UCCC & SPBCBA & SDHGC OF BCA & IT

SYBCOM SEM 3

ADVANCED ACCOUNTING PAPER - 1

Overhead Costing - Practice Exercise with solution

QUESTION 1

State the ideal basis of apportionment for the overhead costs given below:

- [a] Canteen Expenses
- [b] Contribution to Employees' State Insurance (ESI) Scheme
- [c] Rent and Rates
- [d] Watchman's Salary
- [e] Electric Power
- [f] Sundry Expenses
- [g] Indirect Wages
- [h] Depreciation of Machinery

Solution:

Overhead Cost	Appropriate Basis
Canteen Expenses	Number of Employees
Contribution to Insurance Scheme	Direct Wages / Salaries
Rent and Rates	Area Occupied (sq. ft. / sq. meters)
Watchman's Salary	Area Occupied or Time Spent
Power (Electric Power)	Horsepower (HP) of Machinery / Kilowatt Hours
Sundry Expenses	Direct Wages
Indirect Wages	Direct Wages
Depreciation of Machinery	Book Value of Asset / Machinery

QUESTION 2

A manufacturing company has three production departments (A, B, C) and two service departments (X, Y). The expenses after primary distribution are as follows:

Production Departments: A = ₹ 20,000 | B = ₹ 15,000 | C = ₹ 12,000
Service Departments: X = ₹ 10,000 | Y = ₹ 5,000

Percentage of distribution of service departments' expenses:

Service Dept	Dept A	Dept B	Dept C	Dept X	Dept Y
Dept X	40%	30%	20%	-	10%
Dept Y	30%	30%	20%	20%	-

Prepare a statement showing the apportionment of service departments' expenses.

Solution - Statement showing repeated distribution of service department expenses:

Particulars	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Expenses as per Primary Distribution	20,000	15,000	12,000	10,000	5,000
Apportionment of Dept X (4:3:2:1)	4,000	3,000	2,000	(-10,000)	1,000
Total	24,000	18,000	14,000	0	6,000
Apportionment of Dept Y (3:3:2:2)	1,800	1,800	1,200	1,200	(-6,000)
Total	25,800	19,800	15,200	1,200	0
Apportionment of Dept X (4:3:2:1)	480	360	240	(-1,200)	120
Total	26,280	20,160	15,440	0	120
Apportionment of Dept Y (3:3:2:2)	36	36	24	24	(-120)
Apportionment of Dept X (4:3:2:1)	10	7	5	(-24)	2
Apportionment of Dept Y (Final)	1	1	0	0	(-2)
Total Final Overhead	26,327	20,204	15,469	0	0

QUESTION 3

A company has production departments A, B, C and service department D. Details of monthly expenses:

Power = ₹ 10,000 | Worker Welfare Expenses = ₹ 6,000 | Maintenance Expenses = ₹ 4,000 | General Expenses = ₹ 3,000 | Insurance Premium = ₹ 5,000

Other Information:

Particulars	Dept A	Dept B	Dept C	Dept D
Direct Wages (₹)	10,000	15,000	20,000	5,000
Number of Employees	400	300	200	100
Kilowatt (KW)	300	200	300	200
Value of Asset (₹)	20,00,000	15,00,000	10,00,000	5,00,000

Apportion the total expenses of Service Department 'D' among production departments A, B, and C in the ratio of 5:3:2 and prepare a departmental overhead statement.

