[COST ACCOUNTING]

♣ Allocation of Support Activity Costs

I. Theories

- 1. Which of the following would be considered a service department for an airline?
 - A. Maintenance.
 - B. Information Systems.
 - C. Purchasing.
 - D. All of the above.
- 2. Consider the following statements about service department costs:
 - I. The costs of the Human Resources Department in a manufacturing organization must be allocated to production departments in order to achieve a correct costing of inventory.
 - II. The allocation of service department costs requires that an organization select both an allocation base and an allocation method.
 - III. Service department cost allocations are more relevant for firms involved in service industries (e.g., repair, health care) than for those involved with manufacturing.

Which of the above statements is (are) correct?

- A. I only.
- B. II only.
- C. I and II.
- D. I, II, and III.
- E. III only.
- F. I and III.
- G. II and III.
- 3. Which of the following methods ignores the fact that some service departments provide service to other service departments?
 - A. Direct method.
 - B. Indirect method.
 - C. Step-down method.
 - D. Reciprocal method.
- 4. Consider the following statements about the direct method of service department cost allocation:
 - I. Under the direct method, all service department costs are eventually allocated to production departments.
 - II. The order in which service department costs are allocated to production departments is important.
 - III. Once a service department's costs have been allocated, no costs are re-circulated back to that department.

Which of the above statements is (are) correct?

- A. I only.
- B. II only.
- C. I and II.
- D. I and III.
- E. III only.
- F. II and III.
- G. I, II, and III.
- 5. The Milrose Clinic has two service departments (Human Resources and Information Resources) and two production departments (In-patient Treatment and Out-patient Treatment). The service departments service each other, and studies have shown that Information Resources provides the greater amount of service. Which of the following allocations would occur if Milrose uses the direct method of cost allocation?
 - A. Information Resources cost would be allocated to In-patient Treatment.
 - B. Human Resources cost would be allocated to Information Resources.
 - C. In-patient Treatment cost would be allocated to Out-patient Treatment.
 - D. Out-patient Treatment cost would be allocated to Information Resources.
- 6. Trackster Corporation has two service departments (Maintenance and Human Resources) and three production departments (Machining, Assembly, and Finishing). Maintenance is the largest service department and Assembly is the largest production department. The two service departments service each other as well as the three producing departments. On the basis of this information, which of the following cost allocations would not occur under the direct method?
 - A. Machining cost would be allocated to Assembly.
 - B. Maintenance cost would be allocated to Finishing.
 - C. Maintenance cost would be allocated to Human Resources.
 - D. Allocations "A" and "C" would not occur.
- 7. Which of the following methods recognizes some (but not all) of the services that occur between service departments?
 - A. Direct method.
 - B. Step-down method.
 - C. Indirect method.
 - D. Reciprocal method.
- 8. When the step-down method is used, the service department whose costs are allocated first is often the department that:
 - A. obtains the highest yield.
 - B. has the lowest cost.
 - C. is the newest.
 - D. serves the greatest number of other service departments.
- 9. Consider the following statements about the step-down method of service department cost allocation:
 - I. Under the step-down method, all service department costs are eventually allocated to production departments.
 - II. The order in which service department costs are allocated is important.
 - III. Once a service department's costs have been allocated, no costs are re-circulated back

to that department.

Which of the above statements is (are) correct?

- A. I only.
- B. II only.
- C. I and II.
- D. Land III.
- E. I, II, and III.
- F. III only.
- G. II and III.
- 10. Which of the following methods accounts for 100% of the services that occur between service departments?
 - A. Direct method.
 - B. Indirect method.
 - C. Reciprocal method.
 - D. Step-down method.
- 11. Reno Corporation has two service departments (Maintenance and Human Resources) and three production departments (Machining, Assembly, and Finishing). The two service departments service each other, and studies have shown that Maintenance provides the greatest amount of service. Given the various cost allocation methods, which of the following choices correctly denotes whether Maintenance cost would be allocated to Human Resources?

