7. PROCESS AND OPERATION COSTING

ASSIGNMENT SOLUTIONS

PROBLEM NO: 1

Dr. Process 'A' Account Cr.

Particulars	Per unit (Rs.)	Total (Rs.)	Particulars	Per unit (Rs.)	Total (Rs.)
To Material	6.25	1,500	By Process 'B' A/c	11.50	2,760
To Labour	3.34	800	(Transfer to Process -B)		
To Other expenses	1.08	260			
To Indirect expenses*	0.83	200			
	11.50	2,760		11.50	2,760

Dr. Process 'B' Account Cr.

Particulars	Per unit (Rs.)	Total (Rs.)	Particulars	Per unit (Rs.)	Total (Rs.)
To Process - A A/c	11.50	2,760	BY Process 'C' A/c	27.00	6,480
To Material	2.08	500	(Transfer to Process - C)		
To Labour	8.34	2,000			
To Other expenses	3.00	720			
To Indirect expenses*	2.08	500			
	27.00	**6,480**		**27.00**	**6,480**

Dr. Process 'C' Account Cr.

Particulars	Per unit (Rs.)	Total (Rs.)	Particulars	Per unit (Rs.)	Total (Rs.)
To Process - B A/c	27.00	6,480	By Finished Stock A/c	32.00	7,680
To Material	0.83	200	(Transferred)		
To Labour	2.50	600			
To Other expenses	1.04	250			
To Indirect expenses*	0.63	150			
	32.00	**7,680**		**32.00**	**7,680**

*Apportionment of Indirect expenses among Process-A, Process-B and Process-C Total Wages to processes (A+B+C) = Rs. 800+Rs. 2,000+ Rs.600=Rs. 3,400

Apportionment to:

Process - A = $\frac{Rs.850}{Rs.3,400}$ x Rs. 800 = Rs.200; Process - B = $\frac{Rs.850}{Rs.3,400}$ = Rs. 2,000 = Rs. 500 and

Process - C= $\frac{Rs.850}{Rs.3,400}$ x Rs. 600 = Rs. 150

PROBLEM NO: 2

Dr. Process I A/c Cr.

Particulars	Qty	R.P.U	Amount	Particulars	Qty	R.P.U	Amount
To introduced Raw materials	1000	3	3000	By normal loss	50	2	100
To direct material			2600	By units transferred to process II A/c	950	10	9500
To direct labour			2000				
To production overheads (100% of D.L)			2000				
	1000	**-**	**9600**		**1000**	**-**	**9600**

Average cost per unit = $\frac{9600 - 100}{1000 - 50} = \frac{9500}{950}$ = 10/- per unit

Dr. **Process II A/c** **Cr.**

Particulars	Qty	R.P.U	Amount	Particulars	Qty	R.P.U	Amount
To units transferred from process I A/c	950	10	9500	By normal loss	95	4	380
To direct material			1980	By abnormal loss	15	20	300
To direct labour			3000	By units transferred to process III A/c	840	20	16,800
To production overheads (100% of D.L)			3000				
	950		**17,480**				**17,480**

Average cost per unit = $\frac{17,480 - 380}{950 - 95} = \frac{17,100}{855}$ = 20/- per unit.

Dr. **Process III A/c** **Cr.**

Particulars	Qty	R.P.U	Amount	Particulars	Qty	R.P.U	Amount
To units transferred from process II A/c	840	20	16,800	By normal loss	126	5	630
To direct material			2,962	By units transferred to finished stock A/c	750	38	28,500
To direct labour			4,000				
To production overheads (100% of D.L)			4,000				
To Abnormal gain	36	38	1368				
	876	-	29,130		876	-	29,130

Average cost per unit = $\frac{27,762 - 630}{840 - 126} = \frac{27,132}{714}$ = 38/- per unit.

Dr. **Abnormal Gain A/c** **Cr.**

Particulars	Qty	R.P.U	Amount	Particulars	Qty	R.P.U	Amount
To normal loss A/c	36	5	180	By process III A/c	36	38	1368
To costing Profit and Loss A/c			1188				
	36	**-**	**1368**		**36**	**-**	**1368**

Dr. **Abnormal Loss A/c** **Cr.**

Particulars	Qty	R.P.U	Amount	Particulars	Qty	R.P.U	Amount
To process II A/c	15	20	300	By bank A/c	15	4	60
				By costing Profit and Loss A/c			240
	15	**-**	**300**		**15**	**-**	**300**

PROBLEM NO: 3

Dr. **Process I A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Input	25,000	2,00,000	By Normal wastage (2,500 units x Rs. 9.90)	2,500	24,750
To Material		1,92,000	By Abnormal loss A/c (500 units x Rs. 32.50)	500	16,250
To Direct Labour		2,24,000	By Process –II (22,000 units x Rs. 32.50)	22,000	7,15,000
To Manufacturing Exp.		1,40,000			
	25,000	**7,56,000**		**25,000**	**7,56,000**

