cost Accounts | | 1,000 |
| *Add:* Over-absorption of Factory Overheads (₹10,000 – ₹9,500) | 500 | |
| Over-absorption of Selling Overheads (₹4,000 – ₹3,800) | 200 | |
| Under-valuation of Closing Stock (₹2,700 – ₹2,570) | 130 | 830 |
| | | 1,830 |
| *Less:* Under-absorption of Administrative overheads (₹5,200 – ₹3,870) | 1,330 | |
| Goodwill Written off | 1,500 | |
| Interest on Capital | 1,000 | (3,830) |
| **Loss as per Financial Accounts** | | 2,000 |

Q. 2. (a) Total wages = (₹200 + 120% of ₹200) × 6 days = ₹2,640

Effective hours per week = (8 hours – 40 minutes) × 6 days = 44 hours

∴ Effective wage rate = ₹2,640/44 hours = ₹60 per hour

*Allocation of wages:*

| | | |
|---|---|---|
| Job A | 14 hrs × ₹60 | ₹840 |
| Job B | 10 hrs × ₹60 | ₹600 |
| Job C | 12 hrs × ₹60 | ₹720 |
| Charged to Profit and Loss A/c (Abnormal Loss of time) | 8 hrs × ₹60 | ₹480 |
| **Total** | 44 hrs | ₹2,640 |

**Working Note:**

Abnormal Loss of time = Effective hours – Job hours worked

= 44 hours – (14 + 10 + 12) hrs = 8 hrs

(b) (i) **Economic Order Quantity (EOQ)**

$$= \sqrt{\frac{2AO}{I}} = \sqrt{\frac{2 \times 90{,}000 \times 300}{6}}$$

= 3,000 units

where, A = Annual consumption, *i.e.*, 90,000 units

O = Ordering Cost, *i.e.*, ₹300 per order

I = Carrying Cost, *i.e.*, ₹6 per unit

(ii) **Statement of Cost for different quantities ordered**

| **Particulars** | **3,000 units (No Discount)** | **4,500 units (2% Discount)** | **6,000 units (3% Discount)** |
|---|---|---|---|
| A. No. of Orders (Annual consumption ÷ No. of units) | 30 | 20 | 15 |
| B. Ordering Cost (₹300 per unit ordered) (₹) | 9,000 | 6,000 | 4,500 |
| C. Average inventory (in units) | 1,500 | 2,250 | 3,000 |
| D. Carrying Cost (₹ per unit) | 6 | 6 | 6 |
| E. Total Carrying Cost (C × D) (₹) | 9,000 | 13,500 | 18,000 |
| F. Purchase Cost (p.u.) (₹ per unit) | 3 | 2.94 | 2.91 |
| G. Total Purchase Cost (for 90,000 units) (₹) | 2,70,000 | 2,64,600 | 2,61,900 |
| H. Total Cost (B + E + G) (₹) | 2,88,000 | 2,84,100 | 2,84,400 |

***Conclusion:*** It would be most economical to buy in lots of 4,500 units since it costs the least.

*Or*

(a) **Calculation of Earning per worker**

| **Halsey Premium System** | | **X** | **Y** | **Z** |
|---|---|---|---|---|
| Time allowed (hrs) (200/5) | | 40 | 40 | 40 |
| Actual time taken (hrs) | | 20 | 30 | 40 |
| Time saved (hrs) | | 20 | 10 | Nil |
| Rate per hour (₹) | | 25 | 25 | 25 |
| A. Normal wages (Actual Time × ₹25) (₹) | A | 500 | 750 | 1,000 |
| B. Bonus @ 50% of time saved (₹) | B | 250 | 125 | Nil |
| **Total Wages (A + B)** | | 750 | 875 | 1,000 |

| **Rowan Premium System** | **X** | **Y** | **Z** |
|---|---|---|---|
| Time Saved (hrs) | 20 | 10 | Nil |
| Normal wages (Actual Time × ₹25) (₹) | 500 | 750 | 1,000 |
| Bonus | 250 | 187.50 | Nil |
| **Total Wages** | 750 | 937.50 | 1,000 |

**Working Note:**

According to Rowan Premium System, Bonus = Actual time taken × Time Saved/Time Allowed × Rate.

