Part I: Multiple Choice. Circle the best answer (3 points each).

1. Reasons why you would replace machinery would include:
   a. it is too small.
   b. it is worn out and not dependable.
   c. it is obsolete.
   d. costs such as repairs for the present machine are increasing.
   e. all the above are reasons.

2. Methods for acquiring machinery would include:
   a. purchase or buy
   b. lease
   c. joint ownership
   d. custom hire
   e. all of the above are methods

3. Budgets are a common tool used in analyzing farm alternatives or decisions. Examples of budgets could include:
   a. a partial budget.
   b. a whole farm budget.
   c. a crop budget such as soybeans.
   d. a livestock budget such as cattle feeding.
   e. All of the above are types of budgets.

4. A competitive enterprise is:
   a. where if you increase the production of one enterprise, you can also increase the production of another enterprise.
   b. where if you increase the production of one enterprise, you will need to reduce the production of another enterprise.
   c. where if you increase the production of one enterprise, you will not impact the production of another enterprise.
   d. None of the above represents a competitive enterprise.

5. In a whole farm budget:
   a. you only evaluate the costs and return for the items that are changing.
   b. you evaluate all costs and all revenues for the entire operation.
   c. you only evaluate the fixed costs for the operation.
   d. you only compare the return for the items that are changing.
   e. you evaluate the revenue for the entire operation.
The following seven questions are based on the attached soybean budget.

6. Attached is an example budget for soybean production. What is the phosphate cost per acre for soybean production?
   a. $9.00
   b. $8.40
   c. $.25
   d. $.15
   e. None of the above.

7. Given the attached soybean budget, if you had smaller machinery and you used 3 hours rather than 2.45 hours of labor per acre, what would your labor cost on the budget be?
   a. $28.50
   b. $38.00
   c. Would not change because it is family labor.
   d. $24.00
   e. None of the above

8. Given the attached soybean budget, if the price of soybeans is $7.00 per bushel, what is the level of income over variable costs (gross margin) for an acre of soybeans? (Assume all costs are as provided in the budget.)
   a. $280.00
   b. $178.95
   c. $13.82
   d. $114.88
   e. None of the above.

9. Given the attached soybean budget, what is the fixed cost of producing a bushel of soybeans?
   (Assume all costs are as provided in the budget.)
   a. $4.13
   b. $2.53
   c. $6.65
   d. $320.96
   e. None of the above.

10. For the attached soybean budget, how high would the price of soybeans need to be in the short run before you would decide to grow soybeans? (Assume you have no other use for the land. Your either produce soybeans or let it idle.)
    a. $5.69 or more per bushel
    b. $6.65 or more per bushel
    c. $4.13 or more per bushel
    d. $2.53 or more per bushel
11. What is the break-even price for soybeans?
   a. $4.13 per bushel
   b. $2.53 per bushel
   c. $7.65 per bushel
   d. $6.65 per bushel
   e. None of the above.

12. If the interest on preharvest variable costs is 7% and for 7 months, what is the interest cost?
   a. $6.39
   b. $3.73
   c. $5.81
   d. $3.54
   e. None of the above

The following seven questions are based on the attached “Finishing Steer Calves” budget.

13. Given the attached “Swine Production” budget, what is the income (gross revenue) per litter for market hogs if the market hog price is $43.00 per hundred pounds and the cull sow price is $30.00 per hundred pounds. Pig productivity is as reflected in the budget.
   a. $958.50
   b. $838.50
   c. $884.10
   d. $990.42
   e. None of the above.

14. For the “Swine Production” budget, the interest on variable costs of $16.71 was:
   a. money that was borrowed.
   b. money that was tied up for the year.
   c. money that was not borrowed.
   d. none of the above

15. How much corn is fed per litter?
   a. 1500 pounds
   b. 105 bushels
   c. 5,695 bushels per year
   d. 98 bushels
   e. None of the above.

16. For the “Swine Production” budget, if the number of pigs weaned per litter was 10.0 pigs how many pigs are marketed per litter if the other production is as provided in the budget?
   a. 10.0
   b. 9.0
   c. 7.8
   d. 8.8
   e. None of the above.
17. The interest cost of $16.71 per litter as reflected on the "Swine Production" budget is an example of:
   a. using opportunity cost to place a value on resources
   b. non-farm costs
   c. family living costs
   d. fixed costs
   e. None of the above.

