2012 MISSOURI FFA FARM MANAGEMENT CONTEST

This exam and others are available at http://adultaged.missouri.edu/moaged/exams.htm

Multiple Choice Section

The Farm Management Contest is designed to test student understanding of the application of economic principles in farm management. Each question is worth three (3) points.

Choose the best answer and mark the appropriate box on the score sheet. There is only one correct answer to each question.

1. On a crop enterprise budget that does not include any charges for land, which number corresponds to the maximum amount that a farmer could pay in cash rent per acre in the short run?
   A. Total operating costs
   B. Returns above total operating costs
   C. Total costs
   D. Returns above total costs
   E. None of the above

2. On a crop enterprise budget that does not include any charges for land, which number corresponds to the maximum amount that a farmer could pay in cash rent per acre in the long run?
   A. Total operating costs
   B. Returns above total operating costs
   C. Total costs
   D. Returns above total costs
   E. None of the above

3. A soybean producer decides to store his soybeans in the local elevator for 5 months. The price at harvest is $11.50 per bushel and the elevator charges 2 cents per bushel per month for storage plus a 5 cents per bushel handling charge. He has 4,000 bushels to sell and must borrow $50,000 at 6% annual interest while he stores the soybeans. What price must he receive for his soybeans to break even and cover his storage and opportunity costs?
   A. $11.65
   B. $11.86
   C. $11.94
   D. $12.34
   E. None of the above

4. A $50,000 loan amortized at 10% interest for 5 years yields annual payments of $13,189.87. How much of the first year's payment is principal?
   A. $3,189.87
   B. $8,189.87
   C. $11,870.88
   D. $13,189.87
   E. None of the above
5. For the above loan of $50,000, if the fifth and final payment includes $1,199.08 of interest, what was the outstanding principal balance after the fourth payment?
   A. $3,189.87
   B. $8,189.87
   C. $11,990.79
   D. $13,189.87
   E. None of the above

6. If the interest rate is 10%, what is the present value of a dollar to be received by a producer two years from now?
   A. $0.826
   B. $0.900
   C. $1.100
   D. $1.210
   E. None of the above

7. If corn silage as fed contains 65% moisture and 2.5% protein, the dry matter would be what percent protein?
   A. 2.50
   B. 3.85
   C. 5.71
   D. 7.14
   E. None of the above

8. The main drawback of an adjustable rate mortgage is that
   A. the initial interest rate is usually higher than for other types of loans.
   B. the interest is not deductible for farm businesses.
   C. it is only available for loans under $100,000.
   D. the interest rate can increase.
   E. None of the above

9. The cost of producing one additional unit of output is called
   A. opportunity cost.
   B. substitution cost.
   C. average cost.
   D. marginal cost.
   E. None of the above

10. A farmer purchases 700-pound feeder steers for $1.50 per pound and plans to sell the steers at 1100 pounds. The farmer estimates the total cost of gain to be $0.95 per pound. The nearest breakeven price when the steers are sold at 1100 pounds is
    A. $1.25/pound.
    B. $1.30/pound.
    C. $1.36/pound.
    D. $1.43/pound.
    E. None of the above
11. A farmer has total assets of $500,000 of which land is $300,000. The farmer's debt:equity ratio is 1.0. What will the farmer's debt:equity ratio be if the land value increases by 10%?
   A. .64  
   B. .89  
   C. 1.12 
   D. 1.22 
   E. None of the above

12. USDA has an FSA office in most rural counties. FSA stands for
   A. Farm Service Agency. 
   B. Field System Administration. 
   C. Financial Survey Agency. 
   D. Federal Statistical Analysis. 
   E. None of the above

13. How many total acres are included in "SW 1/4 of NE 1/4 and N 1/2 of NW 1/4 of Section 15, Twp. 10N, R4W of the 5th Principle Meridian"?
   A. 80 acres 
   B. 120 acres 
   C. 160 acres 
   D. 320 acres 
   E. None of the above

14. How much perimeter fence would be required to completely enclose the parcel of land described in the question above?
   A. 1.0 mile 
   B. 1.5 miles 
   C. 2.0 miles 
   D. 2.5 miles 
   E. None of the above

15. Collectively, amino acids are usually called
   A. starch. 
   B. protein. 
   C. fats. 
   D. plasma. 
   E. None of the above

16. A 2-wheel drive tractor typically requires more horsepower to pull the same implement as a 4-wheel drive tractor because
   A. 2-wheel drive tractors have more slippage. 
   B. 2-wheel drive tractors weigh more. 
   C. 2-wheel drive tractors are often older. 
   D. 2-wheel drive tractors calculate horsepower differently. 
   E. None of the above
17. A farmer is solvent if
   A. he has sufficient current assets to cover current debts.
   B. he has sufficient equity to cover debts.
   C. he has sufficient assets to cover all debts.
   D. he can pay all debts with all equity.
   E. All of the above

18. A Subchapter S corporation can have no more than
   A. 10 shareholders.
   B. 35 shareholders.
   C. 75 shareholders.
   D. 100 shareholders.
   E. There is no limit on number of shareholders.