Q. 3. (b) **Computation of Machine Hour Rate (MHR)**

| **Particulars** | **Per machine per annum (₹)** | **Per Hour (₹)** |
|---|---|---|
| **Standing Charges:** | | |
| Rent and Rates (₹2,40,000/5) | 48,000 | |
| Electricity (₹24,000/5) | 4,800 | |
| Supervision (₹10,000 × 12 months × 2/5) | 48,000 | |
| Canteen expenses (₹12,000 ÷ 5) | 2,400 | |
| | 1,03,200 | |
| **Standing Charges per hour** (₹1,03,200/1,200 hrs) | | 86.00 |
| **Machine Expenses:** | | |
| Power (10 units @ ₹1) | | 10.00 |
| Repairs and maintenance (₹60,000/5 × 1,200 hrs) | | 10.00 |
| Sundry supplies (₹20,000/5 × 1,200 hrs) | | 3.33 |
| Depreciation (₹3,20,000 – ₹80,000/10 yrs × 1,200 hrs) | | 20.00 |
| **Machine Hour Rate** | | 129.33 |

**Working Notes:**

1. Hire purchase installment and interest is a financial item and thus not included to MHR.
2. Machine hours are computed as follows:
   Total units of power = 60,000 ÷ ₹1 = 60,000 units
   Power for 1 machine = 60,000 units/5 machines = 12,000 units per machine
   No. of units per hour = 10
   Total No. of hours = 12,000/10 = 1,200 hrs per year per machine.

*Or*

(a) Under-absorbed overheads = ₹2,00,000 – ₹1,50,000 = ₹50,000.

Total equivalent units = 13,000 + 10,000 + 20% of 10,000 = 25,000 units.

Supplementary overhead rate = ₹50,000/25,000 units = ₹2 per unit.

**Journal**

| Date | Particulars | | L.F. | Dr. (₹) | Cr. (₹) |
|---|---|---|---|---|---|
| | Cost of Sales A/c (13,000 units × ₹2) | ...Dr. | | 26,000 | |
| | Cost of Goods A/c (10,000 units × ₹2) | ...Dr. | | 20,000 | |
| | Work-in-Progress Control A/c (2,000 units × ₹2) | ...Dr. | | 4,000 | |
| | To Overhead Control A/c | | | | 50,000 |

Q. 4.

(i) **Operating Cost Sheet**

| Particulars | Per month (₹) | Per tonne km (₹) |
|---|---|---|
| **Standing Charges:** | | |
| Driver' wages | 5,000 | |
| Cleaner's wages | 2,500 | |
| Insurance (₹4,800 ÷ 12) | 400 | |
| Tax (₹2,400 ÷ 12) | 200 | |
| General Supervision (₹48,000 ÷ 12) | 4,000 | |
| | 12,100 | 1.613 |
| **Operating Charges:** | | |
| Depreciation (₹10,00,000 – ₹40,000/10 yrs × 12 × 7,500 tonne km) | | 1.067 |
| Repairs and Maintenance (₹5,000 ÷ 7,500 tonne km) | | 0.667 |
| Diesel, oil, grease, etc. (₹200 × 2 trips × 25 days/7,500 tonne km) | | 1.333 |

(ii) **Cost per tonne km (A)** 4.680

Profit 50% on Freight (100% on Cost) (B) 4.680

Freight per tonne (A + B) 9.360

∴ Freight per tonne per trip of 50 km = ₹9.36 × 50 km = ₹468

Therefore, the company should charge ₹468 per trip.

