

# DEPRECIATION, DEPLETION AND AMORTIZATION

## Key Topics to Know

### Depreciation

- **Depreciation Expense**

- Depreciation expense is typically computed using straight-line, the units-of-activity or the declining-balance methods.
- Depreciation expense calculations for the year must be adjusted when the asset is owned for less than a full year (partial year depreciation). This would occur if the asset was acquired or disposed of during the year, i.e. not on January 1 or December 31.
- At times, changes in estimates, such as the useful life or salvage value assigned to a depreciable asset, must be changed. In these cases, the depreciation expense must be recalculated and adjusted in the current and future years to reflect the changes.

- **Accumulated Depreciation**

- Contra-asset account that reduces the cost of the asset to net book value.
- Balance is the total of all depreciation expense recorded to date.

### Depletion

- Equivalent to depreciation for natural resources, such as timber or minerals.
- Since the amount of the asset decreases as it is used up, the decrease in value is recorded directly in the asset account.
- Depletion method is the same as the units-of-activity depreciation method.

### Amortization

- Equivalent to depreciation for intangible assets, such as patents and copyrights.
- Useful life cannot exceed the remaining legal life.
- Since the useful time period for the asset decreases as it is used up, the decrease in value is recorded directly in the asset account.
- Amortization method is the same as the straight-line depreciation method.

## Problems

### **Problem #1 - Straight-line depreciation**

A machine with a cost of \$50,000 has an estimated residual value of \$5,000 and an estimated useful life of 5 years.

Required:           What is the amount of annual depreciation computed by the straight-line method?

### **Problem #2 - Depreciation by the units-of-activity method**

A truck that cost \$40,000 has a residual value of \$5,000 and an estimated useful life of 100,000 miles.

Required:    a) Compute the depreciation rate per mile.  
              b) Compute the first year's depreciation if the truck was driven 12,000 miles?

### **Problem #3 - Depreciation by the declining-balance method**

X Company equipment acquired at the beginning of the year at a cost of \$85,000 has an estimated residual value of \$10,000 and an estimated useful life of 10 years. It is depreciated using the declining-balance method at twice the straight-line rate.

Required:    a) What is the depreciation expense for the first year?  
              b) What is the depreciation expense for the second year?

### **Problem #4 - Depletion entries**

B Company acquired mineral rights for \$15,000,000. The mineral deposit is estimated at 60,000,000 tons. During the current year 11,500,000 tons were mined and sold for \$3,500,000.

Required:    a) Determine the amount of depletion expense for the current year.  
              b) Journalize the adjusting entry to recognize the expense.

**Problem #5 - Amortization of patent rights**

On January 2, the J Company acquired patent rights from the C Company for \$85,000, incurring legal costs of \$5,000. Although the patent will not expire for 17 years, its estimated useful is only 15 years.

Required:                      Journalize the entry to amortize the patent at the end of the current fiscal year.

## Multiple Choice Questions

1. A Company purchased a manufacturing machine with a list price of \$80,000 and received a 2% cash discount on the purchase. The machine was delivered under terms FOB shipping point, and freight costs amounted to \$1,200. Anchor paid \$1,500 to have the machine installed and tested. Insurance costs to protect the asset from fire and theft amounted to \$1,800 for the first year of operations. Based on this information, the amount of cost recorded in the asset account would be:
  - a) \$81,100.
  - b) \$79,600.
  - c) \$82,900.
  - d) \$78,400
  
2. On January 1, I Company purchased equipment with a list price of \$22,000 with a 5% cash discount. A total of \$1,000 was paid for installation and testing. During the first year, Innovative paid \$1,500 for insurance on the equipment and another \$550 for routine maintenance and repairs. I Company uses the units-of-activity method of depreciation. Useful life is estimated at 100,000 units, and estimated salvage value is \$2,000. During the year, the equipment produced 13,000 units. What is the depreciation expense for the year?
  - a) \$2,847
  - b) \$2,587
  - c) \$3,042
  - d) \$2,782
  
3. Which of the following is considered an accelerated depreciation method?
  - a) Double declining balance
  - b) Units of activity
  - c) MACRS
  - d) Both A and C

4. On January 1, M Company purchased a truck that cost \$38,000. The truck had an expected useful life of 10 years and a \$4,000 salvage value. The amount of depreciation expense recognized during year 2 assuming that M Company uses the double declining-balance method is:
  - a) \$5,440
  - b) \$6,080.
  - c) \$3,800.
  - d) \$7,600.
  