19. Corn has an expected yield of 150 bushels per acre and has a production cost of $600 per acre. Current market prices are $6 per bushel for corn and $12 per bushel for soybeans. Soybeans can be raised at a production cost of $400 per acre. At what breakeven yield per acre would soybeans generate the same net return per acre as dryland corn?
   A. 31.9 bushels
   B. 35.2 bushels
   C. 42.6 bushels
   D. 58.3 bushels
   E. None of the above

20. Purchase of a call option on corn means the buyer
   A. is required to sell a corn futures contract at a set price.
   B. may sell, but is not required to sell, a corn futures contract at a set price.
   C. may buy, but is not required to buy, a corn futures contract at a set price.
   D. is required to buy a corn futures contract at a set price.
   E. None of the above

21. The disadvantage of leasing a tractor as compared to purchasing is that leasing
   A. increases your income tax.
   B. decreases your depreciation and capital expensing.
   C. releases capital for other uses.
   D. reduces output per worker.
   E. costs less in the long run.

22. How many pounds of 48% protein supplement must be mixed with 8% protein corn to make a ton of 16% protein feed?
   A. 300 pounds
   B. 400 pounds
   C. 550 pounds
   D. 600 pounds
   E. None of the above
23. The capital gains taxes that would be due should a farmer sell his land is an example of a
   A. current liability.
   B. long-term liability.
   C. deductible expense.
   D. contingent liability.
   E. None of the above

24. Which USDA agency’s primary activity is conducting surveys to determine farm
production, prices, income, and expenses?
   A. Agricultural Research Service (ARS)
   B. National Agricultural Statistics Service (NASS)
   C. Agricultural Marketing Service (AMS)
   D. Economic Research Service (ERS)
   E. None of the above

25. Which of the following statements regarding accrued interest is most nearly true?
   A. Beginning accrued interest will always be less than ending accrued interest.
   B. Beginning accrued interest will always be greater than ending accrued interest.
   C. Accrued interest pertains only to short-term debt.
   D. Accrued interest pertains only to intermediate and long-term debt.
   E. Accrued interest is not a cash expense until it is paid.

26. Diminishing marginal returns to a factor of production are most likely to occur when
   A. one factor is increased and all others are fixed.
   B. one factor is fixed and all others are increased in equal proportion.
   C. all factors are increased in equal portion.
   D. One factor is decreased and all others are fixed.
   E. None of the above

27. A cattle feeder, wishing to use futures markets to hedge the price of slaughter cattle, would
at the time of his cattle purchase
   A. buy futures contracts expecting to sell the contracts when selling cattle.
   B. sell futures contracts expecting to sell more contracts when selling cattle.
   C. sell futures contracts expecting to buy contracts when selling cattle.
   D. buy futures contracts expecting to buy more contracts when selling cattle.
   E. All of the above

28. An increase in the value of the U.S. dollar relative to the currency of other countries should
result in
   A. more costly imports.
   B. less costly imports.
   C. increased exports.
   D. no effect on imports or exports.
   E. None of the above
29. A feedlot operator buys feeder steers, finishes them, and sells them. The operator estimates that finished steers will sell for $120 per cwt. and that it will cost $350 per head to bring them from the 750 pound purchase weight to the 1100 pound selling weight. What is the highest price the operator can pay for 750 pound feeder steers to break even?
   A. $102.55/cwt.
   B. $107.18/cwt.
   C. $115.48/cwt.
   D. $129.33/cwt.
   E. None of the above

30. The demand curve shows the relationship between
   A. consumer tastes and the quantity demanded.
   B. price and the quantity demanded.
   C. price and production costs.
   D. money income and quantity demanded.
   E. None of the above

31. A part-time farmer has 160 acres of land, 40 cows and can only work 400 hours per year on his farm. An acre of hay requires 4 hours of labor and yields 4 tons. An acre of beans takes 2 hours and yields 35 bushels. Each cow needs 7 hours of labor, 3 acres of land, and consumes 1 ton of hay. What is the maximum number of acres of soybeans he can grow if the farmer keeps 40 cows and does not buy any hay?
   A. 25
   B. 27
   C. 30
   D. 40
   E. None of the above