Cost per unit = $\frac{Rs.7,56,000 - Rs.24,750}{25,000\,units - 2,500\,units}$ = Rs. 32.50 per unit

Dr. **Process II A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Process-I	22,000	7,15,000	By Normal wastage (2,200 units x Rs. 8.60)	2,200	18,920
To Material		96,020	By Finished stock (20,000 units x Rs. 49.50)	20,000	9,90,000
To Direct Labour		1,28,000			
To Manufacturing Exp.		60,000			
To Abnormal Gain A/c (200 units x Rs. 49.50)	200	9,900			
	22,200	**10,08,920**		**22,000**	**10,08,920**

Cost per unit = $\frac{Rs.9,99,020 - Rs.18,920}{22,000\,units - 2,200\,units}$ = Rs. 49.50 per unit

Dr. **Abnormal Loss A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Process-I A/c	500	16,250	By Cash (Sales) (500 units x Rs. 9.90)	500	4,950
			By Costing Profit and Loss A/c		11,300
	500	16,250		500	16,250

Dr. **Abnormal Gain A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Normal wastage (200 units x Rs. 8.60)	200	1,720	By Process II A/c	200	9,900
To Costing Profit and Loss		8,180			
	200	9,900		200	9,900

PROBLEM NO: 4

Dr. **Process I A/c** **Cr.**

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Raw material used (Rs.60 × 7,500 units)	7,500	4,50,000	By Normal loss (5% of 7,500 units) × Rs.12.5	375	4,688
To Direct wages	--	1,35,750	By Process- II A/c (Rs.96.7947 × 7,050 units)	7,050	6,82,403
To Direct expenses	--	81,450	By Abnormal loss (Rs.96. 7947 × 75 units)	75	7,259
To Manufacturing overhead		27,150			
	7,500	6,94,350		7,500	6,94,350

Cost per unit of completed units and abnormal Loss

$= \frac{\text{Total Cost - Realisable value from normal loss}}{\text{Inputs units - Normal loss units}} = \frac{Rs.\,6,94,350 - Rs.\,4,688}{7,500\,units - 375\,units} = \frac{Rs.\,6,89,622}{7,125\,units}$ = Rs. 96.7947

Dr. **Process II A/c** **Cr.**

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Process- I A/c	7,050	6,82,403	By Normal loss (10% of 7,050 units)× Rs. 37.5	705	26,438
To Direct wages	--	1,29,250	By Finished Stock A/c (Rs.140.0496 × 6,525 units)	6,525	9,13,824
To Direct expenses	--	84,013			

To Manufacturing overhead	--	19,387			
To Abnormal gain (Rs.140.0496 × 180 units)	180	25,209			
	7,230	9,40,262		7,230	9,40,262

Cost per unit of completed units and abnormal Loss

$$= \frac{\text{Total Cost - Realisable value from normal loss}}{\text{Inputs units - Normal loss units}} = \frac{\text{Rs. 9,15,053 - Rs. 26,438}}{\text{7,050 units - 705 units}} = \frac{\text{Rs. 8,88,165}}{\text{6,345 units}} = \text{Rs.140.0496}$$

Dr. **Finished Goods Stock A/c** **Cr.**

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Process II A/c	6,525	9,13,824	By Cost of Sales (Rs.140.0496 × 6,000 units)	6,000	8,40,828
			By Balance c/d	525	73,526
	6,525	9,13,824		6,525	9,13,824

Income Statement

Particulars	(Rs.)	Particulars	(Rs.)
To Cost of sales (Rs.140.0496 × 6,000 units)	8,40,298	By Abnormal gain {180 units × (Rs.140.0496 - Rs.37.50)}	18,459
To Abnormal loss {75 units × (Rs.96.7947 - Rs.12.50)}	6,322	By Sales (Rs.8,40,298 × 115%)	9,66,343
To Net Profit	1,38,182		
	9,84,802		9,84,802

PROBLEM NO. 5

a) Statement of Equivalent Production

Particulars	Units	Material		Labour		Overhead	
		Units	(%)	Units	(%)	Units	(%)
Finished Output	39,500	39,500	100	39,500	100	39,500	100
Normal Loss (2% of 42,000 units)	840	--	--	--	--	--	--
Abnormal Loss (42,000-39,500-840-1,200)	460	460	100	368	80	276	60
Closing W.I.P	1,200	1,200	100	600	50	480	40
	42,000	41,160		40,468		40,256	

b) Statement of Cost **(in Rs.)**

Units Introduced 42,000 units @ Rs. 12 per unit	5,04,000
Add: Material	61,530
	5,65,530
Less: Value of Normal Loss (840 units x Rs. 4.50)	3,780
	5,61,750

Particulars		Cost per Unit (Rs.)
Material	Rs. 5,61,750 / 41,160 units	13.648
Labour	Rs. 88,820 / 40,468 units	2.195
Overhead	Rs.1,76,400 / 40,256 units	4.382
		20.225
		Amount (Rs.)
Abnormal Loss:		
Material	(460 units x Rs. 13.648)	6,278.08
Labour	(368 units x Rs. 2.195)	807.76

Overheads	(276 units x Rs. 4.382)	1,209.42
		8,295.26
Closing W.I.P:		
Material	(1,200 units x Rs. 13.648)	16,377.60
Labour	(600 units x Rs. 2.195)	1,317.00
Overheads	(480 units x Rs. 4.382)	2,103.36
		19,797.96
Finished Goods		
	(39,500 units x Rs. 20.225)	7,98,887.50

c) Dr. Process II A/c Cr.

