CHAPTER-2&3 **ABSORPTION COSTING & OVERHEADS**

Ans.1. (i) Amount of under-absorption of production overheads during the year 1998-99.

		₹
Total production overheads actually incurred during the year 1998-99		6,00,000
Less : 'Written off' obsolete stores	₹ 45,000	
Wages paid for strike period	₹ 30,000	75,000
Net production overheads actually incurred : (A)		5,25,000
Production overheads absorbed by 48,000 machines hours @ ₹ 10 per hour : (B)		4,80,000
Amount of under-absorption of production overheads: [(A)–(B)]		45,000

(ii) Accounting treatment of under absorption of production overheads

It is given in the statement of the question that 20,000 units were completely finished and 8,000 units were 50% complete, one third of the under-absorbed overheads were due to lack of production planning and the rest were attributable to normal increase in costs.

	₹
1. (33-1/3% of ₹ 45,000) i.e. ₹ 15,000 of under – absorbed overheads were due to lack of production planning. This being abnormal, should be debited to the Profit and Loss A/c	15,000
2. Balance (66-2/3% of ₹ 45,000) i.e. ₹ 30,000 of under – absorbed overheads should be distributed over work-in-progress, finished goods and cost of sales by using supplementary rate	30,000
Total under - absorbed overheads	**45,000**

Apportionment of unabsorbed overheads of ₹ 30,000 over, work-in-progress, finished goods and cost of sales.

	Equivalent Completed units	₹
Work-in-progress *(4,000 units × ₹ 1.25)* (Refer to working note)	4,000	5,000
Finished goods *(2,000 units × ₹ 1.25)*	2,000	2,500
Cost of sales *(18,000 units × ₹ 1.25)*	18,000	22,500
	24,000	**30,000**

Accounting treatment :

Work-in-progress control A/c	Dr.	₹ 5,000	
Finished goods control A/c	Dr.	₹ 2,500	
Cost of Sales A/c	Dr.	₹ 22,500	
Profit & Loss A/c	Dr.	₹ 15,000	
To Overhead control A/c			45,000

Working note :

$$\text{Supplementary overhead absorption rate} = \frac{₹\ 30,000}{24,000 \text{ units}}$$

$$= ₹\ 1.25 \text{ per unit}$$

Ans.2. Computation of unabsorbed overheads :

According to first method, the total unabsorbed overhead amount of ₹ 20,000 will be written off to Costing Profit & Loss Account. The use of this method will reduce the profits of the concern by ₹ 20,000 for the period.

According to second method, a supplementary rate may be used to adjust the overhead cost of each cost unit. The under-absorbed amount in total may, at the end of accounting period be apportioned on proportionate basis over cost of goods sold; stock of finished goods and work-in-progress. Apportionment of under-absorbed overheads may be carried out on the basis of the value of cost of goods sold, stock of finished goods and work-in-progress. Prorated figures of under-absorbed overhead over cost of goods sold; stock of finished goods and work-in-progress in this question, on the basis of values of the balances in each of these accounts are as follows :

Appointment of overhead under absorbed

(Refer to working note)

	₹	₹	₹
Cost of goods sold	3,36,000	14,000	3,50,000
Stock of finished goods	96,000	4,000	1,00,000
Work-in-progress	48,000	2,000	50,000
	4,80,000	**20,000**	**5,00,000**

The use of the above method would reduce the profit of the concern by ₹ 14,000.

Working note :

Under-absorbed overhead to be absorbed by cost of goods sold =

$$\frac{₹\ 3,36,000}{₹\ 4,80,000} \times ₹\ 20,000 = ₹\ 14,000$$

Under-absorbed overheads to be absorbed by stock of finished goods =

$$\frac{₹\ 96,000}{₹\ 4,80,000} \times ₹\ 20,000 = ₹\ 4,000$$

Under-absorbed overhead to be absorbed by WIP =

$$\frac{₹\ 48,000}{₹\ 4,80,000} \times ₹\ 20,000 = ₹\ 2,000$$

Ans.3. (i) **Statement showing the allocation of support department costs to the sales departments (using the direct method)**

Particulars	Basis of allocation	Sales department		Support department	
		Corporate sales	Consumer sales	Administrative	Information systems
		₹	₹	₹	₹
Cost incurred		12,97,751	6,36,818	94,510	3,04,720
Re-allocation of cost of administrative department	Number of employees (6 : 4 : – : –)	56,706	37,804	(94,510)	----
Re-allocation of costs of information systems department	Processing time (6 : 5 : – : –)	1,66,211	1,38,509	----	(3,04,720)
Total		**15,20,668**	**8,13,131**	**----**	**----**

(ii) Ranking of support departments based on percentage of their services rendered to other support departments

- Administration support department provides 23.077% $\left(\frac{21 \times 100}{42+28+21}\right)$ of its services to information systems support department. Thus 23.077% of ₹ 94,510 = ₹ 21,810.
- Information system support department provides 8.33% $\left(\frac{400}{2,400+2,000+400} \times 100\right)$ of its services to Administration support department. Thus 8.33% of ₹ 3,04,720 = ₹ 25,383.