Solution - Statement of Departmental Overhead Allocation:

Expense Particulars	Basis of Allocation	Ratio	A (₹)	B (₹)	C (₹)	D (₹)
Power	Kilowatts	3:2:3:2	3,000	2,000	3,000	2,000
Welfare Expenses	No. of Employees	4:3:2:1	2,400	1,800	1,200	600
Maintenance Expenses	Value of Asset	4:3:2:1	1,600	1,200	800	400
General Expenses	Direct Wages	2:3:4:1	600	900	1,200	300
Insurance Premium	Value of Asset	4:3:2:1	2,000	1,500	1,000	500
Direct Wages (D)	Directly Allocated	-	-	-	-	5,000
Primary Total			9,600	7,400	7,200	8,800
Dept D Expenses	Given Ratio	5:3:2	4,400	2,640	1,760	(-8,800)
Total Overhead			14,000	10,040	8,960	0

QUESTION 4

A factory has production departments A, B, C and service departments X, Y. Service Department Y's expenses are apportioned in the ratio of Direct Wages. Service Department X's expenses are apportioned in the ratio of 5:3:2.

Particulars	Dept A	Dept B	Dept C	Dept X	Dept Y
Direct Wages (₹)	1,00,000	1,50,000	2,00,000	50,000	1,00,000
Direct Materials (₹)	50,000	80,000	70,000	60,000	40,000
Number of Staff	40	50	50	20	20
Light Points	30	40	10	10	10
Area Occupied (sq. ft.)	400	600	200	200	200
Power Consumption (kWh)	15,000	10,000	10,000	5,000	5,000
Cost of Machine (₹)	2,00,000	1,50,000	1,00,000	25,000	25,000

General Overheads: Power: ₹ 4,500 | Light: ₹ 1,000 | Stores Expenses: ₹ 3,000 | Staff Welfare Expenses: ₹ 9,000 | Depreciation: ₹ 1,00,000 | Repair Expenses: ₹ 20,000 | Rent & Rates: ₹ 2,400 | General Expenses: ₹ 30,000.

Calculate:
[1] Allocation of overhead expenses among different departments.
[2] Overhead recovery rate on the basis of direct wages.

Solution:

1.

Particulars	Basis of Allocation	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Direct Wages	Allocated (Service only)	-	-	-	50,000	1,00,000
Direct Materials	Allocated (Service only)	-	-	-	60,000	40,000
Power	kWh (3:2:2:1:1)	1,500	1,000	1,000	500	500

Particulars	Basis of Allocation	A (₹)	B (₹)	C (₹)	X (₹)	Y (₹)
Light	Points (3:4:1:1:1)	300	400	100	100	100
Stores Expenses	Direct Material (5:8:7:6:4)	500	800	700	600	400
Staff Welfare	Staff (4:5:5:2:2)	2,000	2,500	2,500	1,000	1,000
Depreciation	Machine Value (8:6:4:1:1)	40,000	30,000	20,000	5,000	5,000
Repair Expenses	Machine Value (8:6:4:1:1)	8,000	6,000	4,000	1,000	1,000
Rent & Rates	Area (2:3:1:1:1)	600	900	300	300	300
General Expenses	Direct Wages (2:3:4:1:2)	5,000	7,500	10,000	2,500	5,000
Primary Total		57,900	49,100	38,600	1,21,000	1,53,300
Dept X Apportionment	5:3:2	60,500	36,300	24,200	(-1,21,000)	-
Dept Y Apportionment	Direct Wages (2:3:4)	34,067	51,100	68,133	-	(-1,53,300)
Total Overhead		1,52,467	1,36,500	1,30,933	0	0

2. Overhead Recovery Rate based on Direct Wages:

Rate (%) = (Total Overhead / Direct Wages) × 100

- Dept A: (1,52,467 / 1,00,000) × 100 = 152.47%
- Dept B: (1,36,500 / 1,50,000) × 100 = 91.00%
- Dept C: (1,30,933 / 2,00,000) × 100 = 65.47%

QUESTION 5

Total overhead expenses and production units for two months are as follows:

Month	Total Overhead (Fixed + Variable)	Production (Units)
January	₹ 80,000	2,000
February	₹ 1,10,000	3,500

Find the total amount of fixed overhead.