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Opening WIP		Nil	By Normal Loss	840	3,780
To Input	42,000	5,04,000	By Abnormal Loss	460	8,295
To Direct Material	-	61,530	By Finished Goods	39,500	7,98,877
To Labour	-	88,820			
To Overhead	-	1,76,400	By Closing WIP	1,200	19,798
	42,000	8,30,750		42,000	8,30,750

Dr. Abnormal Loss A/c Cr.

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Process II	460	8,295	By Cash (460 units x Rs. 9)	460	4,140
			By Costing P & L	--	4,155
	460	**8,295**		**460**	**8,295**

PROBLEM NO: 6

i) Statement of Equivalent Production

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material - A*		Consumables		Labour & Overheads	
				%	Units	%	Units	%	Units
Units transferred from Process-I	55,000	Units transferred from Process-III	51,000	100	51,000	100	51,000	100	51,000
		Normal loss (4% of 55,000)	2,200	-	-	-	-	-	-
		Closing WIP	2,000	100	2,000	80	1,600	60	1,200
		Abnormal Gain	(200)	100	(200)	100	(200)	100	(200)
	55,000		55,000		52,800		52,400		52,000

*Material A represent transferred-in units from process-I

ii) Determination of Cost per Unit

Particulars	Amount (Rs.)	Units	Per Unit (Rs.)
i) Direct Material (Consumables):			
Value of units transferred from Process - I	3,27,800		
Less: Value of normal loss (2,200 units × Rs. 5)	(11,000)		
	3,16,800	52,800	6.00
ii) Consumables added in Process-II	1,57,200	52,400	3.00
iii) Labour	1,04,000	52,000	2.00
iv) Overhead	52,000	52,000	1.00
Total Cost per equivalent unit			12.00

iii) Determination of value of Work-in-Process and units transferred to Process-III

Particulars	Units	Rate (Rs.)	Amount (Rs.)
Value of Closing W-I-P:			
Material from Process-I	2,000	6.00	12,000
Consumables	1,600	3.00	4,800

Labour	1,200	2.00	2,400
Overhead	1,200	1.00	1,200
			20,400
Value of units transferred to Process-III	51,000	12.00	6,12,000

PROBLEM NO: 7

Statement of Equivalent Units (Process- I)

Input (Units)	Particulars	Output (Units)	Equivalent Production			
			Materials		Labour and Overheads	
			Units	(%)	Units	(%)
40,000	Introduced and completed	36,000	36,000	100	36,000	100
	Normal loss	2,000	-	-	-	-
	Closing stock	2,000	2,000	100	1,000	50
40,000		40,000	38,000		37,000	

Computation of cost per Equivalent Unit for each element of cost (Process- I)

Elements of Cost	Total Cost (Rs.)	Equivalent units	Cost per Equivalent units (Rs.)
Direct Materials	6,00,000	38,000	15.7895
Labour	1,20,000	37,000	3.2432
Factory Overheads	2,40,000	37,000	6.4865

Statement of Apportionment of Cost

Items	Elements	Equivalent units	Cost per unit (Rs.)	Cost (Rs.)	Total (Rs.)
Units introduced and completed	Materials	36,000	15.7895	5,68,422.00	
	Labour	36,000	3.2432	1,16,755.20	
	Overheads	36,000	6.4865	2,33,514.00	9,18,691.20
Closing stock	Materials	2,000	15.7895	31,579.00	
	Labour	1,000	3.2432	3,243.20	
	Overheads	1,000	6.4865	6,486.50	41,308.70

Dr. **Process I A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Materials	40,000	6,00,000	By Normal loss	2,000	-
To Labour		1,20,000	By Process II	36,000	9,18,691
To Overheads		2,40,000	By Closing stock	2,000	41,309
	40,000	9,60,000		40,000	9,60,000

Statement of Equivalent Units (Process- II)

Input (Units)	Particulars	Output (Units)	Equivalent Production			
			Materials		Labour and Overheads	
			Units	(%)	Units	(%)
36,000	Units transferred from Process- I					
	Normal loss	1,500	-	-	-	-
	Completed	32,000	32,000	100	32,000	100
	Closing stock (balancing figure)	2,500	2,500	100	1,250	50
36,000		36,000	34,500		33,250	