32. A vicious cold spell in the late spring has wiped out the buds on the peach trees grown in Georgia, a major peach producing state. How will this freeze impact the price received for peaches by Maryland peach producers?
   A. No effect - Georgia is too far away to have any impact on Maryland.
   B. Will lower the price because the demand for peaches will be lower.
   C. Because of the reduced supply, prices for peaches in Maryland will tend to move upward.
   D. No effect - Maryland does not grow enough peaches to have any impact on prices.
   E. None of the above

33. During the year, a farmer pays $2,800 principal and $800 interest on a tractor loan. His annual depreciation is $3,000. His deductible operating expenses (fuel, oil, repairs, etc) associated with operating the tractor totaled $1,000. His marginal tax rate is 25%. What is his after-tax cash cost of using the tractor for the year?
   A. $200
   B. $3,400
   C. $3,650
   D. $4,600
   E. None of the above
34. The Social Security wage base
   A. does not apply when calculating Medicare taxes.
   B. is the same for Medicare as for Social Security.
   C. is doubled when calculating self-employment income.
   D. is half as much for self-employed individuals.
   E. None of the above

35. A written agreement by which an owner of property transfers title to someone for the benefit of beneficiaries is a
   A. trust.
   B. partnership.
   C. corporation.
   D. sole proprietorship.
   E. None of the above

36. A producer sells 9 feeder steers for $140/cwt. The average weight per steer is 750 pounds. There is a 2.5% sales commission and yardage fees of $3 per head. The net amount received for the pen of steers would be
   A. $1,020.75
   B. $9,186.75
   C. $9,187.42
   D. $9,210.75
   E. None of the above

37. The price of widgets changes from $100 to $90 and, as a result, the quantity demanded increases from 50 to 60 units. From this we can conclude that
   A. the demand for widgets is elastic.
   B. the demand for widgets is inelastic.
   C. the demand for widgets is of unit elasticity.
   D. the demand for widgets has declined.
   E. None of the above

38. In analysis of a farm, what would you do if a cash flow projection indicated that there would be more expense than income in a certain month?
   A. Terminate the enterprise causing the cash flow problem that month.
   B. Use savings, delay expenses, move up sales, or borrow money.
   C. Change from cash to accrual accounting method.
   D. Change depreciation methods.
   E. None of the above

39. If the total cost of producing 100 units of output is $500 and the average variable cost is equal to $1, then which of the following statements is true?
   A. Total variable cost of the 100 units is $400.
   B. Total fixed cost is equal to $100.
   C. Average fixed cost is equal to $4.
   D. Average total cost is equal to $4.
   E. None of the above is true.
40. Farmer Jones wants to plant a crop with a 3.5-in spacing in 30-inch rows. If there are 100,000 seeds in a bushel, how many bushels will he seed per acre.
   A. 0.24  
   B. 0.52  
   C. 0.60  
   D. 1.07  
   E. None of the above

41. Which of the following would not appear on a cash flow statement?
   A. Interest paid on a loan for a tractor  
   B. Principal paid on a loan for a tractor  
   C. Depreciation expense on a tractor  
   D. Rental payment received from the neighbor who used the tractor.  
   E. None of the above

42. Frank's beginning balance sheet showed $40,000 in corn stored at the local elevator. Which of these would not explain his ending balance sheet entry of $20,000 corn stored at the local elevator?
   A. He sold some corn during the year.  
   B. The price of corn was lower at the end of the year.  
   C. He had less corn stored at the end of the year than the beginning.  
   D. All of these could explain the decrease.  
   E. None of these would explain the decrease.

43. Frank expects his wheat to yield 40 bushels per acre and sell for $5 per bushel. He has spent $75 per acre on seed, fertilizer, fuel, and chemicals so far as of January 1. It will cost $20 per acre to harvest and deliver the wheat to market. Right now the wheat price is only $4.50 per bushel. His balance sheet asset entry should reflect
   A. the $75 per acre he has spent so far.  
   B. the $200 per acre he expects to receive when sold.  
   C. $180 based on today's price.  
   D. the $200 per acre minus the $75 spent so far and minus the $20 per acre to harvest the wheat.  
   E. None of the above

44. An increase in total operating costs of $20 per acre will increase the breakeven price of the crop by how much if the yield is 100 units per acre?
   A. $0.02 per unit  
   B. $0.20 per unit  
   C. $2.00 per unit  
   D. $20.00 per unit  
   E. None of the above
45. An increase in total costs of $20 per acre will increase the breakeven yield by how many units if the price the price is $5 per unit.
   A. 4 units
   B. 10 units
   C. 20 units
   D. 100 units
   E. None of the above

In analyzing last year's records, Frank Farmer paid $10,000 in interest and $20,000 in principal. His value of farm production was $150,000. His gain on the sale of assets was $0. His net farm income was $40,000. The value of unpaid labor and management was $10,000. His depreciation totaled $10,000. His average assets totaled $300,000 and his average net worth was $100,000. Hint: Value of farm production equals net farm income plus interest plus depreciation plus gain or loss on sale of assets plus operating expenses.

