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Name \_\_\_\_\_

Chapter \_\_\_\_\_

**2005 STATE FINAL**

**FLORIDA FFA FARM BUSINESS MANAGEMENT  
CAREER DEVELOPMENT EVENT**

**PART II--PROBLEM SOLVING**

200 Points

2 Hours

Answer each question directly on this test paper. **Carry all calculations to 2 decimals.**

You should receive a package with 10 exhibits that are part of the contest. Your contest booklet should have 8 numbered pages of questions (including this page). There are 33 questions and each correct answer is worth 6 points. Partial credit may be given, so be certain to show your work. You may use a calculator.

The budgets provided for this test include all costs except the costs of overhead, risk and management (including the manager's labor contribution). The difference between specified costs and total receipts is called "returns to overhead, risk and management" and is frequently abbreviated as "returns to ORM".

For each question make only those assumptions specified for that question. Unless explicitly specified, assumptions do not "carry forward" from one question to the next.

All Federal Income Tax related questions in this contest are based on tax rules as specified in the IRS Farmer's Tax Guide for 2004 returns which you should receive with this contest.

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*Questions 1-17 refer to the cost of equipment and enterprise budgets in Exhibits 1-6. These budgets were prepared by Mr. Timothy Hewitt, an economist in the Food & Resource Economics Department, University of Florida. Unless otherwise directed, ignore the change in “interest on cash expenses” associated with additional or reduced cash expenses.*

1. Danny pulls his moldboard plow with a 135 horsepower tractor. How long will it take him to plow his 80 acres of dryland corn?

$$80 * 0.24 = 19.20 \text{ hours}$$

2. How much longer would it take Danny to moldboard plow his 80 acres of dryland corn if he used an 80hp tractor instead of the 135hp tractor?

$$80 * 0.25 = 20.00 \text{ hrs}$$

$$20.00 - 19.20 = 0.80 \text{ hrs}$$

3. What are Danny’s total variable costs of tractor and machinery on his 80 acres of dryland cotton?

{note typo: cotton rather than corn—correct answer for either accepted}

Corn:  $80 * 16.38 = \$1,310.40$

Cotton  $80 * 25.81 = \$2,064.80$

4. Danny expects to harvest 74 bushels/acre from his dryland corn. What is his break-even price on total costs?

$$246.97 / 74 = \$3.34$$

5. With a local cash price of \$2.40 per bushel for dryland corn, what is Danny’s break-even yield on total costs?

$$246.97 / 2.40 = 102.90 \text{ bu/acre}$$

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6. With a yield of 74 bushels/acre and a market price of \$2.40 per bushel, what is Danny's per acre return to ORM from his dryland corn?

$$(74 * 2.40) - 246.97 = -\$69.37$$

7. Using the assumptions of the previous question, what is Danny's return to ORM if he provides all labor, owns his land, and requires no production credit?

$$-69.37 + 10.50 + 40.00 + 9.55 = -\$9.32$$

8. Juan has 100 acres of cotton in north Florida. According to the budget he will pay \$600.00 for a scouting fee. What does Juan receive for this \$600.00 payment?

A professional inspection of the crop looking for plant disease and/or insect problems.

*Sheila manages a farm with soybeans and cotton. Questions 9-14 are based on the following information about Sheila's operation:*

Crop	Acres	Yield/acre	Price
Soybeans	120	35 bu.	\$5.50/bu.
Cotton	80	750 lb.	\$0.90/lb.

9. What is Sheila's total tractor + machinery cost?

$$120 * (15.27 + 21.83) + 80 * (25.81 + 46.15) = \$10,208.80$$

10. What is Sheila's total return to ORM?

$$120 ((35 * 5.50) - 223.15) + 80((750 * 0.90) - 588.13) = \$3,271.60$$

11. How many tons of potash must Sheila buy?

$$((120 * 100) + (80 * 80)) / 2000 = 9.20 \text{ tons}$$

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12. Sheila figures that the fifth spraying (air) on her cotton increases the per acre yield by 10 pounds. What are the marginal revenue and marginal costs of the fifth spraying?

$$MR = 10 * 0.90 = \$9.00/\text{acre} \text{ or } 80 * 9.00 = \$720.00$$

$$MC = \$6.00/\text{acre} \text{ or } 80 * 6.00 = \$480.00$$

13. How many hours of hired labor does Sheila currently use?

$$(120 * 1.5) + (80 * 2.5) = 380 \text{ hours}$$

14. If only 350 hours of hired labor were available, how would Sheila have to adjust her acreage of soybeans and cotton?

Every acre of cotton converted to beans saves one hour of labor. So she converts 30 acres of cotton to soybeans

Result: 50 acres of cotton and 150 acres of soybeans

15. Sam produces cantalopes for the fresh market. Based on Sam's costs and production, Mr. Hewitt put together the budget included in your packet of exhibits. This budget is based on an assumed yield of how many cartons per acre?