	Direct	Step-Down	Reciprocal
A.	Yes	No	Yes
B.	Yes	No	No
C.	Yes	Yes	Yes
D.	No	Yes	No
E.	No	Yes	Yes

- 12. A company that uses activity-based costing would likely allocate costs from:
 - A. service departments to production departments.
 - B. service departments to products and services.
 - C. service departments to production departments and then to products and services.
 - D. activity-cost pools to production departments.
 - E. activity-cost pools to products and services.
- 13. The Hopwood Clinic has two service departments (Human Resources and Information Systems) and two "production" departments (In-patient Treatment and Out-patient Treatment). The service departments service each other, and studies have shown that Information Systems provides the greatest amount of service. Which of the following allocations would not occur if Hopwood uses the step-down method of cost allocation?
 - A. Information Systems cost would be allocated to Human Resources.
 - B. Human Resources cost would be allocated to Information Systems.
 - C. Human Resources cost would be allocated to In-patient Treatment.
 - D. In-patient Treatment cost would be allocated to Out-patient Treatment.
 - E. Allocations "B" and "D" above.
- 14. Duluth Corporation has two service departments (Maintenance and Human Resources) and

three production departments (Machining, Assembly, and Finishing). The two service departments service each other, and studies have shown that Maintenance provides the greatest amount of service. On the basis of this information, which of the following cost allocations would likely occur under the step-down method?

- A. Machining cost would be allocated to Assembly.
- B. Maintenance cost would be allocated to Finishing.
- C. Maintenance cost would be allocated to Human Resources.
- D. Human Resources cost would be allocated to Maintenance.
- E. Allocations "B" and "C" above.
- 15. A service department provides specific functional tasks for other internal units. Which of the following activities would not be engaged in by a service department?
 - A. purchasing
 - B. warehousing
 - C. distributing
 - D. manufacturing
- 16. Indirect costs should be allocated for all of the following reasons except to
 - A. motivate managers.
 - B. determine the full cost of a product.
 - C. motivate general administration.
 - D. compare alternatives for decision making.
- 17. All of the following objectives are reasons to allocate service department costs to compute full cost except to
 - A. provide information on cost recovery.
 - B. abide by regulations that may require full costing in some instances.
 - C. provide information on controllable costs.
 - D. reflect production's "fair share" of costs.
- 18. All of the following objectives are reasons that service department allocations can motivate managers except to
 - A. instill a consideration of support costs in production managers.
 - B. encourage production managers to help service departments control costs.
 - C. encourage the usage of certain services.
 - D. determine divisional profitability.
- 19. Which of the following is a reason for allocating service department costs and thereby motivating management?
 - A. provides for cost recovery
 - B. provides relevant information in determining corporate-wide profits generated by alternative actions
 - C. meets regulations in some pricing instances
 - D. reflects usage of services on a fair and equitable basis

- 20. After service department costs have been allocated, what is the final step in determining full product cost?
 - A. determine direct material cost
 - B. determine overhead application rates for revenue-producing areas
 - C. determine direct labor cost
 - D. determine total service department costs
- 21. Which of the following is not an objective for computing full cost?
 - A. to reflect production's "fair share" of costs
 - B. to instill a consideration of support costs
 - C. to reflect usage of services on a fair and equitable basis
 - D. to provide for cost recovery
- 22. A rational and systematic allocation base for service department costs should reflect the cost accountant's consideration of all of the following except
 - A. the ability of revenue-producing departments to bear the allocated costs.
 - B. the benefits received by the revenue-producing department from the service department.
 - C. a causal relationship between factors in the revenue-producing department and costs incurred in the service department.
 - D. all of the above are considerations.
- 23. The overhead allocation method that allocates service department costs without consideration of services rendered to other service departments is the
 - A. step method.
 - B. direct method.
 - C. reciprocal method.
 - D. none of the above.
- 24. Which service department cost allocation method assigns indirect costs to cost objects after considering some of the interrelationships of the cost objects?
 - A. step method
 - B. indirect method
 - C. algebraic method
 - D. direct method
- 25. Which service department cost allocation method utilizes a "benefits-provided" ranking?
 - A. algebraic method
 - B. indirect method
 - C. step method
 - D. direct method
- 26. The most accurate method for allocating service department costs is the
 - A. step method.
 - B. direct method.
 - C. algebraic method.
 - D. none of the above.

27. The criteria that are most often used to decide on allocation bases are?

	Benefits received	Fairness	Causal relationships
A.	yes	yes	no
B.	yes	yes	yes
C.	no	yes	yes
D.	no	no	no