**Working Note:** *Calculation of Total tonne km:*

= (5 tonnes × 25 days × 50 km) + (5 tonnes × 25 days × 50 km × 20%)

= 6,250 + 1,250 = 7,500 tonne km

*Or*

**(i) Contract Accounts**

***Dr.*** *for the year ending 31st December, 2016* ***Cr.***

| Particulars | Contract 501 (₹) | Contract 601 (₹) | Particulars | Contract 501 (₹) | Contract 601 (₹) |
|---|---|---|---|---|---|
| To Materials issued | 80,000 | 30,000 | By Materials returned | 2,000 | 1,000 |
| To Direct labour | 75,000 | 21,000 | By Materials on site | 11,000 | 4,000 |
| To Direct expenses | 33,000 | 17,500 | By Plants at site (31st December, 2016) | 42,500 | 42,000 |
| To Est. expenses | 12,500 | 3,500 | By Work-in-progress: | | |
| To Plants installed | 50,000 | 45,000 | Work Certified | 2,10,000 | 67,500 |
| To Architect's fees | 1,000 | 500 | Work Uncertified | 11,500 | 5,000 |
| To Material transferred | – | 4,500 | By Materials transferred | 4,500 | – |
| To Notional Profit c/d | 30,000 | – | By Loss t/f to Profit and Loss A/c | – | 2,500 |
| | 2,81,500 | 1,22,000 | | 2,81,500 | 1,22,000 |
| To Profit and Loss A/c | 18,000 | – | By Notional Profit b/d | 30,000 | – |
| To Balance c/d | 12,000 | – | | | |
| | 30,000 | – | | 30,000 | – |

(ii) **Balance Sheet (Extract)** *as on 31st December, 2016*

| Liabilities | | ₹ | Assets | | ₹ |
|---|---|---|---|---|---|
| Profit and Loss A/c (Contract 501) | 18,000 | | Plant at site ₹(42,500 + 42,000) | | 84,500 |
| *Less:* Loss (Contract 601) | 2,500 | 15,500 | Materials at site ₹(11,000 + 4,000) | | 15,000 |
| | | | Work-in-Progress (Contract 501): | | |
| | | | Work Certified | 2,10,000 | |
| | | | Work Uncertified | 11,500 | |
| | | | | 2,21,500 | |
| | | | *Less:* Cash received | 1,89,000 | |
| | | | | 32,500 | |
| | | | *Less:* Reserves | 12,000 | 20,500 |
| | | | Work-in-Progress (Contract 601): | | |
| | | | Work Certified | 67,500 | |
| | | | Work Uncertified | 5,000 | |
| | | | | 72,500 | |
| | | | *Less:* Cash received | 62,500 | 10,000 |

**Working Note:**

Transfer to Profit and Loss A/c = Estimated profit $\times \frac{2}{3} \times \frac{\text{Cash received}}{\text{Work certified}} = ₹30,000 \times \frac{2}{3} \times \frac{₹1,89,000}{₹2,10,000}$

= ₹18,000.

(Since the contract is more than 50% complete (*i.e.*, ₹2,10,000/₹3,00,000 = 7/10 = 70%), therefore, 2/3rd of the Notional Profit has been transferred to Profit and Loss A/c).

Q. 5. (a) **Statement of Equivalent Production**

| Input units | Particulars | Output units | Equivalent Units | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Material | | Labour | | Overheads | |
| | | | (%) | Units | (%) | Units | (%) | Units |
| 2,000 | Opening Work-in-Progress | 2,000 | 20 | 400 | 40 | 800 | 40 | 800 |
| 8,000 | Units introduced and completed | 5,000 | 100 | 5,000 | 100 | 5,000 | 100 | 5,000 |
| | Closing Work-in-Progress | 3,000 | 80 | 2,400 | 60 | 1,800 | 60 | 1,800 |
| 10,000 | Total | 10,000 | | 7,800 | | 7,600 | | 7,600 |

(b) (i)

***Dr.*** **Process X Account** ***Cr.***

| Particulars | Tonnes | ₹ | Particulars | Tonnes | ₹ |
|---|---|---|---|---|---|
| To Materials @ ₹125 | 1,000 | 1,25,000 | By Normal Loss A/c (5% of 830) | 41.5 | ... |
| To Wages | | 30,000 | By Scrap A/c (10% of 1000 @ ₹80) | 100 | 8,000 |
| To Manufacturing Expenses | | 6,000 | By Abnormal Loss A/c @ ₹178.20* | 28.5 | 5,079 |
| | | | By Process Y A/c (transferred) (@ ₹178.20)* | 830 | 1,47,921 |
| | 1,000 | 1,61,000 | | 1,000 | 1,61,000 |

*Cost per unit = $\frac{₹1,61,000 - ₹8,000}{1,000 - (41.5 + 100)} = \frac{₹1,53,000}{858.5}$ = ₹178.20.