Computation of cost per Equivalent Unit for each element of cost (Process- I)

Elements of Cost	Total Cost (Rs.)	Equivalent units	Cost per Equivalent units (Rs.)
Cost of 36,000 units transferred from Process- I	9,18,691	34,500	26.6287
Labour	1,60,000	33,250	4.8120
Factory Overheads	2,00,000	33,250	6.0150

Statement of Apportionment of Cost

Items	Elements	Equivalent units	Cost per unit (Rs.)	Cost (Rs.)	Total (Rs.)
Units introduced and completed	Materials	32,000	26.6287	8,52,118.40	
	Labour	32,000	4.8120	1,53,984.00	
	Overheads	32,000	6.0150	1,92,480.00	11,98,582.40
Closing stock	Materials	2,500	26.6287	66,571.75	
	Labour	1,250	4.8120	6,015.00	
	Overheads	1,250	6.0150	7,518.75	80,105.50

Dr. **Process II A/c** **Cr.**

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Units introduced	36,000	9,18,691	By Normal loss	1,500	-
To Labour		1,60,000	By Finished stock	32,000	11,98,582
To Overheads		2,00,000	By Closing stock	2,500	80,109*
	36,000	12,78,691		36,000	12,78,691

*Difference arose due to rounding-off has been adjusted.

PROBLEM NO: 8

Statement of Equivalent Production

(FIFO Method)

Output		Output		Equivalent Production			
Particulars	Units	Particulars	Units	Material		Labour & Overheads	
				(%)	Units	(%)	Units
Opening WIP	8,000	Transfer to next Process:					
Introduced	1,82,000	Opening WIP completed	8,000	--	--	40	3,200
		Introduced & completed	1,50,000	100	1,50,000	100	1,50,000
		Normal loss 5% (8,000 + 1,82,000)	9,500	--	--	--	--
		Abnormal loss	4,500	100	4,500	80	3,600
		Closing WIP	18,000	100	18,000	70	12,600
	1,90,000		**1,90,000**		**1,72,500**		**1,69,400**

i) Computation of Cost per unit

Particulars	Materials (Rs.)	Labour (Rs.)	Overhead (Rs.)
Input of Materials	7,37,500	--	--
Expenses	--	3,40,600	1,70,300
Total	7,37,500	3,40,600	1,70,300
Less: Sale of Scrap (9,500 units x Rs.5)	(47,500)	--	--
Net cost	6,90,000	3,40,600	1,70,300
Equivalent Units	1,72,500	1,69,400	1,69,400
Cost Per Unit	4.0000	2.106	1.0053

Total cost per unit = Rs. (4.0000 + 2.0106 + 1.0053) = Rs. 7.0159

ii) Value of units transferred to next process:

Particulars	Amount (Rs.)	Amount (Rs.)
Opening W-I-P	75,000	
Add: Labour (3,200 units x Rs. 2.0106)	6,434	
Overhead (3,200 units x Rs. 1.0053)	3,217	84,651
New introduced (1,50,000 units x Rs. 7.0159)		10,52,385
		11,37,036

PROBLEM NO: 9

Statement of Equivalent Production

(FIFO Method)

Output		Output		Equivalent Production			
				Material		Labour & Overheads	
Particulars	Units	Particulars	Units	(%)	Units	(%)	Units
Opening WIP	40,000	Transfer to Process II:					
Introduced	1,80,000	Opening WIP completed	40,000	--	--	75	30,000
		Introduced & completed	1,10,000	100	1,10,000	100	1,10,000
		Closing WIP	70,000	100	70,000	50	35,000
	2,20,000		**2,20,000**		**1,80,000**		**1,75,000**

Statement showing Cost for each element

Item of Cost	Equivalent Production	Cost Incurred (Rs.)	Cost per Unit (Rs.)
Material	1,80,000	6,60,000	3.66667
Labour & Overheads	1,75,000	14,80,000	8.45714
			12.12381

Statement of Apportionment of Cost

Transfer to Process II		
Opening WIP Completed		
Cost already Incurred Rs. (1,00,000 + 25,000 + 45,000)	1,70,000	
Cost Incurred during the Month		
Labour & Overheads (30,000 units x Rs. 8.45714)	2,53,714	4,23,714
Introduced & Completed (1,10,000 units x Rs. 12.12381)		13,33,619
		17,57,333
Closing WIP		
Material (70,000 units x Rs. 3.66667)	2,56,667	
Labour and Overheads (35,000 units x Rs. 8.45714)	2,96,000	5,52,667

Process – A A/c

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount (Rs.)
To Opening WIP	40,000	1,70,000	By Process II A/c	1,50,000	17,57,333
To Materials	1,80,000	6,60,000	By Closing WIP	7,000	5,52,667
To Labour		5,55,000			
To Overheads		9,25,000			
	2,20,000	**23,10,000**		**2,20,000**	**23,10,000**