46. What was his rate of return on equity?
   A. 0%
   B. 10%
   C. 20%
   D. 30%
   E. None of the above

47. What was his operating ratio?
   A. 50%
   B. 60%
   C. 70%
   D. 80%
   E. None of the above

48. What was his turnover?
   A. 0%
   B. 5%
   C. 50%
   D. 100%
   E. None of the above

49. If the rate of return to assets is 10%, and the average interest rate is 8%, what would the debt-to-asset ratio need to be for Frank in order for him to earn a rate of return on equity of 16%?
   A. 25%
   B. 50%
   C. 67%
   D. 75%
   E. None of the above
50. If Frank's turnover is 60%, assets are $500,000, and rate of return to assets is 8%, what is his value of farm production?
   A. $100,000
   B. $200,000
   C. $300,000
   D. $400,000
   E. None of the above
Problems Section

Choose the best answer and mark the corresponding numbered space on the answer sheet. Computations may be done in the margins or on the back of the paper. Each question is worth four (4) points. There is only one correct answer for each question. Answers have been rounded.

PROBLEM I - Market Value Balance Sheet

Using the information below, complete the net worth statement for January 1, 2012:

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>$850,000</td>
</tr>
<tr>
<td>House</td>
<td>90,000</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>310,000</td>
</tr>
<tr>
<td>Cows</td>
<td>51,000</td>
</tr>
<tr>
<td>Calves</td>
<td>18,600</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>5,100</td>
</tr>
<tr>
<td>Autos</td>
<td>47,000</td>
</tr>
<tr>
<td>Sows and boars</td>
<td>26,000</td>
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<tr>
<td>Market hogs</td>
<td>70,000</td>
</tr>
<tr>
<td>Checking and savings</td>
<td>17,800</td>
</tr>
<tr>
<td>Soybeans</td>
<td>22,000</td>
</tr>
<tr>
<td>Hog buildings</td>
<td>74,000</td>
</tr>
<tr>
<td>Feed and hay</td>
<td>22,500</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>500</td>
</tr>
<tr>
<td>Accrued interest owed</td>
<td>28,450</td>
</tr>
<tr>
<td>Accrued taxes owed</td>
<td>13,250</td>
</tr>
</tbody>
</table>

30-year land loan balance is $550,000.
$22,000 plus interest is due March 1 of each year.

7-year combine loan balance is $90,000.
$18,000 plus interest is due November 30 of each year.

15-year home loan balance is $52,800.
$1,500 plus interest is due each quarter.

Current Assets:

Current Liabilities:

<table>
<thead>
<tr>
<th>Current Assets:</th>
<th>Current Liabilities:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Assets:</th>
<th>Current Liabilities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>
Non-current Assets:  

_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  

Total  ________________  

Total Assets  _________________  

Non-current Liabilities:  

_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  
_________________________________  

Total  __________________  

Total Liabilities  __________________  

Net Worth  __________________

Questions 1 through 7 refer to PROBLEM I

1. The total value of current assets on January 1, 2012, was
   A. $151,400
   B. $177,400
   C. $202,400
   D. $228,400
   E. None of the above

2. The total value of non-current assets was
   A. $1,371,000
   B. $1,422,000
   C. $1,448,000
   D. $1,599,000
   E. None of the above

3. The total value of current liabilities was
   A. $41,700
   B. $46,800
   C. $88,300
   D. $92,800
   E. None of the above

4. The total value of non-current liabilities was
   A. $528,000
   B. $646,800
   C. $651,300
   D. $692,800
   E. None of the above

5. The net worth was
   A. $859,800
   B. $1,005,090
   C. $1,448,000
   D. $1,599,400
   E. None of the above
6. The debt-to-equity ratio was
   A. 0.46
   B. 0.86
   C. 1.16
   D. 2.16
   E. None of the above

7. The net working capital was
   A. $58,600
   B. $151,400
   C. $801,200
   D. $859,800
   E. None of the above

PROBLEM II – Enterprise Budget

Use the following soybean budget to answer Questions 8 through 16.