Solution:

Variable Cost per Unit = Change in Expenses / Change in Production
= (1,10,000 - 80,000) / (3,500 - 2,000) = 30,000 / 1,500 = ₹ 20 per unit

Calculation of Fixed Cost based on January:
Total Overhead = Fixed Cost + Variable Cost
80,000 = Fixed Cost + (2,000 × 20)
80,000 = Fixed Cost + 40,000 => Fixed Cost = ₹ 40,000

QUESTION 6

Details obtained from a production department:
- Estimated Annual Factory Overhead = ₹ 2,40,000
- Estimated Annual Direct Labor Cost = ₹ 4,00,000
- Estimated Machine Hours = 1,20,000 hours

Find the absorption rate using the following methods:
[1] Direct Labor Cost Method
[2] Machine Hour Rate Method

Solution:

[1] Direct Labor Cost Percentage Rate:
Rate (%) = (Factory Overhead / Direct Labor Cost) × 100
= (2,40,000 / 4,00,000) × 100 = 60%

[2] Machine Hour Rate:
Machine Hour Rate = Factory Overhead / Machine Hours
= 2,40,000 / 1,20,000 = ₹ 2 per hour

QUESTION 7

The annual power expense for a machine at Padmavati Limited is ₹ 9,000, which is 30% of the total annual variable expenses. Annual fixed expenses are ₹ 24,000. The machine consumes 2 units of power per hour, and the rate of power per unit is ₹ 0.75. Calculate the Machine Hour Rate.

Solution:

1. Calculation of Working Hours:
Total Power Units Used = 9,000 / 0.75 = 12,000 units
Annual Machine Hours = 12,000 / 2 = 6,000 hours

2. Variable Expenses:
Power Expenses = ₹ 9,000
Other Variable Expenses (70%) = 9,000 × (70 / 30) = ₹ 21,000

3. Machine Hour Rate Statement (for 6,000 hours):

Particulars	Annual Amount (₹)	Hourly Rate (₹)
Fixed Expenses	24,000	4.00
Power Expenses	9,000	1.50
Other Variable Expenses	21,000	3.50
Machine Hour Rate	54,000	₹ 9.00

QUESTION 8

Calculate the Machine Hour Rate for Machine 'A' from the following information:

- [1] Cost of Machine ₹ 10,00,000, Useful Life 10 years, Scrap Value ₹ 50,000, Installation Cost ₹ 50,000.
- [2] Monthly Staff Welfare Expenses ₹ 500.
- [3] Annual Power Consumption ₹ 80,000.
- [4] Insurance Premium: 2% per annum of Cost.
- [5] Monthly salary of 2 workers working on 4 machines is ₹ 10,000 each.
- [6] Hire Purchase Installment ₹ 55,000 (including 10% interest).
- [7] Annual Repair Expense for 4 machines ₹ 32,000.
- [8] Supervisor's salary ₹ 40,000 monthly. He devotes 1/2 of his time supervising machines and there are 4 identical machines.
- [9] Monthly Factory Rent ₹ 12,000 (a total of 4 identical machines are set up).
- [10] Power Consumption: 4 units per hour, Rate per unit ₹ 5.
- [11] Monthly Electricity Expenses ₹ 500.

Solution:

1. Calculation of Annual Hours:
Total Units = 80,000 / 5 = 16,000 units => Hours = 16,000 / 4 = 4,000 hours

2. Calculation of Machine Hour Rate:

Particulars	Annual Amount (₹)	Hourly Rate (₹)
Fixed Expenses:		
Staff Welfare (500 × 12)	6,000	
Insurance Premium (10,00,000 × 2%)	20,000	
Workers' Wages (10,000 × 2 × 12 × 1/4)	60,000	
Hire Purchase Interest (55,000 × 10/110)	5,000	
Supervisor's Salary (40,000 × 12 × 1/2 × 1/4)	60,000	
Factory Rent (12,000 × 12 × 1/4)	36,000	
Electricity Expenses (500 × 12)	6,000	
Total Fixed Expenses	1,93,000	48.25
Variable Expenses:		
Depreciation ((10,00,000 + 50,000 - 50,000) / (10 × 4,000))	-	25.00
Repairs ((32,000 × 1/4) / 4,000)	-	2.00
Power Consumption	-	20.00
Machine Hour Rate		₹ 95.25

QUESTION 9

There are 5 identical machines in 'Nisarg Limited' factory.