PROBLEM NO: 10

i) Statement of Equivalent Units of Production

INPUT		Output		EQUIVALENT Material		PRODUCTION Labour & Overheads	
Particulars	Units	Particulars	Units	(%)	Units	(%)	Units
Op. WIP	1,500	Work on Op. WIP	1,500	--	--	66 2/3	1,000
Introduced	18,500	Introduced and completed in the period	13,500		13,500	100	13,500
		Transferred to next process	15,000				
		Normal Loss	2,000	--	--	--	--
		Closing WIP	5,000	90	4,500	30	1,500
			22,000		18,000		16,000
		Less: Abnormal Gain	2,000	100	2,000	100	2,000
	20,000		**20,000**		**16,000**		**14,000**

ii) Statement of Cost per Equivalent Unit for Each Cost Element

Particulars	Amount (Rs.)	Cost (Rs.)	Equivalent Units	Cost per Equivalent Unit (Rs.)
Material	52,000			
Less: Scrap Value	4,000	48,000	16,000	3
Labour		14,000	14,000	1
Overheads		28,000	14,000	2

iii) Statement of Cost of Finished Output and Closing Work in Progress

Particulars	Elements	Equivalent Units	Cost per Unit Rs.	Cost of Equivalent Units Rs.	Total Rs.
Opening WIP (1,500 units)		--	--	--	15,000
Opening WIP	Material	NIL	--	--	
Opening WIP	Labour	1,000	1	1,000	
Opening WIP	Overhead	1,000	2	2,000	
Units introduced and completed During the period	Material	13,500	3	40,500	
"	Labour	13,500	1	13,500	3,000
"	Overhead	13,500	2	27,000	81,000

iv) Dr. Process - I A/c Cr.

	Units	Rs.		Units	Rs.
To Opening WIP	1,500	15,000	By Normal Loss	2,000	4,000
To Units introduced (Direct Material)	18,500	52,000	By Transfer to next process	15,000	99,000
To Direct Labour			By Closing WIP		
To Overhead	--	14,000		5,000	18,000
To Abnormal Gain (See working note)	--	28,000			
	2,000	12,000			
	22,000	1,21,000		22,000	1,21,000

Dr. Abnormal Gain A/c Cr.

	Units	Rs.		Units	Rs.
To Process I A/c	2,000	4,000	By Process I	2,000	12,000
To Costing P & L A/c	--	8,000			
		12,000			12,000

WORKING NOTE: Total cost of Abnormal Gain: (2,000 Units) @ Rs. 6/- p.u. = Rs. 12,000

PROBLEM NO: 11

Statement of Equivalent Production of Process RT

Input units	Details	Output units	Equivalent Production			
			Material		Conversion Cost	
			Units	(%)	Units	(%)
4,000	Opening WIP					
16,000	Introduced completed and transfer to next	14,400	14,400	100	14,400	100
	Normal Spoilage	1,440	--	--	--	--
	Abnormal Spoilage	1,160	1,160	100	1,160	100
	Closing WIP	3,000	3,000	100	2,000	66.67
20,000		20,000	18,560		17,560	

Statement showing Cost of each element

	Opening (Rs.)	Cost in Process (Rs.)	Total (Rs.)	Equivalent Units	Cost per unit (Rs.)
Materials	30,000	1,20,000	1,50,000	18,560	8.0819
Conversion cost	29,200	1,60,800	1,90,000	17,560	10.8200

Statement of Apportionment of cost

Completed Units	Material	14,400	8.0819	1,16,380
	Conversion cost	14,400	10.8200	1,55,808
				2,72,188
Closing stock	Material	3,000	8.0819	24,246
	Conversion cost	2,000	10.8200	21,640
				45,886
Abnormal Loss	Material	1,160	8.0819	9,375
	Conversion cost	1,160	10.8200	12,551
				21,926

Dr. **Process - RT A/c** **Cr.**

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	4,000	59,200	By Normal Loss	1,440	--
To Material introduced	16,000	1,20,000	By Abnormal loss	1,160	21,926
To Conversion cost		1,60,800	By Transfer to next process	14,400	2,72,188
			By Closing WIP	3,000	45,886
	20,000	3,40,000		20,000	3,40,000

PROBLEM NO: 12

(i) Statement of Equivalent Production

Particulars	Input Units	Particulars	Output Units	Equivalent Production			
				Material		Labour & O.H.	
				%	Units	%	Units
Opening WIP	2,000	Completed and transferred to Process - II	35,000	100	35,000	100	35,000
Units introduced	38,000	Normal Loss (5% of 40,000)	2,000	--	--	--	--
		Abnormal loss (balancing figure)	1,000	100	1,000	80	800
		Closing WIP	2,000	100	2,000	80	1,600
	40,000		**40,000**		**38,000**		**37,400**