SOYBEANS, per acre, bottomland (loam soil), owned equipment

<table>
<thead>
<tr>
<th>Operating Inputs</th>
<th>Units</th>
<th>Price</th>
<th>Qty.</th>
<th>Value</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean seed</td>
<td>Lbs.</td>
<td>1.400</td>
<td>45.000</td>
<td>$63.00</td>
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</tr>
<tr>
<td>Nitrogen (N)</td>
<td>Lbs.</td>
<td>0.500</td>
<td>15.000</td>
<td>7.50</td>
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<tr>
<td>Phosphate (P(_2)O(_5))</td>
<td>Lbs.</td>
<td>0.600</td>
<td>40.00</td>
<td>24.00</td>
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</tr>
<tr>
<td>Potash (K(_2)O)</td>
<td>Lbs.</td>
<td>0.400</td>
<td>40.00</td>
<td>16.00</td>
<td></td>
</tr>
<tr>
<td>Herbicide</td>
<td>Acre</td>
<td>14.020</td>
<td>1.000</td>
<td>14.02</td>
<td></td>
</tr>
<tr>
<td>Crop insurance</td>
<td>Acre</td>
<td>20.000</td>
<td>1.000</td>
<td>20.00</td>
<td></td>
</tr>
<tr>
<td>Rent fert. spreader</td>
<td>Acre</td>
<td>2.350</td>
<td>1.000</td>
<td>2.35</td>
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<tr>
<td>Annual operating capital</td>
<td>Dol.</td>
<td>0.100</td>
<td>83.335</td>
<td>8.33</td>
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</tr>
<tr>
<td>Machinery labor</td>
<td>Hour</td>
<td>10.000</td>
<td>1.427</td>
<td>14.27</td>
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<tr>
<td>Mach. fuel, lube, repair</td>
<td>Dol.</td>
<td></td>
<td></td>
<td>28.50</td>
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<tr>
<td>Total operating costs</td>
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<td></td>
<td>$197.97</td>
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Fixed costs

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<tr>
<th></th>
<th>Amount</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Interest at 10%</td>
<td>184.00</td>
<td>18.40</td>
</tr>
<tr>
<td>Depr., taxes, insurance</td>
<td>24.21</td>
<td></td>
</tr>
<tr>
<td>Total fixed costs</td>
<td>42.61</td>
<td></td>
</tr>
</tbody>
</table>

Production

<table>
<thead>
<tr>
<th>Units</th>
<th>Price</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bu.</td>
<td>11.00</td>
<td>36.00</td>
<td>396.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total receipts</td>
<td></td>
<td></td>
<td>396.00</td>
</tr>
<tr>
<td>Returns above total operating costs</td>
<td>198.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Returns above all specified costs</td>
<td>155.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. Total operating cost per acre is:
   A. $8.33
   B. $155.42
   C. $197.97
   D. $198.03
   E. None of the above

9. The return above operating cost per acre is:
   A. $8.33
   B. $155.42
   C. $197.97
   D. $198.03
   E. None of the above

10. How many pounds of fertilizer are budgeted per acre?
    A. 1.50
    B. 2.35
    C. 47.50
    D. 95.00
    E. None of the above

11. What is the total budgeted interest cost per acre?
    A. $8.33
    B. $18.40
    C. $26.73
    D. $42.61
    E. None of the above

12. What price per bushel is paid for seed beans?
    A. $1.40
    B. $45.00
    C. $63.00
    D. $84.00
    E. None of the above

13. What is the total specified fertilization cost per acre? (ignore cost of labor and operating capital)
    A. $2.35
    B. $47.50
    C. $49.85
    D. $63.87
    E. None of the above

14. What yield will cause returns above all specified costs to equal zero?
    A. 6.68 bu.
    B. 18.00 bu.
    C. 21.87 bu.
    D. 26.93 bu.
    E. None of the above
15. What will be the per acre returns above all specified costs if one-third of the 36-bushel crop must be given to the landlord for rent of the land?
   A. -$0.26
   B. $23.42
   C. $66.03
   D. $103.61
   E. None of the above

16. If one-third of the crop is given as rent, what price received for soybeans will make the per acre receipts above all specified costs equal zero?
   A. $7.33
   B. $9.57
   C. $10.02
   D. $10.88
   E. None of the above

PROBLEM III -- Income Tax Management

Use the tables at the end of this exam to calculate depreciation on the following item.

On May 1, 2011, Mary bought a new planter. Mary traded her old planter which had a remaining book value of $3,025. Mary paid $30,000 "down" and financed the remaining $15,000 over 3 years at 8% interest. She elected to roll the remaining basis of her old planter into the new one.

