VIVEKANANDA COLLEGE
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NAAC ACCREDITED 'A' GRADE

Topic:Activity Based Costing

Course Title:B.Com

Paper:Cost&Mgt Accounting-2

Unit:01

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Practical Problems

1. A manufacturing company produces two products, *X* and *Y*. Particulars relating to the products are given below :

	Product X	*Product Y*
Direct material cost per unit	10	12
Direct labour per unit	10	8
Units produced	200	200
Direct labour hours per unit	12	12
Material moves per product [redacted] Line	10	14

Budgeted material handling cost (overhead cost) ₹ 24,000.

Required :

(i) Determine cost per unit of the products using volume based allocation method (direct labour hour rate).

(ii) Determine cost per unit of the products using activity-based costing method.

[C.U., B.Com. (Hons.) '12]

2. A company manufactures two products *P* and *Q* using same facilities and similar process. The cost data for April, 2019 are given below :

	P	*Q*
Units produced	8,000	10,000
Direct labour hours per unit	1	2
Machine hours per unit	3	1
No. of set-ups in the period	15	35
No. of orders handled in the period	20	60

The overhead costs for the month are as under :	₹
Relating to machine activity	2,80,000
Relating to production run set-ups	26,400
Relating to handling of orders	42,600

You are required to calculate the production overheads to be absorbed by one unit of each of the products *P* and *Q* using the following costing methods :

(i) A traditional costing approach (using direct labour hour rate to absorb overheads).

(ii) An activity-based costing approach (using suitable cost drivers).

3. The budgeted overheads and cost driver volumes of Zed Ltd. are as follows :

Cost pool	*Budgeted overhead* ₹
Material procurement	5,80,000
Quality control	1,76,000
Maintenance	9,70,000
Material handling	2,50,000
Machinery	7,20,000
Set up	4,15,000

Cost drivers	*Budgeted volume*
No. of inspection	900
Maintenance hours	8,400
No. of machine hours	24,000
No. of set ups	520
No. of orders	1,100
No. of movements	680

The company has produced a batch of 2,600 components of 'Zydus', its material cost was ₹ 1,30,000 and labour cost was ₹ 2,45,000. The usage activities of the said batch are as follows :

Material order	26	Maintenance hours	690
Material movements	18	Inspection	28
Set ups	25	Machine hours	1,800

Required :

(i) Calculate cost driver rates that are used for tracing appropriate amount of overheads.

(ii) Ascertain the cost of the batch.

4. A company manufactures four products using same plant and process. The following information relates to a production period :

Product	*Volume of production (units)*	*Material cost (per unit)*	*Direct labour (per unit)*	*Machine time (per unit)*	*Labour cost (per unit)*
A	1,000	₹ 6	1 hr.	0·5 hr.	₹ 4
B	6,000	₹ 5	1 hr.	0·5 hr.	₹ 4
C	800	₹ 15	2 hrs.	1·0 hr.	₹ 8
D	9,000	₹ 20	2·5 hrs.	1·5 hrs.	₹ 10

	₹
Factory overhead applicable to machine oriented activities	62,300
Set-up cost	6,400
Cost of ordering materials	2,100
Administration cost for spare parts	10,600
Handling cost of materials	8,500
	89,900

Product	*No of set-ups*	*No. of material orders*	*No. of times materials handled*	*No. of spare parts*
A	2	2	3	3
B	4	5	10	4
C	3	2	4	1
D	10	5	15	5
	19	14	32	13

Calculate the cost of the products under : *(i)* traditional costing (applying machine hours rate for absorption of overhead) ; and *(ii)* activity-based costing. Also show the difference in overhead cost per unit under the two methods.

A B C Basu & Das

1 (i) Cal. of Total D. Lab. hour :—

Product X — 200 × 12 = 2400

Prod Y = 200 × 12 = 2400

4800

Bud. Mat. handling Cost per D.L. hour = Bud. Mat. handling Cost / Total D.L. hour

= 2400 / 480 = ₹5

Statement showing Cost/unit.

	X		Y	
Mat. Cost		10		12
D. Lab.		10		8
P. Cost		20		20
O/h.	12 × 5	60	12 × 5	60
		80		80

(ii) Total Mat. movement :—

Product X — 10 times

Y — 14 "

24 "

Bud. Mat. handling Cost per Mat. movement = Bud. Mat handling Cost / Total no. of Mat. movement

= 2400 / 24 = 100.

Statement showing Cost/unit using ABC

D. Mat Cost		10		12
D. Lab		10		8
P. Cost		20		20
O/h	10 × 100 / 200	50	14 × 100 / 200	70
T. Cost		70		90

(2) Cal. of Total Direct Lab. hour:-

Product P - 8000 × 1 = 8000

" Q 10000 × 2 = 20000

28,000

O/h Absorption rate Per D. Lab. hour = $\frac{\text{Total O/h Cost}}{\text{Total D.L. hour}}$

$= \frac{2,80,000 + 26,440 + 42,600}{28000}$

$= 12.4643$.

Statement showing Prdn O/h P.U under Traditional Costing approach.

