Chapter 11

LABOR: CONTROLLING AND ACCOUNTING FOR COSTS

MULTIPLE CHOICE

Question Nos. 11-12 are AICPA adapted.
Question No. 13 is ICMA adapted.
Question No. 14 is CIA adapted.

C **1.** **To check the accuracy of hours worked, one would ordinarily compare clock cards with:**

A. employee earnings records
B. personnel records
C. job tickets
D. labor variance reports
E. time recorded in the payroll journal

D **2.** **Uno Manufacturing Corporation has found that the production of a certain product is subject to an 80% learning curve. Production is in lots of 100 units, with 8 hours required for the first lot each time the product is manufactured. The total time to produce 400 units is:**

A. 19.52 hours
B. 24 hours
C. 32 hours
D. 20.48 hours
E. 25.6 hours

SUPPORTING CALCULATION:

Lot	Cumulative Average/Lot	Total Time
1	8.00	8.00
2	6.40	12.80
4	5.12	20.48

D **3.** **A company started a new process and during the first week found that the number of units produced was considerably less than standard. As time progressed, the company noted that production increased until it reached the standard level several weeks later. After that, there was little improvement in production rates, which was probably a result of:**

A. installation of a standard cost system
B. better incentive plans
C. a labor efficiency variance
D. the learning phenomenon
E. education of newly hired employees

A **4.** **A ratio that is employed in connection with the productivity and performance standard to measure the operating achievement of an operation is the:**
- **A. productivity-efficiency ratio**
- **B. physical output per labor-hour ratio**
- **C. base-rate ratio**
- **D. fringe-cost ratio**
- **E. performance-report ratio**

B **5.** **The document that is used to secure information as to the type of work performed is the:**
- **A. labor voucher**
- **B. time ticket**
- **C. daily efficiency report**
- **D. clock card**
- **E. requisition**

E **6.** **The incentive program that bases an employee's bonus on meeting an objective stated in terms of time per output unit is:**
- **A. group learning-curve plan**
- **B. 100-percent group bonus plan**
- **C. straight piecework plan**
- **D. Emerson efficiency system**
- **E. 100-percent bonus plan**

A **7.** **An example of a fringe benefit is:**
- **A. the employer portion of FICA tax**
- **B. the direct labor wage rate**
- **C. the straight rate for overtime hours**
- **D. withheld taxes**
- **E. the employee portion of FICA tax**

E **8.** **The company division that is responsible for recording the direct labor cost on the appropriate production reports and the indirect labor cost on the departmental cost analysis sheets is:**
- **A. Timekeeping Department**
- **B. Production Planning Department**
- **C. Personnel Department**
- **D. Payroll Department**
- **E. Cost Department**

B **9.** **To curtail the wage-price spiral requires that:**
- **A. wage increases must be greater than unit cost increases**
- **B. productivity increases must be greater than or equal to wage increases**
- **C. unit cost increases must be greater than wage increases**
- **D. direct labor cost increases must be in the form of fringe benefits**
- **E. aggregate labor cost increases must not be in the form of fringe benefits**

D 10. An 80% learning curve was in effect for a certain industry. The first time the task was performed, it required a time of 800 minutes. When the task was performed for the eighth time, the cumulative average time per task, rounded to the nearest minute, equaled:

A. 6,400 minutes
B. 800 minutes
C. 512 minutes
D. 410 minutes
E. 3,277 minutes

SUPPORTING CALCULATION:

Task	Cumulative Average Time/Task
1	800
2	640 (800 x .8)
4	512 (640 x .8)
8	409.6 (512 x .8)

D 11. The Webb Company's new process will be carried out in one department. The production process has an expected learning curve of 80%. The costs subject to the learning effect for the first batch produced by the process were $10,000. Using the simplest form of the learning function, the cumulative average cost after the sixteenth batch is:

A. $10,000.00
B. $5,120.00
C. $3,276.80
D. $4,096.00
E. $8,000.00

SUPPORTING CALCULATION:

Batch	Cumulative Average Cost
1	$10,000
2	$8,000 ($10,000 x .8)
4	$6,400 ($8,000 x .8)
8	$5,120 ($6,400 x .8)
16	$4,096 ($5,120 x .8)

D 12. If a firm is considering the use of learning-curve analysis in the determination of labor cost standards for a new product, it should be advised that this technique generally is most relevant to situations in which the production time per unit decreases as additional units are produced and the unit cost:

A. increases or decreases unpredictably
B. increases slightly
C. increases substantially
D. decreases
E. does not change

B 13. A construction company has just completed a bridge over the Snake River. This is the first bridge the company ever built, and it required 100 weeks to complete. Now having hired a bridge construction crew with some experience, the company would like to continue building bridges. Because of the investment in heavy machinery needed continuously by this crew, the company believes it would have to bring the average construction time to less than one year (52 weeks) per bridge to earn a sufficient return on investment. The average construction time will follow an 80% learning curve. To bring the average construction time (over all bridges constructed) below one year per bridge, the crew would have to build approximately:

A. 3 additional bridges
B. 7 additional bridges
C. 8 additional bridges
D. 15 additional bridges
E. 2 additional bridges

SUPPORTING CALCULATION:

Bridges	**Cumulative Average/Bridge**
1	**100**
2	**80 (100 x .8)**
4	**64 (80 x .8)**
8	**51 (64 x .8)**

∴ 8-1 = 7

E 14. Which of the following may be scheduled in production planning by the use of learning curves?

A. subassembly production
B. delivery dates of finished products
C. labor assignments
D. purchases of materials
E. all of the above

E 15. The assumption(s) that characterizes better human resource management is:

A. there is a vast pool of ideas in the workforce waiting to be tapped
B. people who do the work are best qualified to improve it
C. decision making should be pushed down to the lowest level possible
D. worker participation increases commitment to company objectives
E. all of the above

E 16. To be successful, an incentive wage plan must:

A. provide for proportionately more pay for output above standard
B. set fair standards so that extra effort will result in bonus pay
C. result in immediate reward every payday
D. be applicable to situations in which a worker can increase output
E. all of the above

B 17. The incentive wage plan in which the production standard is computed in minutes per piece and is then translated into money per piece is the:

A. double-time plan
B. straight piecework plan
C. 100-percent bonus plan
D. group bonus plan
E. none of the above

D **18.** **An incentive wage plan under which a worker's production is divided by the standard quantity, resulting in an efficiency ratio by which the base wage rate is multiplied, is the:**

A. **group bonus plan**
B. **straight commission plan**
C. **straight piecework plan**
D. **100-percent bonus plan**
E. **none of the above**

B **19.** **The department responsible for recruiting and employment procedures, training programs, job descriptions, and job evaluations is the:**

A. **Payroll Department**
B. **Personnel Department**
C. **Cost Department**
D. **Production Planning Department**
E. **Timekeeping Department**

E **20.** **The department responsible for work scheduling, release of job orders to the producing departments, and the dispatching of work in the factory is the:**

A. **Timekeeping Department**
B. **Payroll Department**
C. **Personnel Department**
D. **Cost Department**
E. **Production Planning Department**

C **21.** **The department that supervises, controls, and collects the clock card and job ticket is the:**

A. **Cost Department**
B. **Production Planning Department**
C. **Timekeeping Department**
D. **Payroll Department**
E. **Personnel Department**

E **22.** **The department that records the job classification, department, and wage rate for each employee is the:**

A. **Personnel Department**
B. **Cost Department**
C. **Production Planning Department**
D. **Timekeeping Department**
E. **Payroll Department**

A **23.** **The incentive wage plan in which employee suggestions are the heart of the plan is:**

A. **organizational incentive plan**
B. **straight piecework plan**
C. **100-percent bonus plan**
D. **group bonus plan**
E. **all of the above**

D 24. The incentive wage plan in which the central theme is that all employees have the capacity to make valuable contributions to an organization is:
- **A. group bonus plan**
- **B. 100-percent bonus plan**
- **C. straight piecework plan**
- **D. gainsharing plan**
- **E. none of the above**

E 25. The incentive wage plan in which the company sets a predetermined formula and if improvement above a certain amount occurs, all employees including management participate in the bonus is the:
- **A. Taylor plan**
- **B. Halsey plan**
- **C. Gantt plan**
- **D. Emerson plan**
- **E. Scanlon plan**

A 26. The learning-curve formula is:
- **A.** $y = ax^b$
- **B.** $y = a^b x$
- **C.** $x = a^b y$
- **D.** $a = bx + y$
- **E. none of the above**

B 27. In highly automated manufacturing where direct labor is small relative to other production costs and not easily traceable to specific jobs, direct labor costs may be charged directly to:
- **A. Income Summary**
- **B. Factory Overhead Control**
- **C. Work in Process**
- **D. Cost of Goods Sold**
- **E. none of the above**

D 28. Symbols that can be processed electronically to identify numbers, letters, or special characters are:
- **A. clock cards**
- **B. optical scanners**
- **C. time tickets**
- **D. bar codes**
- **E. none of the above**

The following questions are based on the Appendix to the chapter:

E 29. The law establishing the requirement that a company must pay overtime premiums to certain workers is the:
- **A. Social Security Act**
- **B. Cost Accounting Standards Act**
- **C. Employment Retirement Income Security Act**
- **D. Overtime Hours Act**
- **E. Fair Labor Standards Act**

E 30. When scheduling delays occur throughout the week and results in a specific job being completed during an overtime shift, the overtime premium is charged to:
- **A. Accrued Overtime Premium Receivable**
- **B. Work in Process**
- **C. the job worked on during the overtime premium**
- **D. an extraordinary loss account**
- **E. Factory Overhead Control**

D 31. An employee is paid a base rate of $800 per week for 52 weeks. The employee is entitled to a two-week vacation each year. Factory Overhead Control is debited each week for accrued vacation pay of:
- **A. $15.38**
- **B. $30.77**
- **C. $20**
- **D. $32**
- **E. $16**

SUPPORTING CALCULATION:

$$\frac{800 \_ 2}{50} = \$32$$

E 32. To spread the cost of vacation pay over production throughout the year, the weekly payroll entry would include a debit to which of the following accounts for the vacation pay portion of the entry?
- **A. Payroll**
- **B. Liability for Vacation Pay**
- **C. Cash**
- **D. Work in Process**
- **E. Factory Overhead Control**

A 33. If an employee earns $10 per hour and receives time-and-a-half for hours worked in excess of 40 per week, in a week when 45 hours were worked the overtime premium would be:
- **A. $25**
- **B. $50**
- **C. $10**
- **D. $5**
- **E. none of the above**

SUPPORTING CALCULATION:

(1/2 x $10) (45 - 40) = $25

A 34. In accordance with the Federal Wage and Hour Law, employee payroll records must show all of the following *except:*

A. the breakdown between debits to Work in Process and to Factory Overhead Control
B. total extra pay for overtime worked each week
C. total daily or weekly earnings at straight time
D. total wages paid during each pay period
E. the basis on which wages are paid

B 35. To spread the cost of bonus payments over production throughout the year, the weekly payroll entry would include a debit to which of the following accounts for the bonus pay portion of the entry?

A. Cash
B. Factory Overhead Control
C. Work in Process
D. Payroll
E. Liability for Bonus Pay

B 36. FASB Statement No. 43 requires an employer to accrue a liability for employees' rights to receive compensation for future absences when all of the following conditions are met, *except:*

A. the amount can be reasonably estimated
B. the accrual is for future sick pay benefits in advance of employee absences
C. the rights are attributable to employees' services already rendered
D. the rights vest or accumulate
E. payment is probable

B 37. Every employer subject to unemployment taxes must keep records of all of the following *except:*

A. the amount of contributions paid into each state unemployment compensation fund
B. the accounting method used to record the tax accrual
C. all information required to be shown on the tax return
D. the total amount of remuneration paid to each employee during the year
E. the total amount of remuneration that constitutes taxable wages

C 38. Cafeteria plans provide for:

A. free meals for all employees who have to work overtime
B. the employer picking up the employee's portion of the FICA tax
C. a specified dollar amount to be apportioned to defray the cost of various available benefits
D. cost of living allowances tied to the Consumer Price Index
E. none of the above

A 39. Vacation pay accruals are allowed for income tax purposes when:

A. it is a vested plan and the amounts are paid within two and one-half months of year's end
B. the rights are attributed to employee services already rendered
C. payment is probable
D. the amount can be reasonably estimated
E. the pay relates to a government contract

PROBLEMS

PROBLEM

1.
Labor Costs Under Straight Piecework Plan. The following labor data for the past week were prepared for B. Masterson, an employee of Boot Hill Corp.:

Day	Units Produced	Hours Worked
Monday	110	8
Tuesday	125	8
Wednesday	120	8
Thursday	135	8
Friday	130	8

Masterson's wage rate is $15 per hour, and the standard production rate is 15 units per hour.

Required: **Determine the daily wages for Masterson and the labor cost per unit for units produced during each day of the week, assuming that the company is on a straight piecework incentive wage plan and that a worker is guaranteed a wage of $15 per hour. (Round the unit labor cost to two decimal places.)**

SOLUTION

Day	Excess Units Produced	Bonus	Regular Pay	Total Pay	Unit Labor Cost
Monday	--	--	$120	$120	$1.09
Tuesday	5	$ 5	120	125	1.00
Wednesday	--	--	120	120	1.00
Thursday	15	15	120	135	1.00
Friday	10	10	120	130	1.00

Base wage rate/standard production rate
= $15 per hour/15 units per hour
= $1 labor cost per unit for units produced each day

PROBLEM

2.