(ii) Statement showing cost for each element

Particulars	Materials (Rs.)	Labour (Rs.)	Overhead (Rs.)	Total (Rs.)
Cost of opening work-in-process	80,000	15,000	45,000	1,40,000
Cost incurred during the month	14,80,000	3,59,000	10,77,000	29,16,000
Less: Realisable Value of normal scrap (Rs. 20 × 2,000 units)	(40,000)	--	--	(40,000)
Total cost: (A)	15,20,000	3,74,000	11,22,000	30,16,000
Equivalent units: (B)	38,000	37,400	37,400	
Cost per equivalent unit: (C) = (A ÷ B)	40.00	10.00	30.0	80.00

(iii) Statement of distribution of cost

Particulars	Amount (Rs.)	Amount (Rs.)
1. Value of units completed and transferred (35,000 units × Rs. 80)		28,00,000
2. Value of Abnormal Loss:		
• Materials (1,000 units × Rs. 40)	40,000	
• Labour (800 units × Rs. 10)	8,000	
• Overheads (800 units × Rs. 30)	24,000	72,000
3. Value of Closing WIP:		
• Materials (2,000 units × Rs. 40)	80,000	
• Labour (1,600 units × Rs. 10)	16,000	
• Overheads (1,600 units × Rs. 30)	48,000	1,44,000

(iv) Dr. Process-I A/c Cr.

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Opening W.I.P:			By Normal Loss (Rs.20 × 2,000 units)	2,000	40,000
- Materials	2,000	80,000	By Abnormal loss	1,000	72,000
- Labour	--	15,000	By Process-II A/c	35,000	28,00,000
- Overheads	--	45,000	By Closing WIP	2,000	1,44,000
To Materials introduced	38,000	14,80,000			
To Direct Labour	3,59,000				
To Overheads	10,77,000				
	40,000	**30,56,000**		**40,000**	**30,56,000**

(v) Dr. Normal loss A/c Cr.

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Process-I A/c	2,000	40,000	By Cost Ledger Control A/c	2,000	40,000
	2,000	**40,000**		**2,000**	**40,000**

(vi) Dr. Abnormal loss A/c Cr.

Particulars	Units	(Rs.)	Particulars	Units	(Rs.)
To Process-I A/c	1,000	72,000	By Cost Ledger Control A/c	1,000	20,000
			By Costing Profit & Loss A/c	52,000	
	1,000	**72,000**		**1,000**	**72,000**

PROBLEM NO: 13

i) Statement of Equivalent Production

Particulars	Units	Material		Labour and Overhead	
		(%)	Units	(%)	Units
Production units completed	1,58,000	100	1,58,000	100	1,58,000
Normal Loss	15,200	--	--	--	--
8% of (1,82,000 + 8,000) Closing WIP	18,000	100	18,000	70	12,600
	1,91,200	--	1,76,000	--	1,70,600
Less: Abnormal Gain	1,200	100	1,200	100	1,200
Total	1,90,000		1,74,800		1,69,400

ii) Statement of cost

Particulars	Materials (Rs.)	Labour (Rs.)	Overhead (Rs.)
Opening WIP	63,900	10,800	5,400
Input of Materials	7,56,900	-	-
Expenses	-	3,28,000	1,64,000
Total	8,20,800	3,38,800	1,69,400
Less: Sale of Scrap (15,200 x Rs. 8)	1,21,600	-	-
Net cost	6,99,200	3,38,800	1,69,400
Equivalent Units	1,74,800	1,69,400	1,69,400
Cost Per Units	Rs. 4.00	Rs. 2.00	Rs. 1.00

Total cost per unit = Rs. (4+2+1) = Rs. 7.00

PROBLEM NO: 14

i) Statement of Equivalent Production

Input	Units	Output	Units	Equivalent production			
				Material		Labour and Overhead	
				(%)	Units	(%)	Units
Opening WIP	1,500	Completed and transfer to Process-II	32,000	100	32,000	100	32,000

Units Introduced	35,000	Normal loss (5% of 36,500)	1,825		--		-
		Abnormal loss	1,175	100	1,175	80	940
		Closing WIP	1,500	100	1,500	80	1,200
	36,500		36,500		34,675		34,140

ii) Statement of Cost

Details	Cost at the beginning of process (Rs.)	Cost added (Rs.)	Total cost (Rs.)	Equivalent Units	Cost per unit (Rs.)
Material **Less:** Value of normal loss (1,825 units x Rs. 8)	60,000	14,00,000	14,60,000 (14,600) 14,45,400	34,675	41.6842
Labour	35,000	3,46,000	3,81,000	34,140	11.1599
Overheads	30,000	6,37,000	6,67,000	34,140	19.5372
					72.3813

iii) Statement of Cost

(a) Completed and transferred to Process – II: 32,000 units @ Rs. 72.3813	Rs. 23,16,202
(b) Abnormal loss 1,175 units	
Materials 1,175 units @ Rs. 41.6842	Rs. 48,979
Labour 940 units @ Rs. 11.1599	Rs. 10,491
Overheads 940 units @ Rs. 19.5372	Rs. 18,365
	Rs. 77,835
(c) Closing WIP 1,500 units	
Materials 1,500 units @ Rs. 41.6842	Rs. 62,526
Labour 1,200 units @ Rs. 11.1599	Rs. 13,392
Overheads 1,200 units @ Rs. 19.572	Rs. 23,445
	Rs. 99,363

iv) Dr. Process – I Account Cr.

