**AAE 320 Problem Set #4 Due October 22, 2020 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1) You had a milking barn built and bought a used combine harvester. The milking barn cost $540,000 and the combine cost $90,000. For your internal farm accounting purposes, you will depreciate the milking barn over 15 years and the combine over 6 years. The milking barn will have zero salvage value, but the combine will have a salvage value of $20,000. For this problem, fill out the following 4 tables that report the value of the asset at the beginning of each year, the amount of depreciation during each year and the value at the end of each year. There are 2 tables for the milking barn and 2 for the combine. For each asset, one table uses Straight Line depreciation, the other uses 150% Declining Balance. Do the full life cycle for each asset (15 years for the barn and 6 years for the combine). For the 150% Declining Balance, do not let the asset value fall below the salvage value (set depreciation to zero if needed) and if the implied value does not reach the salvage value by the end of the useful life, take the remaining value as depreciation in the last year.

Milking Barn, Straight Line Milking Barn, 150% Declining Balance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Beginning Basis | Depreciation | Ending Basis | Beginning Basis | Depreciation | Ending Basis |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |

Combine, Straight Line Combine, 150% Declining Balance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Beginning Basis | Depreciation | Ending Basis | Beginning Basis | Depreciation | Ending Basis |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |

2) In this problem, you will figure the depreciation you can claim for tax purposes for the milking barn. Use IRS Publication 946: How to Depreciation Property <https://www.irs.gov/pub/irs-pdf/p946.pdf>. This is the latest version, for preparing 2019 taxes. For this problem, you will use MACRS, electing the GDS option and not claiming any Section 179 depreciation. Read “Which Depreciation System (GDS or ADS) Applies?” beginning on p. 28. I do not fully understand the rules and options, but it seems that farm property generally uses 200% declining balance, but farmers can elect 150% declining balance and even straight line from my reading of “Depreciation Methods for Farm Property” (p. 35), the next section (“Electing a Different Method”), and Table 4.1, but I am no tax expert. If I were a farmer, I would hire a farm tax expert to do my farm taxes.

a) Read “Which Property Class Applies under GDS” starting on p. 29. What property class (3-year, 5-year, 7-year, etc.) must be used for the barn (a farm building) that, for tax purposes, is technically not a single purpose agricultural or horticultural structure? Read “Recovery Periods Under GDS” on p. 32, but especially see Appendix B, beginning on page 97, especially page 99 where common agricultural assets are listed. What recovery period (how many years) must be used for the milking barn?

Recovery Period = \_\_\_\_\_\_\_\_\_\_\_\_\_

b) Suppose you built the milking barn and had it ready for use in August of 2019. Read “Which Convention Applies?” on p. 34. The milking barn is not “nonresidential real property”. Because the milking barn was “placed in service” before the final three months of the year and is not a large portion of the total depreciable property you will claim for deductions during the 4th quarter, I interpret this section to mean that you should use the mid-quarter convention, with the asset placed in service during the 3rd quarter. Using Chart 1 on p. 69, which depreciation table must be used for the milking barn?

Depreciation Table = \_\_\_\_\_\_\_\_\_\_\_\_

c) Use the appropriate depreciation table to calculate the depreciation you will be able to claim as a deduction each year for the milking barn’s useful life as defined for tax purposes. What I want is a table starting in 2019 (when the milking barn was “placed in service”) and what percentage of the original cost you can claim as a depreciation cost each year until the milking barn it totally depreciated for tax purposes. I have created an empty table on the next page for 26 years, which is likely more than needed. You will simply copy in the depreciation percentages from the table you determined in part b and then calculate the depreciation dollars you will claim for the next 26 years (some of the last years may be 0), and then the remaining basis (asset value for tax purposes) at the end of the year. The Depreciation ($) is the depreciation expenses for the milking barn that you could deduct from your taxable income during each year and the Remaining Basis is what you would use for depreciation recapture if you sold or transferred the building.

Note: I found it easier to use a spreadsheet program to do the calculations, and then copy the values into the table.

Tax Depreciation for the Milking Barn ($540,000 initial value).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CalendarYear | AssetYear | Depreciation (%)(from tax table) | Depreciation ($) | Remaining Basis |
| 2019 | 1 |  |  |  |  |
| 2020 | 2 |  |  |  |  |
| 2021 | 3 |  |  |  |  |
| 2022 | 4 |  |  |  |  |
| 2023 | 5 |  |  |  |  |
| 2024 | 6 |  |  |  |  |
| 2025 | 7 |  |  |  |  |
| 2026 | 8 |  |  |  |  |
| 2027 | 9 |  |  |  |  |
| 2028 | 10 |  |  |  |  |
| 2029 | 11 |  |  |  |  |
| 2030 | 12 |  |  |  |  |
| 2031 | 13 |  |  |  |  |
| 2032 | 14 |  |  |  |  |
| 2033 | 15 |  |  |  |  |
| 2034 | 16 |  |  |  |  |
| 2035 | 17 |  |  |  |  |
| 2036 | 18 |  |  |  |  |
| 2037 | 19 |  |  |  |  |
| 2038 | 20 |  |  |  |  |
| 2039 | 21 |  |  |  |  |
| 2040 | 22 |  |  |  |  |
| 2041 | 23 |  |  |  |  |
| 2042 | 24 |  |  |  |  |
| 2043 | 25 |  |  |  |  |
| 2044 | 26 |  |  |  |  |

d) For this problem, you want to see if you can take Section 179 depreciation for the combine. Skim over IRS Pub 946 Electing the Section 179 Deduction beginning on p. 15. Focus on determining whether the combine (a type of machinery or equipment) qualifies for this deduction (see Eligible Property p. 16 and following) and how much you can claim (see How Much Can you Deduct (p. 17 and following), and especially “Married Individuals” (p. 19).

Specific questions to answer for this problem:

1. Does the tractor qualify for Section 179 depreciation deduction?
2. Suppose the farm and the spouse’s business bought and placed in service lots of eligible equipment ($2,700,000) in 2019 and they file a joint tax return. Could the couple claim Section 179 depreciation for all $2,700,000? If not, how much Section 179 depreciation could they claim in total between the two of them?

3) Use the Sample Farm Balance Sheet on the next page to answer the following questions:

1. What is this farm’s current ratio? (Show your calculation.)

Interpret this farm’s current ratio—Is the farm doing okay or is there a problem?

1. Using a market basis, what was the farm’s debt to asset ratio? (Show your calculation.)

Using a cost basis, what was the farm’s debt to asset ratio? (Show your calculation.)

Interpret this farm’s ratios—Is the farm doing okay or is there a problem?

1. Suppose the farm were to buy 40 acres of land for $10,000/acre with a bank loan that had zero down payment and 0% interest for the first year. Using a market bass for assets, how would this change i) The farm’s current ratio:

ii) The farm’s debt to asset ratio:

iii) The farm’s equity:

**Sample Farm Balance Sheet**