Labor Cost Under 100-Percent Bonus Plan. B. Parker, an employee of B. Robber and Company, submitted the following data for work performed last week:

Day	Units Produced Each Day
Monday	22
Tuesday	24
Wednesday	30
Thursday	21
Friday	27

During the week, Parker worked 8 hours each day and was paid a flat hourly wage of $10, plus a bonus based on the 100% bonus plan. Standard production is 3 units per hour. The bonus is computed on a daily basis.

Required: **Prepare a report for Parker, showing daily earnings, the daily efficiency ratio, and the labor cost per unit produced each day. (Round labor cost per unit to two decimal places.)**

SOLUTION

Day	Daily Earnings	Daily Efficiency Ratio	Labor Cost per Unit Produced Each Day
Monday	$ 80	.9167	$3.64
Tuesday	80	1.0000	3.33
Wednesday	100	1.2500	3.33
Thursday	80	.8750	3.81
Friday	90	1.1250	3.33

PROBLEM

3.
Effect of Wage Increase on Higher Productivity; Pricing a Unit of Output. Walo Widget Inc. is in the process of completing labor negotiations for the coming year. Part of these negotiations call for an increase in the base wage rate for direct labor from $10 to $12 per hour, with a corresponding increase in fringe benefits. At present, fringe benefits amount to 35% of total wages, and this percentage will remain unchanged with the new contract. The present labor standards call for 8 direct labor hours per unit of output. Other conversion costs amount to $40 per unit, of which 75% is for variable costs. Materials costs amount to $8 per unit. Administrative costs are fixed and amount to $10 per unit at the present production level. Products are sold with a gross margin of 30% on sales.

Required:

(1) Compute the current selling price of a unit of output.
(2) Compute the new selling price to be charged if there is no increase in productivity as a result of the new labor contract.
(3) Compute the selling price to be charged if the new labor contract were accompanied by a 20% increase in productivity.

(Round all computations to the nearest whole cent.)

SOLUTION

	(1) Present	(2) With Wage Increase	(3) With Wage and 20% Productivity Increase
Production costs:			
Direct labor cost	$ 80.00[1]	$ 96.00[2]	$ 80.04[3]
Fringe benefits	28.00[4]	33.60[5]	28.01[6]
Variable cost	30.00[7]	30.00	30.00
Fixed cost	10.00[8]	10.00	8.33[9]
Materials cost	8.00	8.00	8.00
Total	$ 156.00	$ 177.60	$ 154.38
Selling price[10]	$ 222.86	$ 253.71	$ 220.54

[1]$10 per hour x 8 hours = $80 per unit
[2]$12 per hour x 8 hours = $96 per unit
[3]$12 per hour x (8 hours/1.20 units) = $12 per hour x 6.67 hours = $80.04 per unit
[4]35% x $80 unit direct labor cost = $28 per unit
[5]35% x $96 unit direct labor cost = $33.60 per unit
[6]35% x $80.04 unit direct labor cost = $28.01 per unit
[7]75% x $40 = $30 per unit
[8]25% x $40 = $10 per unit
[9]$10/1.20 units = $8.33 per unit
[10]Production costs/(1 - .30 gross profit ratio) = Selling price
Present: $156/.70 = $222.86
With wage increase: $177.60/.70 = $253.71
With wage and 20% productivity increase: $154.38/.70 = $220.54

PROBLEM

4.

Learning Curve Effect on Total Cost. Armstrong-Glenn (A-G) Inc. is preparing to bid on the construction of seven additional rocket carrier frames for launching communication satellites. Under a special contract, the company has already built one frame with the following costs:

Materials	**$ 800,000**
Labor (60,000 hrs.)	**750,000**
Variable overhead:	
50% of direct labor cost	**375,000**
On the basis of materials used	**150,000**
Total	**$ 2,075,000**

Variable overhead based on materials used represents materials storage cost. For seven frames, this cost would be $1,050,000. The company was informed that the maximum acceptable bid is $2,000,000 per unit. However, A-G will not place a bid unless it can recover its costs plus a $600,000 gross profit per frame. An 80% learning curve is in effect.

Required:

(1) Determine the total direct labor hours required for all eight frames.
(2) Determine the total cost for the seven frames covered by the new bid.
(3) Determine the profit (or loss) per unit if a bid of $2,000,000 per frame is offered. (Round all amounts to the nearest whole dollar.)
(4) Should A-G accept the contract at a bid price of $2,000,000 per frame?