17. The planter is
   A. 3-year property
   B. 5-year property
   C. 7-year property
   D. 10-year property
   E. None of the above

18. If Mary does not claim any special first year depreciation or expense any of the cost of the planter, then 2011 depreciation will be (use MACRS GDS and mid-year convention)
   A. $1,395.30
   B. $3,538.30
   C. $4,821.30
   D. $5,145.40
   E. None of the above

19. If Mary expenses $10,000 of the planter cost and uses the mid-quarter convention and MACRS GDS, then 2011 depreciation will be
   A. $567.19
   B. $2,414.09
   C. $3,379.69
   D. $5,092.69
   E. None of the above
20. If Mary expenses the maximum allowable on the planter and uses MACRS GDS with the mid-year convention, then 1/1/12 remaining book value will be
   A. $0
   B. $324.10
   C. $2,700.90
   D. $16,093.80
   E. None of the above

21. If Mary does not claim any special first year depreciation or expense deduction and uses the mid-quarter convention and straight line depreciation over the alternate life, her 2011 depreciation will be
   A. $3,001.56
   B. $5,106.67
   C. $6,003.12
   D. $7,407.25
   E. None of the above

22. Under MACRS GDS, a pickup truck purchased in 2011 is classified as
   A. 3-year property
   B. 5-year property
   C. 7-year property
   D. 10-year property
   E. None of the above
The above graph represents supply of pork for import into the U.S. ($S_r$) the supply of pork produced in the U.S. ($S_{US}$), the total supply of pork in the U.S. ($S_T$), the foreign demand for U.S. pork ($D_F$), the domestic demand for pork ($D_{US}$), and the total demand for pork ($D_T$) in the U.S.

23. What is the market equilibrium price of pork in the U.S.?
   A. $P_1$
   B. $P_2$
   C. $P_3$
   D. $P_4$
   E. None of the above

24. At the market equilibrium price, how much pork will be exported from the U.S.?
   A. $Q_1$
   B. $Q_2$
   C. $Q_3$
   D. $Q_4$
   E. $Q_5$

25. At the market equilibrium price, how much pork will be consumed in the U.S.?
   A. $Q_1$
   B. $Q_2$
   C. $Q_3$
   D. $Q_4$
   E. $Q_5$

26. At what price would pork imports equal pork exports?
   A. $P_1$
   B. $P_2$
   C. $P_3$
   D. $P_4$
   E. None of the above
For questions 27 and 28, assume the value of the U.S. dollar weakens with respect to the currency of other major pork trading countries.

27. The change will cause the U.S. pork exports to
   A. increase.
   B. decrease.
   C. not change.
   D. None of the above

28. As the dollar weakens, U.S. equilibrium price of pork should
   A. increase.
   B. decrease.
   C. stay the same.
   D. None of the above

PROBLEM V - Marketing

On July 10, a farmer has 10,000 bushels of wheat in his bin. He sells it on October 25. Ignore commissions, storage cost, and interest.

<table>
<thead>
<tr>
<th>July 10 quotes:</th>
<th>July futures price = $6.60</th>
<th>Basis = $0.10 under the board</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 25 quotes:</td>
<td>December futures price = $6.50</td>
<td>Basis = $0.05 under the board</td>
</tr>
<tr>
<td>Strike price</td>
<td>Premiums</td>
<td>Premiums</td>
</tr>
<tr>
<td>$6.10</td>
<td>$0.73</td>
<td>$0.01</td>
</tr>
<tr>
<td>$6.20</td>
<td>$0.63</td>
<td>$0.02</td>
</tr>
<tr>
<td>$6.30</td>
<td>$0.53</td>
<td>$0.03</td>
</tr>
<tr>
<td>$6.40</td>
<td>$0.43</td>
<td>$0.08</td>
</tr>
<tr>
<td>$6.50</td>
<td>$0.33</td>
<td>$0.15</td>
</tr>
<tr>
<td>$6.60</td>
<td>$0.24</td>
<td>$0.24</td>
</tr>
</tbody>
</table>

29. What is the cash price of wheat on October 25?
   A. $6.40
   B. $6.45
   C. $6.50
   D. $6.55
   E. None of the above

30. If the farmer sold two futures contracts on July 10 and bought back the contracts on October 25, what would be the realized price per bushel (cash + net on futures) for the wheat?
   A. $6.55
   B. $6.60
   C. $6.65
   D. $6.85
   E. None of the above
31. If the farmer bought two $6.40 Puts on July 10 and sold the Puts on October 25, what would be the realized price per bushel (cash + net on options) for his wheat?
   A. $6.42
   B. $6.43
   C. $6.48
   D. $6.53
   E. None of the above

32. If the farmer bought two $6.40 Puts and sold two $6.40 Calls on July 10, and sold the Puts and bought back the Calls on October 25, what would be the realized price per bushel (cash + net on options) for his wheat?
   A. $6.46
   B. $6.58
   C. $6.63
   D. $6.81
   E. None of the above

33. Given all the information above, which of the following actions taken on July 10 turned out to be the most profitable?
   A. Selling two futures contracts.
   B. Buying two $6.40 Put options.
   C. Buying two $6.40 Puts and selling two $6.40 Calls.
   D. Selling the wheat on July 10.
   E. Taking no market action.