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	1,500	1,25,000*	By Normal Loss	1,825	14,600
To Material introduced	35,000	14,00,000	By Abnormal loss	1,175	77,835
To Direct labour		3,46,000	By Process –II A/c	32,000	23,16,202,
To Overhead		6,37,000	By Closing WIP	1,500	99,363
	36,500	25,08,000		36,500	25,08,000

*Materials + Labour + Overheads = Rs. (60,000 + 35,000 + 30,000) = Rs. 1,25,000.

Dr. Normal Loss Account Cr.

Particulars	Units	Amount	Particulars	Units	Amount
To Process – I A/c	1,825	14,600	By Cost Ledger Control A/c	1,825	14,600
	1,825	14,600		1,825	14,600

Dr. Abnormal Loss Account Cr.

Particulars	Units	Amount	Particulars	Units	Amount
To Process – I A/c	1,175	77,835	By Cost Ledger Control A/c (1,175 units x Rs. 8)	1,175	9,400
			By Costing Profit and Loss A/c		68,435
	1,175	77,835		1,175	77,835

PROBLEM NO: 15

Statement of Equivalent Units (Process - I)

Input Details	Units	Output Particulars	Units	Equivalent production					
				Material-A		Material-B		Labour and Overhead	
				(%)	Units	(%)	Units	(%)	Units
Opening WIP	1,600	Work on Opening WIP	1,600	-	-	20	320	40	640

Process –II Transfer	55,400	Introduced & completed during the month	50,600	100	50,600	100	50,600	100	50,600
		Normal loss (5% of 52,800 units)	2,640	-	-	-	-	-	-
		Closing WIP	4,200	100	4,200	70	2,940	50	2,100
		Abnormal Gain	(2,040)	100	(2,040)	100	(2,040)	100	(2,040)
	57,000		57,000		52,760		51,820		51,300

WORKING NOTE:

Production units = Opening units + Units transferred from Process - II - Closing Units

= 1,600 units + 55,400 units – 4,200 units = 52,800 units

Statement of Cost

	Cost (Rs.)	Equivalent units	Cost per equivalent units (Rs.)
Material A (Transferred from previous process)	6,23,250		
Less: Scrap value of normal loss (2,640 units x Rs.5)	(13,200)		
	6,10,050	52,760	11.5627
Material B	2,12,400	51,820	4.0988
Labour	96,420	51,300	1.8795
Overheads	56,400	51,300	1.0994
	9,75,270		18.6404

Statement of apportionment of Process Cost

		Amount (Rs.)	Amount (Rs.)
Opening WIP	Material A		24,000
Completed opening WIP units - 1600	Material B (320 units x Rs. 4.0988)	1311.62	
	Wages (640 units x Rs. 1.8795)	1202.88	
	Overheads (640 units x Rs. 1.0994)	703.62	3,218.12
Introduced & Completed – 50,600 units	50,600 units x Rs. 18.6404		9,43,204.24
Total cost of 52,200 finished goods units			9,70,422.36
Closing WIP units- 4,200	Material A (4,200 units x Rs. 11.5627)		48,563.34
	Material B (2,940 units x Rs. 4.0988)		12,050.47
	Wages (2,100 units x Rs. 1.8795)		3,946.95
	Overheads (2,100 units x Rs. 1.0994)		2,308.74
			66,869.50
Abnormal gain units-2,040	(2,040 units x Rs. 18.6404)		38,026.42

Statement of apportionment of Process Cost

Particulars	Units	Amount (Rs.)	Particulars	Units	Amount(Rs.)
To Balance b/d	1,600	24,000	By Normal loss	2,640	13,200
To Process II A/c	55,400	6,23,250	By Finished goods	52,200	9,70,422.36
To Direct material		2,12,400	By Closing WIP	4,200	66,874.06*
To Direct wages		96,420			
To Production overheads		56,400			
To Abnormal gain	2,040	38,026.42			
	59,040	10,50,496.42		59,040	10,50,496.42