- 28. To identify costs that relate to a specific product, an allocation base should be chosen that
 - A. does not have a cause-and-effect relationship.
 - B. has a cause-and-effect relationship.
 - C. considers variable costs but not fixed costs.
 - D. considers direct material and direct labor but not manufacturing overhead.
- 29. Which service department cost allocation method provides for reciprocal allocation of service costs among the service department as well as to the revenue producing departments?
 - A. algebraic method
 - B. indirect method
 - C. step method
 - D. direct method
- 30. The allocation of general overhead control costs to operating departments can be least justified in determining
 - A. income of a product or functional unit.
 - B. costs for making management's decisions.
 - C. costs of products sold.
 - D. costs for government's "cost-plus" contracts.
- 31. Which of the following methods of allocating the costs of service departments provides the broadest recognition of departments served?
 - A. Reciprocal allocation.
 - B. Step-down allocation.
 - C. Direct allocation.
 - D. Arbitrary allocation.
- 32. Which of the following is a good reason for allocating indirect costs to operating departments?
 - A. The company could lose money if the operating departments do not pay for the services they use.
 - B. To remind managers of the need to cover indirect costs.
 - C. To encourage managers to use more services.
 - D. To determine the true costs of operating departments.
- 33. Direct, step-down, and reciprocal are names for
 - A. the allocation methods most likely to produce goal congruence.
 - B. transfer-pricing methods.
 - C. methods for allocating costs of service departments to operating departments.

D. alternative organizational structures.

II. Problems

Problem I

Diller Corporation has three production departments A, B, and C. Diller Corporation also has two service departments, Administration and Personnel. Administration costs are allocated based on value of assets employed, and Personnel costs are allocated based on number of employees. Assume that Administration provides more service to the other departments than does the Personnel Department.

<u>Dept.</u>	Direct Costs	Employees	Asset Value
Admin.	P 900,000	25	P 450,000
Personnel	350,000	10	600,000
A	700,000	15	300,000
В	200,000	5	150,000
С	250,000	10	800,000

Using the direct method:

- 1. What amount of Administration costs is allocated to A (round to the nearest peso)?
- 2. What amount of Personnel costs is allocated to B (round to the nearest peso)?
- 3. What amount of Administration costs is allocated to C (round to the nearest peso)?
- 4. What amount of Personnel costs is allocated to A (round to the nearest peso)?
- 5. What is the total cost of Dept. A?
- 6. How much overhead cost is allocated to Dept. C?

Using the step method:

- 7. What amount of Administration costs is allocated to Personnel (round to the nearest peso)?
- 8. What amount of Administration costs is allocated to A (round to the nearest peso)?
- 9. What amount of Personnel costs is allocated to B (round to the nearest peso)?
- *10.* What amount of Personnel costs is allocated to C (round to the nearest peso)?
- 11. What is the total cost of Dept. B?
- 12. How much overhead cost is allocated to Dept. C?
- 13. How much overhead cost is allocated to Dept. A?

Problem II

Grant Corporation distributes its service department overhead costs directly to producing departments without allocation to the other service departments. Information for January is presented here.

	<u>Maintenance</u>	<u>Utilities</u>
Overhead costs incurred	P18,700	P9,000
Service provided to:		
Maintenance Dept.		10%
Utilities Dept.	20%	
Producing Dept. A	40%	30%
Producing Dept. B	40%	60%

- 14. The amount of Utilities Department costs distributed to Dept. B for January should be (rounded to the nearest peso)
- 15. Using the step method, how much of Grant Corporation's Utilities Department cost is allocated between Departments A and B?
- 16. Assume that Grant Corporation distributes service department overhead costs based on the algebraic method. What would be the formula to determine the total maintenance costs?

Problem III

Welsh Medical Clinic has two service departments: Building Operations and Utilities, and three operating departments: Rehabilitation, Preventative Medicine, and Geriatrics. Welsh Medical Clinic allocates the cost of Building Services on the basis of square footage and Utilities on the basis of patient days. Fixed and variable costs are not separated.

Budgeted operating data for the previous year are presented below:

	<u>Service</u>	Departments	Operating	Departments	
	Building			Preventative	
	Operations	<u>Utilities</u>	Rehabilitation	<u>Medicine</u>	Geriatrics
Budgeted costs					
before	P20,000	P10,000	P90,000	P60,000	P100,000
allocation					
Square Footage	1,000	4,000	6,000	18,000	12,000
Patient Days	-	-	5,500	7,700	8,800

- 17. What is the total cost of the Rehabilitation Department using direct method of allocating service costs?
- 18. What is the total cost of the Geriatics Department using direct method of allocating service costs?
- 19. What is the total cost of the Preventive medicine department using step method of allocating service costs?
- 20. How much overhead was allocated to the Geriatics Department using step method of allocating service costs?

Problem IV

Following are data about Hamilton Co.'s two service departments and two operating departments.

G	Service	Depts.	Operati	ing Depts.
	А	В	Х	Y
Direct costs	P400	P600	P2,000	P3,000
Services performed by Dept. A	7	30%	30%	40%
Services performed by Dept. B	3. 20%		70%	10%

- 21. Hamilton allocates costs of its service departments using the reciprocal method of allocation. Find the total cost that will be allocated to X.
- 22. Find the total cost of Y after allocation using reciprocal method.