PROBLEM VI - Loan Payments

Loan Amortization: You have a $10,000 loan to be paid back over 7 periods in equal payments.

<table>
<thead>
<tr>
<th>Period</th>
<th>Outstanding Principal before Payment</th>
<th>Loan Payment</th>
<th>Payment Portion</th>
<th>Payment Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$10,000.00</td>
<td>$1,855.53</td>
<td>A $1,155.53</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>$8,844.47</td>
<td>$1,855.53</td>
<td>$619.11 $1,236.42</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>$7,608.05</td>
<td>$1,855.53</td>
<td>$532.56 B</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>$6,285.08</td>
<td>$1,855.53</td>
<td>$439.95 $1,415.58</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>$5,037.83</td>
<td>$1,855.53</td>
<td>$340.86 $1,514.67</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>$3,354.83</td>
<td>$1,855.53</td>
<td>$234.84 D</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>$1,734.14</td>
<td>$1,855.53</td>
<td>$121.39 $1,734.14</td>
<td></td>
</tr>
</tbody>
</table>

34. The value of A is
   A. $700.00
   B. $709.22
   C. $712.86
   D. $720.15
   E. None of the above
35. The value for C is
   A. $4,819.96  
   B. $4,869.50  
   C. $4,894.66  
   D. $4,907.18  
   E. None of the above

36. What is the outstanding principal after the seventh payment?
   A. -$121.39  
   B. $0  
   C. $121.39  
   D. $1,734.14  
   E. None of the above

37. What interest rate is used for this loan?
   A. 7.00%  
   B. 7.75%  
   C. 11.56%  
   D. 18.56%  
   E. None of the above

38. Using the table on the previous page, what is the present value of an annuity of $1,855.53 for 5 years?
   A. $3,354.83  
   B. $7,608.05  
   C. $8,112.14  
   D. $8,844.47  
   E. None of the above

39. At the beginning of last year, a farmer had an outstanding loan for $228,712. The interest rate was 7% APR. If the farmer made one loan payment at the end of the year of $45,000, what was the outstanding balance at the end of the year?
   A. $183,712  
   B. $189,873  
   C. $199,722  
   D. $244,722  
   E. None of the above

40. On April 1, 2011, Sharon borrowed $25,000 to plant soybeans. On November 1, 2011, she repaid the $25,000 along with $1,057.29 interest. What annual interest rate did she pay?
   A. 4.23%  
   B. 7.25%  
   C. 9.25%  
   D. 9.75%  
   E. None of the above
A farmer is looking at a precision ag firm that can apply fertilizer in 10 lb. increments. The cost of fertilizer is $0.60/lb. Corn is selling for $5.50 per bushel. He has one field that is a mix of Soils A and B. The field is 100 acres with 40 acres of Soil A and 60 acres of Soil B. He has determined that his yields will respond according to the following table.

<table>
<thead>
<tr>
<th>Fertilizer</th>
<th>Soil A yld.</th>
<th>Soil B yld.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lbs./ac.</td>
<td>bu./ac.</td>
<td>bu./ac.</td>
</tr>
<tr>
<td>120</td>
<td>110</td>
<td>130</td>
</tr>
<tr>
<td>130</td>
<td>115</td>
<td>138</td>
</tr>
<tr>
<td>140</td>
<td>118</td>
<td>144</td>
</tr>
<tr>
<td>150</td>
<td>120</td>
<td>148</td>
</tr>
<tr>
<td>160</td>
<td>121</td>
<td>151</td>
</tr>
<tr>
<td>170</td>
<td>122</td>
<td>153</td>
</tr>
</tbody>
</table>

41. How much fertilizer should he apply per acre if he fertilizes the entire field based on Soil Type A?
   A. 130 lbs.
   B. 140 lbs.
   C. 150 lbs.
   D. 160 lbs.
   E. None of the above

42. What are his net returns above fertilizer cost for the entire field if he fertilizes the entire field based on Soil A?
   A. $9,000
   B. $48,840
   C. $66,240
   D. $75,240
   E. None of the above