210 cartons/acre  
(see marketing costs)

16. Sam expects his cantalopes to yield 200 cartons per acre this year. Sam would not harvest his cantalopes (i.e. he would let it rot in the field) if the price per carton fell below what level?

$$1555.71 / 200 = \$7.78$$

17. Sam expects his cantalopes to yield 200 cartons per acre this year. He sells his cantalopes for \$14.00 per carton. By how much would his yield need to increase to justify a second irrigation application?

$$275.00 / 14 = 19.64 \text{ cartons/acre}$$

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*Questions 18-23 deal with financial analysis. Each problem can be solved using the financial tables presented in Exhibits 7 and 8.*

18. What is the present value of \$5,000 to be received 7 years from now at an 8% discount rate?

$$5000 * 0.583490 = \$2,917.45$$

19. What is the present value of an income stream that will provide you with \$600 per year for each of the next 10 years using a 12% discount rate?

$$600 * 5.650223 = \$3,390.13$$

20. Bank A offers certificates of deposit that pay 8% compounded annually. Bank X offers certificates of deposit that pay 12% compounded annually. If you deposit \$1,000.00 in Bank X, how much more will you have at the end of 20 years than you would have had if you had deposited the same amount in Bank A?

$$(1000 * 9.646293) - (1000 * 4.660957) = \$4,985.34$$

21. Congratulations, you have just won the Florida lottery with a jackpot of \$10 million. After the cheering has stopped you learn that what you have really one is one twentieth of \$10 million to be paid over the next twenty years, or \$500,000.00 per year. What is the present value of your winnings at an 8% discount rate?

$$500000 * 9.818147 = \$4,909,073.50$$

22. It's never too early to think about retirement. How much would you have to save in each of the next 40 years in an account that pays 12% in order to have \$1 million at the end of the forty years?

$$1000000 * 0.001304 = \$1,304.00$$

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23. In order to buy some addition land, Sue takes out a thirty year mortgage for \$400,000.00 at 12%. What are her equal annual payments on this mortgage?

$$400000 * 0.124144 = \$49,657.60$$

*Questions 24-28 are based on the net worth statement for the Hamilton farm shown in Exhibit 9.*

24. What was the change in the Hamilton's net worth from 12/31/03 to 12/31/04?

$$(804500 - 340900) - (1393800 - 813200) = -\$117,000$$

25. The Hamilton's made two significant changes in their operation during 2004. What are they?

{This question was not graded because the original had 2003 rather than 2004}

1. Got out of beef cattle business
2. Sold some land

26. What was the Hamilton's current ratio on 12/31/04?

$$126500 / 39900 = 3.17$$

27. How much working capital did the Hamilton's have on 12/31/04?

$$126500 - 39900 = \$86,600$$

28. What is the Hamilton's debt/equity (or leverage) ratio on 12/31/04?

$$340900 / 463600 = 0.74$$

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*Questions 29-33 concern federal taxes. For all questions the IRS publication Farmers Tax Guide is the definitive source of information. A copy of the relevant portions of the Tax Guide are in Exhibit 10.*

29. From the point of view of taxes, why do investors prefer long-term capital gains to short-term capital gains?

Short-term gains are taxed as ordinary income at rates of 30% or more  
Long-term gains are taxed at a rate of 15% or less.

28. Farmer Dusty bought a new tractor for \$70,000 in June, 2001. Using the normal MACRS/GDS, how much depreciation can Dusty claim on his 2004 taxes?

7-year, half year convention, fourth year

$$70000 * 0.1225 = \$8,575.00$$

29. Sarah spent \$80,000 installing a small wine vineyard in 1999. How much depreciation can she claim on her 2004 taxes?

Must use 10-year straight line

$$80000 * 0.10 = \$8,000.00$$

30. Rhonda is a traveling sales representative for a chemical company. In 2002 she bought a new Mercedes sedan. She figures that 80% of the mileage is used for business and 20% for personal use. What is the maximum amount of depreciation she can claim on her 2004 taxes?

Maximum depreciation in year 3 is \$2,950. She may claim 80% of that

$$2950 * 0.80 = \$2,360.00$$

31. In 2001 John bought some logging and sawmill equipment that he uses on some land in Brazil. He paid \$80,000 for all of the equipment. How much depreciation can he claim on his 2004 taxes?

Must use ADS/SL

$$80000 / 6 = \$13,333.33$$

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32. In 1992 Mary's father bought some IBM stock for \$100 per share. When her father died in 1997, Mary inherited that stock that was valued at \$140 per share. During 2004 Mary sold the stock for \$180 per share. What is Mary's capital gain per share?

Mary's basis is \$140

Capital gain per share is  $180 - 140 = \$40.00$

33. In 1992 Maria's husband bought some JCP stock for \$70 per share. When he died in 1996 the stock, then worth \$50 was transferred to Maria. In 2004, Maria sold the stock for \$80 per share. What is Maria's capital gain per share?

On spousal transfer there is no change in basis

Capital gains per share is  $80 - 70 = \$10.00$

**END OF PART II**

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