- [1] Rent & Rates (according to area occupied): ₹ 20,000
- [2] Annual Depreciation per Machine: ₹ 1,200
- [3] Repair Expenses for 5 machines: ₹ 4,000
- [4] Power Consumption (at ₹ 2 per unit): ₹ 1,20,000
- [5] Light Expenses: ₹ 5,000
- [6] 2 Attendants for 5 machines, who are paid ₹ 3,000 monthly each.
- [7] 1 Supervisor for 5 machines whose monthly salary is ₹ 5,000.
- [8] Sundry Expenses: ₹ 1,000
- [9] Hire Purchase Installment Interest (per machine): ₹ 300
- [10] Machine consumes 12 units of power per hour.

Calculate the Machine Hour Rate for 1 machine.

Solution:

1. Hours for One Machine:

Power Expense for 1 machine = ₹ 1,20,000 / 5 = ₹ 24,000

Power Units = 24,000 / 2 = 12,000 units => Machine Hours = 12,000 / 12 = 1,000 hours

2. Machine Hour Rate (for 1 machine):

Particulars	Amount (₹)	Hourly Rate (₹)
Fixed Expenses:		
Rent & Rates (20,000 / 5)	4,000	
Electricity (5,000 / 5)	1,000	
Attendants' Salary (3,000 × 2 × 12 / 5)	14,400	
Supervisor Salary (5,000 × 12 / 5)	12,000	
Sundry Expenses (1,000 / 5)	200	
Hire Purchase Interest	300	
Total Fixed Expenses	31,900	31.90
Variable Expenses:		
Depreciation (1,200 / 1,000)	-	1.20
Repairs (800 / 1,000)	-	0.80
Power (12 units × ₹ 2)	-	24.00
Machine Hour Rate		₹ 57.90

QUESTION 10

Find the Machine Hour Rate from the details given below for 'Janmejay Company Limited':

• Cost Price of Machine = ₹ 1,10,000 | Installation Charges = ₹ 20,000 | Scrap Value after 10 years = ₹ 10,000
• Quarterly Rent & Rates = ₹ 1,800 | Monthly Light Expense = ₹ 500 | Annual Insurance Premium = ₹ 1,500
• Repair Expenses = 50% of Depreciation
• Power: 10 units per hour (Annual Power Expense ₹ 7,600, Rate ₹ 38 per 100 units)
• Supervisor's Monthly Salary = ₹ 2,000 | Steam & Water (Half-Yearly) = ₹ 2,200 | Annual Hire Purchase Interest = ₹ 400

Other Information:
[1] Machine occupies 1/4 of the factory space.
[2] 3 out of a total of 12 light points belong to this machine.
[3] The supervisor looks after 4 other identical machines besides this one (5 machines in total).

Solution:

1. Calculation of Annual Hours:
Power Units = 7,600 / 0.38 = 20,000 units => Hours = 20,000 / 10 = 2,000 hours

2. Machine Hour Rate Statement:

Particulars	Annual Amount (₹)	Hourly Rate (₹)
Fixed Expenses:		
Rent & Rates (1,800 × 4 × 1/4)	1,800	
Light (500 × 12 × 3/12)	1,500	
Insurance Premium	1,500	
Supervisor Salary (2,000 × 12 × 1/5)	4,800	
Steam & Water (2,200 × 2)	4,400	
Hire Purchase Interest	400	
Total Fixed Expenses	14,400	7.20
Variable Expenses:		
Depreciation ((1,10,000 + 20,000 - 10,000) / (10 × 2,000))	12,000	6.00
Repairs (12,000 × 50% / 2,000)	6,000	3.00
Power Consumption (7,600 / 2,000)	7,600	3.80
Machine Hour Rate		₹ 20.00