5. Which of the following terms is used to identify the expense recognition for intangible assets?
  - a) Amortization.
  - b) Depletion.
  - c) Depreciation.
  - d) Allocation.
  
6. On January 1, year 1, L Company purchased an asset that cost \$80,000. The asset had an expected useful life of five years and an estimated salvage value of \$15,000. L Company uses the straight-line method for the recognition of depreciation expense. At the beginning of the fourth year of usage, the company revised its estimated salvage value to \$8,000. Based on this information, the depreciation expense to be recognized for year 4 is:
  - a) \$12,800
  - b) \$12,500
  - c) \$33,600
  - d) \$20,800
  
7. F Company purchased equipment on January 1, year 1 for \$82,000. The machines are estimated to have a 5-year life and a salvage value of \$4,000. The company uses the straight-line depreciation method. At the beginning of year 4, F Company revised the expected life to eight years. The annual amount of depreciation expense for each of the remaining years would be:
  - a) \$5,440
  - b) \$27,200
  - c) \$6,240
  - d) \$14,800

8. F Company purchased equipment on January 1 for \$82,000. The machines are estimated to have a 5-year life and a salvage value of \$4,000. The company uses the straight-line depreciation method. If the original expected life remained the same (i.e., 5-years), but at the beginning of year 4, the salvage value was revised to \$8,000, the annual depreciation expense for each of the remaining years would be:
- a) \$5,440.
  - b) \$27,200.
  - c) \$13,600.
  - d) \$14,800.
9. Which of the following terms is applied to long-term assets that have no physical substance and provide rights, privileges and special opportunities to businesses?
- a) Tangible assets
  - b) Intangible assets
  - c) Natural resources
  - d) Property, plant and equipment
10. On January 1, S Company paid \$80,000 to obtain a patent. It expected to use the patent for 5 years before it became technologically obsolete. The remaining legal life of the patent was 8 years. Based on this information, the amount of amortization expense on the December 31, year 3 income statement and the book value of the patent on the December 31, year 3 balance sheet would be:
- a) \$10,000/\$30,000.
  - b) \$16,000/\$48,000.
  - c) \$10,000/\$50,000.
  - d) \$16,000/\$32,000.

## **Solutions to Problems**

### **Problem #1 - Straight-line depreciation**

$$(50,000 - \$5,000) / 5 \text{ years} = \$9,000 \text{ per year}$$

### **Problem #2 - Depreciation by the units-of-activity method**

$$(\$40,000 - \$5,000) / 100,000 \text{ miles} = \$0.35 \text{ per mile}$$

$$12,000 \text{ miles} \times \$0.35 = \$4,200$$

### **Problem #3 - Depreciation by the declining-balance method**

- a) First year: 20% of \$85,000 = \$17,000
- b) Second year: 20% of (\$85,000 - \$17,000) = \$13,600

### **Problem #4 - Depletion entries**

- a)  $\$15,000,000 / 60,000,000 = \$0.25 \text{ per ton}$   
 $11,500,000 \times \$0.25 = \$2,875,000 \text{ depletion expense}$
- b)
 

Depletion Expense	2,875,000	
Accumulated Depletion		2,875,000

### **Problem #5 - Amortization of patent rights**

Amortization Expense - Patents	6,000	
Accumulated Amortization - Patents		6,000

**Solutions to Multiple Choice Questions**

- 1. A
- 2. B
- 3. D
- 4. B
- 5. A
- 6. B
- 7. C
- 8. C
- 9. B
- 10. D