	P	Q
Prdn O/h	1 × 12.4643 = 12.4643	2 × 12.4643 = 24.9286

(11) Cal. of Total M. hour

Product P - 8000 × 3 = 24,000

" Q 10000 × 1 = 10,000

34,000

O/h relating to Machine activity per machine hour

$= \frac{\text{O/h relating to M. activity}}{\text{Total m. hour}}$

$= \frac{2,80,000}{34000} = 8.2353$

O/h relating to Prdn Run set up Per no. of set up

$= \frac{\text{O/h Cost relating to Prdn Run set up}}{\text{Total no. of set up}} = \frac{26,440}{(15+35)} = 528$

O/h relating to handling of order Per no. of order handled

$= \frac{\text{O/h relating to handling of order}}{\text{Total no. of order handled}} = \frac{42,600}{20+60} = 532.5$

Statement showing Prdn O/h P.U under ABC

Prdn. O/h	P	Q
Machine activity	3 × 8.2353 = 24.7059	1 × 8.2353 = 8.2353
Prdn Run set up	$\frac{15 \times 528}{8000}$ = 0.99	$\frac{35 \times 528}{10000}$ = 1.848
handling of order	$\frac{20 \times 532.5}{8000}$ = 1.3313	$\frac{60 \times 532.5}{10000}$ = 3.195
	27.0272	13.2783

(3) O/h relating to Mat. Procurement Per order = $\frac{\text{Mat. Procurement}}{\text{No. of order}} = \frac{5,80,000}{1100}$

$= 527.2727$

O/h relating to Quality Control Per Inspection

$= \frac{\text{Quality Control}}{\text{No. of Inspection}} = \frac{176000}{900} = 195.5556$.

O/h relating to maintenance Per Maintenance hour

$= \frac{\text{Maintenance O/h}}{\text{No. of maintenance hour}} = \frac{9,70,000}{8400} = 115.4762$

O/h relating to mat. handling Per movement

$= \frac{\text{Mat. handling O/h}}{\text{No. of movement}} = \frac{2,50,000}{680} = 367.6471$

O/h relating to machine Per machine hour

$= \frac{\text{Machine O/h}}{\text{No. of machine hour}} = \frac{720000}{24000} = 30$.

O/h Relating to Set up = $\frac{\text{Set up O/h}}{\text{No. of Set up}} = \frac{41500}{520} = 798.0769$

Cost of 1st Batch

Prods = 2600

	Total.	P.U
Mat. Cost	1,30,000	50.00
Lab Cost	2,45,000	94.2307
P. Cost	3,75,000	144.2307
F. O/h		
Mat. Procurement (26 × 527.2727)	13,709	
Quality Cont. (28 × 195.5556)	5,476	
Maintenance (690 × 115.4762)	79679	
Mat. handling (18 × 367.6471)	6618	
Machy (1800 × 30)	54,000	
Set up (25 × 798.0769)	19952	1,79434 69.0131
	5,54,434	213.2438

(4) Cal. of Total machine hour:—

Product A – 1000 × 0.5	= 500	O/h rate P. M. hour
B 6000 × 0.5	= 3000	= $\frac{89,100}{1780}$
C 800 × 1	= 800	= 5.0505
D 9000 × 1.5	= 13500	
	17,800	

Traditional Costing

	A	B	C	D
Mat. Cost	6	5	15	20
Add:- Lab.	4	4	8	10
P.C	10	9	23	30
Add O/h	(0.5 × 5.0505) 2.5253	(0.5 × 5.0505) 2.5253	(1 × 5.0505) 5.0505	(1.5 × 5.0505) 7.5757
T. Cost P.U.	12.5253	11.5253	28.0505	37.5757

ii) M. oriented activity o/h Per M. hour = $\frac{62,100}{1780} = 35$

Setup o/h Cost Per Setup = $\frac{6400}{19} = 336.8421$

Cost of ordg Mat. Per no. of mat. order = $\frac{2100}{14} = 150.$

Adm. Cost for Spare Parts Per Spare Parts = $\frac{10600}{13} = 815.3846$

Handling cost of Mat. Per No. of mat. handled = $\frac{8500}{32} = 265.625$

Activity Based Costing

	A	B	C	D
P. cost	(1000 × 10) 10,000	(6000 × 9) 54,000	(800 × 23) 18400	(9000 × 30) = 270000
Add:- O/h.				
M. oriented.	(500 × 3.5) = 1750	(3000 × 3.5) = 10500	(800 × 3.5) = 2800	(13500 × 3.5) 47250
Setup Cost	(2 × 336.84) = 674	(4 × 336.84) = 1347	(3 × 336.84) = 1011	(10 × 336.84) 3368
Ordg mat.	2 × 150 = 300	(5 × 150) = 750	(2 × 150) = 300	(5 × 150) = 750
Spare Parts.	(3 × 815.38) 2446	(4 × 815.38) 3262	1 × 815.38 815	5 × 815.38 4077
Handl Cost	(3 × 265.625) 797 5967	(10 × 265.625) 2656 18515	(4 × 265.63) 1063 5989	15 × 265.625 3984 59429
Total Cost	15 967	72,515	24,389	329429
Cost P.U	$\frac{15967}{1000} = 15.967$	$\frac{72515}{6000} = 12.0858$	$\frac{24389}{800} = 30.4862$	$\frac{329429}{9000} = 36.6032$

Statement showing difference

	A	B	C	D
Total Cost P.U under Traditional Costing	12.5253	11.5253	28.0505	37.5757
Total Cost P.U. under Activity Based Costing	15.967	12.0858	30.48625	36.6032