Problem V

Ryan, Inc. has two service departments (Human Resources and Building Maintenance) and two production departments (Machining and Assembly). The company allocates Building

Maintenance cost on the basis of square footage and believes that Building Maintenance provides more service than Human Resources. The square footage occupied by each department follows.

Human Resources	4,000
Building Maintenance	11,000
Machining	16,000
Assembly	22,000

23. Assuming use of the direct method, over how many square feet would the Building Maintenance cost be allocated?

Problem VI

The Dollar Store has a Human Resources Department and a Janitorial Department that provide service to three sales departments. The Human Resources Department cost is allocated on the basis of employees, and the Janitorial Department cost is allocated on the basis of space. The following information is available:

	Human				
	Resources	<u> Janitorial</u>	<u>Sales #1</u>	Sales #2	<u>Sales #3</u>
Budgeted cost	P45,000	P30,000			
Space in square feet	4,000	1,000	20,000	30,000	50,000
Number of employees	5	10	15	45	30

- 24. Using the direct method, the amount of Janitorial Department cost allocated to Sales Department no. 2 is?
- 25. Using the step-down method and assuming that Human Resources is allocated first, the amount of Human Resources cost allocated to Sales Department no. 3 is?
- 26. Using the step-down method and assuming Human Resources is allocated first, the amount of Janitorial cost allocated to Sales Department no. 2 is?

Problem VII

Novaturn Corporation has three service departments (S1 and S2) and two production departments (P1 and P2). S1 and S2 both use the number of employees as an allocation base. The following data are available:

	Number of	
	Employees	Budgeted
		<u>Cost</u>
S1	40	P172,000
S2	60	250,000
P1	300	660,000
P2	500	840,000

Assuming use of the direct method:

- 27. Over how many employees would S1's budgeted cost be allocated?
- 28. How much of S2's cost would be allocated to P1?
- 29. How much of P1's cost would be allocated to S1?

Assuming use of the step-down method:

- 30. How much of S1's cost would be allocated to S2? Novaturn allocates S1's costs prior to allocating those of S2.
- *31. How much of S2's total cost would be allocated to P2?*
- 32. How much of S2's total cost would be allocated to S1?

Problem VIII

Beckers Corporation is developing departmental overhead rates based on direct labor hours for its two production departments, Molding and Assembly. The Molding Department worked 20,000 hours during the period just ended, and the Assembly Department worked 40,000 hours. The overhead costs incurred by Molding and Assembly were P151,250 and P440,750, respectively.

Two service departments, Repair and Power, directly support the two production departments. These service departments have costs of P90,000 and P250,000, respectively. The following schedule reflects the use of Repair and Power's output by the various departments:

	<u>Repair</u>	<u>Power</u>	<u>Molding</u>	<u>Assembly</u>
Repair (repair hours)		500	500	4,000
Power (kilowatt hours)	120,000		420,000	60,000

- 33. Allocate the company's service department costs to production departments by using the direct method.
- 34. Calculate the overhead application rates of the production departments.
- 35. Allocate the company's service department costs to production departments by using the stepdown method. Begin with the Power Department, and round calculations to the nearest dollar.

"Success seems to be connected with action. Successful people keep moving. They make mistakes, but they don't quit."

~Conrad Hilton

Answer Key			
Theories	Problems		
1. D	1. 216,000		
2. C	2. 58,333		
3. A	3. 576,000		
4. D	4. 175,000		
5. A	5.1,091,000		
6. D	6. 692,667		
7. B	7. 291,892		
8. D	8. 145,946		
9. E	9.106,982		
10. C	10.213,964		
11. E	11.379,955		
12. E	12.603,153		
13. E	13.466,892		
14. E	14. 6,000.		
15. D	15. 12,740		
16. C	16. M = 18,700 + .10U		
17. C	17. 95,833		
18. D	18. 110,667		
19. D	19. 73,200		
20. B	20. 10,800		
21. C	21. 702		
22. D	22. 3,298		
23. B	23.38,000		
24. A	24. 9,000.		
25. C	25. 13,500.		
26. C	26. 10,350.		
27. B	27. 800		
28. B	28. 93,750		
29. A	29. 0		
30. B	30. 12,000		
31. A	31. 163,750		
32. D	32. 0		
33. C	33. Molding - 228,750 ; Assembly - 111,250		
	34. Molding - 19.00 ; Assembly - 13.80		
	35. Molding - 190,556 ; Assembly - 149,444		