Statement showing allocation of support costs

(By using step-down allocation method)

Particulars	Basis of allocation	Sales department		Support department	
		Corporate sales	Consumer sales	Administrative	Information systems
		₹	₹	₹	₹
Cost incurred		12,97,751	6,36,818	94,510	3,04,720
Re-allocation of cost of administrative department	Number of employees (6 : 4 : – : – 3)	43,520	29,080	(94,510)	21,810
					3,26,530
Re-allocation of costs of information systems department	Processing time (6 : 5 :–:–:–)	1,78,107	1,48,423		(3,26,530)
Total		**15,19,478**	**8,14,321**	**----**	**----**

(iii) An alternative ranking is based on the rupee amount of services rendered to other service departments, using the rupee figures obtained under requirement (ii) This approach would use the following sequence of ranking.

- Allocation of information systems overheads as first (₹ 25,383 provided to administrative).
- Allocated administrative overheads as second (₹ 21,810 provided to information systems).

(iv) Working notes :

(1) **Percentage of services provided by each service department to other service department and sales departments.**

Particulars	Service departments		Sale departments	
	Administrative	Information system	Corporate Sales	Consumer Sales
Administrative	----	23.07%	46.16%	30.77%
Information systems	8.33%	----	50%	41.67%

(2) **Total cost of the support department :** (By using simultaneous equation method).

Let AD and IS be the total costs of support departments Administrative and Information systems respectively. These costs can be determined by using the following simultaneous equations:

	AD	=	94,510 + 0.0833 IS
	IS	=	3,04,720 + 0.2307 AD
or	AD	=	94,510 + 0.0833 {3,04,720 + 0.2307 AD}
or	AD	=	94,510 + 25,383 + 0.01922 AD
or	0.98078AD	=	1,19,893
or	AD	=	₹ 1,22,243
and	IS	=	₹ 3,32,922

Statement showing the allocation of support department costs to the sales departments (Using reciprocal allocation method)

Particulars	Sales department	
	Corporate sales	Consumer sales
	₹	₹
Costs incurred	12,97,571	6,36,818
Re-allocation of cost administrative department (46.16% and 30.77% of ₹ 1,22,243)	56,427	37,614
Re-allocation of costs of information systems department (50% and 41.67% of ₹ 3,32,922)	1,66,461	1,38,729
Total	**15,20,639**	**8,13,161**

Ans.4. (i) **Computation of predetermined overhead rate for each production department from budgeted data**

	Production Deptts.		Service Deptts.	
	P1	P2	S1	S2
Budgeted factory overheads for the year in (₹)	25,50,000	21,75,000	6,00,000	4,50,000
Allocation of service department S1's costs to production departments P1 and P2 equally in (₹)	3,00,000	3,00,000	----	6,00,000
Allocation of service department S2's costs to production department P1 and P2 in ratio of 2:1 in (₹)	3,00,000	1,50,000	----	- 4,50,000
Total (₹)	31,50,000	26,25,000	Nil	Nil

Budgeted machine hours in department P1 (Refer to working Note1)	1,05,000	----	----	----
Budgeted machine hours in department P2 (Refer to working Note 1)	----	1,75,000	----	----
Budgeted machine hour rate (₹ 31,50,000 / 1,05,000)	₹ 30	----	----	----
Budgeted machine hour rate (₹ 26,25,000 / 1,75,000)	----	₹ 15	----	----

(ii) **Performance report for July, 1993**

(When 4,000 and 3,000 units of products and B respectively were actually produced)

	Budgeted	Actual
	₹	₹
Raw material used in department P1		
A : 4,000 units × ₹ 120	4,80,000	4,89,000
A : 3,000 units × ₹ 150	4,50,000	4,56,000
Direct Labour		
Cost on the basis of labour hours worked in department P2		
4,000 × 2 hrs. × ₹ 72	5,76,000	5,91,000
3,000 × 2.5 hrs. × ₹ 75	5,62,500	5,52,000
Overhead absorbed		
On machine hour basis in department P1		
A : 4,000 × 1.5 hrs. × ₹ 30	1,80,000	1,74,400*
Overhead absorbed		
On machine hour basis in department P2		
A : 4,000 × 2 hrs. × ₹ 15	1,20,000	1,31,364**
B : 3,000 × 2.5 hrs. × ₹ 15	1,12,500	1,18,548
	25,71,000	**26,31,861**
* (Refer to working Note 4)		
** (Refer to Working Note 5)		