SOLUTION

(1)

Accumulated Number of Times Task Is Performed	Accumulated Average Time per Task Unit (in Hours)
1	60,000
2	48,000 (60,000 x .8)
4	38,400 (48,000 x .8)
8	30,720 (38,400 x .8)

8 units x 30,720 average hours per unit
= 245,760 total direct labor hours required

(2) Cost for 7 frames covered by bid:

Materials (7 units @ $800,000)	**$ 5,600,000**
Labor (245,760 total hours - 60,000 hours for first unit) x (12.50 per hr.)	**2,322,000**
Variable overhead: 50% of $2,322,000	**1,161,000**
Materials storage as given	**1,050,000**
Total	**$ 10,133,000**

(3)

Bid price per unit	**$ 2,000,000**
Per-unit cost ($10,133,000/7)	**1,447,571**
Gross profit per unit	**$ 552,429**

(4) No. The profit per unit will be less than the required profit per unit by $47,571 ($552,429 - $600,000 required profit).

PROBLEM

5.

100-Percent Group Bonus Plan. The Assembly Department of the Gladdon Company employs 10 workers on an 8-hour shift at $15 per hour. Production for the second week of May shows: Monday, 350 units; Tuesday, 400 units; Wednesday, 425 units; Thursday, 440 units; Friday, 390 units. The company has recently installed a group 100-percent bonus system with standard production for the group of 50 units per hour. The bonus is computed each day. The controller asks that an analysis of the week's production costs be made.

Required: **Prepare a schedule showing the daily earnings in the department and the unit labor cost. (Round unit costs to three decimal places.)**

SOLUTION

Day	Units Produced	Standard Hours for Units Produced	Actual Hours	Regular Wage	Group Bonus (Hrs. Saved @ $15)
Monday	350	70	80	$1,200	$ 0
Tuesday	400	80	80	1,200	0
Wednesday	425	85	80	1,200	75
Thursday	440	88	80	1,200	120
Friday	390	78	80	1,200	0

Total Group Earnings	Labor Cost per Unit
$1,200	$3.429
1,200	3.000
1,275	3.000
1,320	3.000
1,200	3.077

PROBLEM

6.

Organizational (Gainsharing) Plan. The Humanistic Company employs an organizational incentive plan for its entire manufacturing facility. For the year 19B, 850 employees were eligible, and each participated equally.

The plan provides for a gainsharing pool totalling 30% of the value of wages being saved. The saving is computed by determining the prior year's productivity ratio (standard hours for work done divided by total actual direct and indirect labor hours). This ratio (rounded to six decimal places) is then divided into the standard hours for the work being done during the current year. The resulting figure is compared to current year's actual direct and indirect labor hours.

	19B	19A
Standard hours for work done	776,000	725,000
Total actual direct and indirect labor hours	1,695,000	1,650,000

The 19B average hourly pay plus labor fringe benefits was $21.

Required: **Compute the gainsharing incentive, rounded to the nearest dollar, in total and per employee.**

SOLUTION

19A productivity ratio =
725,000 ÷ 1,650,000 = .439394

Hours needed for 19B production at 19A productivity ratio =

776,000 ÷ .439394	**1,766,069**
Less total actual direct and indirect labor hours	**1,695,000**
Hours saved	**71,069**

Value of wages saved = 71,069 x $21 = $1,492,449

Employee gainsharing incentive total =
$1,492,449 x 30% = $447,735

Gainsharing incentive per employee =
$447,735 ÷ 850 employees = $527

The following problem is based on the Appendix to the chapter:

PROBLEM

7.
Fringe Benefits. A production worker earns $3,000 a month, and the company pays one month's salary as a bonus at the end of the year. The worker is also entitled to a half-month paid vacation, and the company pays $5,000 a year into a pension fund for the worker. Bonus, vacation pay, and fringe benefits are charged to production during the 11 1/2 months that the employee is at work. The federal and state unemployment insurance tax rates are .8% and 5.4%, respectively. The employer's share of FICA tax is 7.5%. All labor-related fringe benefits for production workers are treated as factory overhead.

Required: **Prepare the journal entries to record the February payroll distribution and the cost of fringe benefits.**

SOLUTION

Work in Process	**3,000.00**	
Payroll		**3,000.00**
Factory Overhead	**1,237.08**	
FICA Tax Payable ($3,000 x .075)		**225.00**
Federal Unemployment Tax Payable ($3,000 x .008)		**24.00**
State Unemployment Tax Payable ($3,000 x .054)		**162.00**
Liability for Bonus ($3,000/11.5)		**260.87**
Liability for Vacation Pay [(1/2 x $3,000)/11.5]		**130.43**
Liability for Pensions ($5,000/11.5)		**434.78**