43. How much fertilizer should he apply per acre if he fertilizes the entire field based on Soil Type B?
   A. 140 lbs.
   B. 150 lbs.
   C. 160 lbs.
   D. 170 lbs.
   E. None of the above

44. What are his net returns above fertilizer cost for the entire field if he fertilizes the entire field based on Soil B?
   A. $26,840
   B. $50,490
   C. $67,130
   D. $77,330
   E. None of the above
45. What are his net returns above fertilizer cost for the entire field if he fertilizes by applying the profit maximizing amount on each soil type?
   A. $66,690
   B. $67,170
   C. $68,020
   D. $76,890
   E. None of the above

46. What are his net returns above fertilizer cost for the entire field if he applies 160 pounds per acre on all 100 acres?
   A. $66,130
   B. $66,450
   C. $66,850
   D. $76,450
   E. None of the above

PROBLEM VIII - Equipment Management

For the next two questions, assume a farmer operates a 15 ft. wide piece of tillage equipment at 5 mph with a field efficiency of 75%.

47. How long will it take to till a 10-acre field?
   A. 1.47 minutes
   B. 6.82 minutes
   C. 80.27 minutes
   D. 88.00 minutes
   E. None of the above

48. How many acres can be tilled in an hour?
   A. 0.147 acres
   B. 6.82 acres
   C. 8.48 acres
   D. 8.80 acres
   E. None of the above

49. Which combination of factors will result in the most acres tilled per hour?
   A. 12 ft. width and 7.5 mph and 75% field efficiency
   B. 18 ft. width and 4.5 mph and 75% field efficiency
   C. 15 ft. width and 5.0 mph and 80% field efficiency
   D. 12 ft. width and 7.0 mph and 80% field efficiency
   E. Either B or C

50. Which of the following should increase field efficiency?
   A. Adding GPS to the tractor
   B. Tilling larger fields
   C. Tilling rectangular fields
   D. All of the above
   E. None of the above
### Annual Depreciation Percentages for 5-Yr Property, 150% DB

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>MID-YEAR CONVENTION</th>
<th>Quarter placed in service --</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>15.000%</td>
<td>26.250%</td>
</tr>
<tr>
<td>2</td>
<td>25.500</td>
<td>22.125</td>
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<tr>
<td>3</td>
<td>17.850</td>
<td>16.520</td>
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<td>4-5</td>
<td>16.660</td>
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<tr>
<td>6</td>
<td>8.330</td>
<td>2.065</td>
</tr>
<tr>
<td>Total</td>
<td>100.000</td>
<td>100.000</td>
</tr>
</tbody>
</table>

### Annual Depreciation Percentages for 7-Yr Property, 150% DB

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>MID-YEAR CONVENTION</th>
<th>Quarter placed in service --</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>10.714%</td>
<td>18.750%</td>
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<tr>
<td>2</td>
<td>19.133</td>
<td>17.411</td>
</tr>
<tr>
<td>3</td>
<td>15.033</td>
<td>13.680</td>
</tr>
<tr>
<td>4</td>
<td>12.249</td>
<td>12.160</td>
</tr>
<tr>
<td>5-7</td>
<td>12.249</td>
<td>12.160</td>
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<tr>
<td>8</td>
<td>6.124</td>
<td>1.520</td>
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<tr>
<td>Total</td>
<td>100.000</td>
<td>100.000</td>
</tr>
</tbody>
</table>

### Annual Fractions for Straight Line Over N Years (N less than 26)

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>MID-YEAR CONVENTION</th>
<th>Quarter placed in service --</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1/2</td>
<td>7/8</td>
</tr>
<tr>
<td>2-N</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>N+1</td>
<td>1/2</td>
<td>1/8</td>
</tr>
</tbody>
</table>

Depreciation formula: Basis divided by N times number from table above.

### Annual Fractions for 27 1/2 Year Property, MACRS GDS

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>Month Placed in Service --</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>11.5</td>
</tr>
<tr>
<td>2-27</td>
<td>12</td>
</tr>
<tr>
<td>28</td>
<td>6.5</td>
</tr>
<tr>
<td>29</td>
<td>--</td>
</tr>
</tbody>
</table>

Depreciation formula: Basis divided by 27 1/2 divided by 12 times number from table above.

### Annual Fractions for 39 Year Property, MACRS GDS

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>Month Placed in Service --</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>11.5</td>
</tr>
<tr>
<td>2-39</td>
<td>12</td>
</tr>
<tr>
<td>40</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Depreciation formula: Basis divided by 39 divided by 12 times number from table above.
2012 STATE FFA FARM MANAGEMENT CONTEST

Key

Multiple Choice


Problems