Working Notes :

	Product A	Product B	Total
1. Budgeted output (in units)	50,000	30,000	----
Budgeted machine hours In department P1	75,000 (50,000 ×1.5 hrs.)	30,000 (30,000 × 1 hrs.)	1,05,000 ----
Budgeted labour hours In department P2	1,00,000 (50,000 × 2 hrs.)	75,000 (30,000 × 2.5 hrs.)	1,75,000
	Product A	**Product B**	**Total**
2. Actual output (in units)	4,000	3,000	----
Actual machine hours utilised in department P1	6,100	4,150	10,250
Actual labour hours utilised in department P2	8,200	7,400	15,600

3. Computation of actual overhead rate for each production department from actual data

	Production Deptts.		Service Deptts.	
	P1	**P2**	**S1**	**S2**
Actual factory overheads for the month of July, 1993 in (₹)	2,31,000	2,04,000	60,000	48,000
Allocation of service department S1's costs in (₹) over production departments P1 and P2 equally.	30,000	30,000	- 60,000	----
Allocation of service department S2's costs in (₹) over production departments P1 and P2 in the ratio of 2 : 1	32,000	16,000	----	- 48,000
Total (Rs.)	**2,93,000**	**2,50,000**	**Nil**	**Nil**
Actual machine hours in department P1 (Refer to Working Note 2)	10,250	----	----	----
Actual labour hours in department P2 (Refer to Working Note 2)	----	15,600	----	----
Machine hour rate (₹ 2,93,000 / 10,250)	₹ 28.59	----	----	----
Labour hour/ rate (₹ 2,50,000 / 15,600)	----	₹ 16.02	----	----

4. **Actual overheads absorbed (based on machine hours) :**
   A : 6,100 hrs.× ₹ 28.59 = ₹ 1,74,400 (say)
   B : 4,150 hrs.× ₹ 28.59 = ₹ 1,18,649 (say)
5. **Actual overheads absorbed (based on labour hours) :**
   A : 8,200 hrs.× ₹ 16.02 = ₹ 1,31,364
   B : 7,400 hrs.× ₹ 16.02 = ₹ 1,18,548

Statement showing apportionment of the cost of Service Departments to Production Departments by using the Repeated Distribution Method.

	Production Departments			Service Departments	
	A	B	C	X	Y
	₹	₹	₹	₹	₹
Total overheads as per distribution summary	13,600	14,700	12,800	9,000	3,000
Department X overheads apportioned in the ratio of (40 : 30 : 20 : - : 10)	3,600	2,700	1,800	-9,000	900
Department Y overheads apportioned in the ratio of (30 : 30 : 20 : 20 : -)	1,170	1,170	780	780	-3,900
Department X overheads apportioned in the ratio of (40 : 30 : 20 : 20 : - : 10)	312	234	156	-780	78
Department Y overheads apportioned in the ratio of (30 : 30 : 20 : 20 : -)	23	23	16	16	-78
Department X overheads apportioned in the ratio of (40 : 30 : 20 : - : 10)	6	5	3	-16	2
Department Y overheads apportioned in the ratio of (30 : 30 : 20 : 20 : -)	1	1	----	—	-2
	18,712	18,833	15,555	—	—

Ans. 5. 1. Statement showing cost and profit per piece of each batch order

	Jun.	Feb.	March	April	May	June	Total
Unit	210	200	220	180	200	220	1230
	₹	₹	₹	₹	₹	₹	₹
Material Direct Wages	650	640	680	630	700	720	4020
Direct Wages	120	140	150	140	150	160	860
Prime Cost	770	780	830	770	850	880	4880
	(240 x 2.5)	(280 x 2.4)	(280 x 2.4)	(270 x 2.3)	(300 x 2.6)	(320 x 2.5)	
Total Cost	1370	1452	1502	1391	1630	1680	9025
÷ No. of Units	210	200	220	180	200	220	1230
Cost P.U.	6.52	7.26	6.82	7.73	8.15	7.67	7.34
+ Profit P.U.	1.48	0.74	1.18	0.27	(0.15)	0.33	0.66
S.P.P.U.	8	8	8	8	8	8	8

2. Overall Position for an order of 1200 Units

Sales (1200 x 8)	9,600
Less : Total Cost (1200 x 7.34)	8,808
Profit	792