*Difference in figure due to rounding off has been adjusted with closing WIP

PROBLEM NO: 16

Calculation of equivalent units

	Units	Material 1		Material 2		Wages & Overheads	
		(%)	Units	(%)	Units	(%)	Units
Completed	46,500		--		--		--
From opening WIP	6,000		--	40	2,400	60	3,600
From input	40,500	100	40,500	100	40,500	100	40,500
Closing work in process	4,000	100	4,000	50	2,000	30	1,200
Normal loss	3,000		--		--		--
Abnormal loss	(500)	100	500	80	400	60	300
	54,000		45,000		45,300		45,600
	Rs.		**Rs.**		**Rs.**		**Rs.**
This month's costs	1,92,300		1,40,400		27,180		54,720
Less: Revenue from normal loss	2,400		2,400		--		--
	1,89,900		1,08,000		27,180		54,720
Cost per equivalent unit	Rs. 4.2		Rs. 2.4		Rs. 0.6		Rs. 1.2

Evaluation of September 2015, Output

	Total Rs.	Material 1 Rs.	Material 2 Rs.	Wages Rs.	Overheads Rs.	Sundries Rs.
Completed from opening WIP (last month)	19,440					19,400
From opening WIP (this month)	5,760		1,440	1,440	2,880	
From input	1,70,100	97,200	24,300	16,200	32,400	
Finished goods	**1,95,300**	**97,200**	**25,740**	**17,640**	**35,280**	**19,440**
Closing work-in-process	12,240	9,600	1,200	480	960	
Normal loss (revenue)	2,400					2,400
Abnormal loss	1,800	1,200	240	120	240	
	2,11,740	1,08,000	27,180	18,240	36,480	21,840

Dr. Process C A/c Cr.

	Units	(Rs.)		Units	(Rs.)
To Opening WIP	6,000	19,440	By Finished goods	46,500	1,95,300
To Process B	48,000	1,10,400	By Closing WIP	4,000	12,240
To Direct materials added		27,180	By Normal loss (Revenue)	3,000	2,400
To Direct wages		18,240	By Abnormal loss	500	1,800
To Production Overhead		36,480			
	54,000	**2,11,740**		**54,000**	**2,11,740**

Dr. Abnormal Loss A/c Cr.

	Units	(Rs.)		Units	(Rs.)
To Process C	500	1,800	By Process C-revenue for abnormal scrap	500	400
			By Costing Profit and loss A/C		1,400
	500	**1,800**		**500**	**1,800**

Dr. Finished Goods A/c Cr.

	Units	(Rs.)		Units	(Rs.)
To Process C	46,500	1,95,300			

PROBLEM NO: 17

Dr. **Process I A/c** **Cr.**

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Opening stock	7,500	7,500	--	Process II A/c	54,000	40,500	13,500
Direct materials	15,000	15,000	--				
Direct wages	11,200	11,200	--				
	33,700	33,700	--				
Less: Closing stock	(3,700)	(3,700)					
Prime cost	30,000	30,000	--				
Overheads	10,500	10,500	--				
Process cost	40,500	40,500	--				
Profit (33 1/3 of total cost)	13,500	--	13,500				
	54,000	40,500	13,500		54,000	40,500	13,500

Dr. **Process II A/c** **Cr.**

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Opening stock	9,000	7,500	1,500	Finished Stock A/c	1,12,500	75,750	36,750
Transferred from Process I	54,000	40,500	13,500				
Direct materials	15,750	15,750	--				
Direct wages	11,250	11,250	--				
	90,000	75,000	15,000				
Less Closing Stock*	(4,500)	(3,750)	(750)				
Prime cost	85,500	71,250	14,250				
Overheads	4,500	4,500	--				
Process cost	90,000	75,750	14,250				
Profit (25% on total cost)	22,500	--	22,500				
	1,12,500	**75,750**	**36,750**		**1,12,500**	**75,750**	**36,750**

***Cost of Closing Stock =** $\frac{\text{Rs.75,000}}{\text{Rs.90,000}}$ x Rs. 4,500 = Rs. 3,750

Dr. **Finished Stock A/c** **Cr.**

Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)	Particulars	Total (Rs.)	Cost (Rs.)	Profit (Rs.)
Opening stock	22,500	14,250	8,250	Process II A/c	1,40,000	82,500	57,500
Process II	1,12,500	75,750	36,750				
	1,35,000	90,000	45,000				
Less: Closing Stock*	(11,250)	(7,500)	(3,750)				
Finished stock	1,23,750	82,500	41,250				
Profit	16,250	--	16,250				
	1,40,000	82,500	57,500		1,40,000	82,500	57,500

***Cost of Closing Stock =** $\frac{\text{Rs.90,000}}{\text{Rs.1,35,000}}$ x Rs. 11,250 = Rs. 7,500

WORKING NOTES:

Let the transfer price be 100 then profit is 25; i.e. cost price is Rs. 75

1. If cost is Rs. 75 then profit is Rs. 25

   If cost is Rs. 40,500 then profit is $\frac{25}{75}$ x 40,500 = Rs. 13,500

2. If cost is Rs. 80 then profit is Rs. 20

   If cost is Rs. 90,000 then profit is $\frac{20}{80}$ x 90,000 = Rs. 22,500

Verified By: G. Ramesh Sir

THE END