***Dr.*** **Process Y Account** ***Cr.***

| Particulars | Tonnes | ₹ | Particulars | Tonnes | ₹ |
|---|---|---|---|---|---|
| To Process X A/c | 830 | 1,47,921 | By Normal Loss A/c (5% of 780) | 39 | ... |
| To Materials @ ₹200 | 70 | 14,000 | By Scrap A/c | 90 | 18,000 |
| To Wages | | 10,250 | [10% of 900 (*i.e.*, 830 + 70) @ ₹200] | | |
| To Mfg. Expenses | | 5,000 | By Finished Stock A/c (@ ₹206.45)* | 780 | 1,61,031 |
| To Abnormal gain (@ ₹206.45)* | 9 | 1,860 | | | |
| | 909 | 1,79,031 | | 909 | 1,79,031 |

*Cost per unit = $\frac{₹1,77,171 - ₹18,000}{900 - (39 + 90)} = \frac{1,59,171}{771}$ = ₹206.45.

(ii)

***Dr.*** **Abnormal Loss Account** ***Cr.***

| Particulars | Units | ₹ | Particulars | Units | ₹ |
|---|---|---|---|---|---|
| To Process X A/c | 28.5 | 5,079 | By Cash A/c (₹80 × 28.5) | | 2,280 |
| | | | By Costing Profit and Loss A/c | | 2,799 |
| | | 5,079 | | | 5,079 |

***Dr.*** **Abnormal Gain Account** ***Cr.***

| Particulars | Units | ₹ | Particulars | Units | ₹ |
|---|---|---|---|---|---|
| To Normal Loss A/c (₹200 × 9) | 9 | 1,800 | By Process Y A/c | 9 | 1,860 |
| To Costing Profit and Loss A/c | | 60 | | | |
| | | 1,860 | | | 1,860 |

*Or*

(b) **Statement of Cost and Profit**

| Particulars | | ₹ |
|---|---|---|
| **Direct Materials:** | | |
| Opening stock | 30,000 | |
| Purchases | 1,88,500 | |
| Carriage on purchases | 2,500 | |
| *Less:* Closing Stock | (36,000) | |
| Scrap (Sale) | (5,000) | |
| *Raw material consumed* | | 1,80,000 |
| *Add:* Wages | | 2,97,000 |
| | **Prime Cost** | 4,77,000 |
| *Add:* Works overheads (60% of direct labour cost, *i.e.*, wages) | | 1,78,200 |
| *Add:* Opening Work-in-progress | | 31,200 |
| *Less:* Closing Work-in-progress | | (38,400) |
| | **Works Cost** | 6,48,000 |
| *Add:* Administration Overheads (9,000 units @ ₹12) | | 1,08,000 |
| | **Cost of Goods Produced** | 7,56,000 |
| *Add:* Opening stock of Finished goods (200 × ₹84) | | 16,800 |
| *Less:* Closing stock of Finished goods (1,600 × ₹84) | | (1,34,400) |
| | **Cost of Goods sold** | 6,38,400 |
| *Add:* Selling and Distribution overheads (20% of sales) | | 1,82,400 |
| | **Total Cost** | 8,20,800 |
| | **Profit (10% of sales)** | 91,200 |
| | **Sales** | 9,12,000 |

**Working Notes:**

1. Goods produced = Closing Stock + Sales – Opening Stock
   = 1,600 units + 7,600 units – 200 units = 9,000 units.
2. Let the value of sales be $x$.

   Then, $x$ = ₹6,38,400 + 20$x$/100 + 10$x$/100

   $\Rightarrow \frac{70}{100}x$ = ₹6,38,400

   $\Rightarrow x$ = ₹6,38,400 × 100/70 = ₹9,12,000

   $\therefore$ Selling and distributed overheads = 20% of ₹9,12,000 = ₹1,82,400.