18. What is the supplement and mineral cost per pound for the 'swine production' budget?
   a. $1.12
   b. $1.17
   c. $1.16
   d. None of the above.
   e. Can't determine with information provided.

19. What is the breakeven selling price for all costs given the budget information provided? (The information is as provided in the budget.)
   a. $36.31 per cwt.
   b. $44.43 per cwt.
   c. $46.62 per cwt.
   d. $38.50 per cwt.
   e. None of the above.

The next two questions are based on the following information.

You have 100 acres of land and you can produce corn and wheat. If you produce all corn, you produce 10,000 bushels and if you produce all wheat, you produce 6,000 bushels. Other combinations are shown in the table below.

<table>
<thead>
<tr>
<th>Combination Number</th>
<th>Corn Bushels</th>
<th>Wheat Bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>6,000</td>
</tr>
<tr>
<td>2</td>
<td>2,000</td>
<td>5,300</td>
</tr>
<tr>
<td>3</td>
<td>4,000</td>
<td>4,300</td>
</tr>
<tr>
<td>4</td>
<td>6,000</td>
<td>3,200</td>
</tr>
<tr>
<td>5</td>
<td>8,000</td>
<td>1,900</td>
</tr>
<tr>
<td>6</td>
<td>10,000</td>
<td>0</td>
</tr>
</tbody>
</table>

20. If the price of corn is $2.25 per bushel and the price of wheat is $3.75, what combination would you select to maximize your profits?
   a. Number 1
   b. Number 2
   c. Number 3
   d. Number 4
   e. Number 5
   f. Number 6
21. If the price of wheat is $3.50, how high would the price of corn need to be before you would produce all corn? (Combination 6)
   a. At least $3.33 per bushel
   b. At least $2.57 per bushel
   c. At least $1.23 per bushel
   d. At least $3.97 per bushel
   e. Can't determine with information provided.

The following information is used for the next two questions and provides returns in $1,000 increments for three alternative uses of capital.

<table>
<thead>
<tr>
<th>Capital Invested</th>
<th>Fed Cattle</th>
<th>Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 First $1000</td>
<td>$2,800</td>
<td>$3,100</td>
<td>$2,700</td>
</tr>
<tr>
<td>2 Second $1000</td>
<td>$2,000</td>
<td>$3,500</td>
<td>$4,000</td>
</tr>
<tr>
<td>3 Third $1000</td>
<td>$1,500</td>
<td>$2,500</td>
<td>$2,500</td>
</tr>
<tr>
<td>4 Fourth $1000</td>
<td>$700</td>
<td>$950</td>
<td>$900</td>
</tr>
<tr>
<td>5 Fifth $1000</td>
<td>$500</td>
<td>$900</td>
<td>$800</td>
</tr>
</tbody>
</table>

22. If you have only $3,000 to invest where will you put your money?
   a. $1,000 in cattle, $1,000 in corn, and $1,000 in soybeans.
   b. $2,000 in corn and $1,000 in soybeans.
   c. $2,000 in soybeans and $1,000 in corn.
   d. $3,000 in soybeans.
   e. None of the above is the best combination.

23. How much would you invest if you have unlimited capital or you can invest as much as you want?
   a. $5,000 in all three areas as total returns exceed total costs.
   b. $3,000 in each enterprise.
   c. $1,000 in fed cattle; $2,000 in corn; and $2,000 in soybeans.
   d. $3,000 in soybeans and none in the other areas as that provides the highest total return.
   e. None of the above.
The next seven questions are based on the following information.

You are looking into purchasing a tractor for your farm business. You have pulled together the following information for a tractor purchase and want to calculate costs.

- Purchase price = $100,000
- Salvage value = $30,000
- Years of useful life = 7 years
- Fuel cost = $1.60/gallon
- Fuel use (gallon/acre) = 10.0
- Taxes = 1% of new cost
- Labor cost = $12.00/hour
- Repairs = .5% /100 hrs of use (based on new cost)
- Number of acres = 600 acres
- Hours of use per acre = 1.5 hrs
- Interest rate = 7%
- Insurance and housing = 3% of new cost

24. In a budget for tractor ownership, what is the annual interest cost?
   a. $7,000
   b. $4,900
   c. $5,000
   d. $2,450
   c. None of the above.

25. In a budget for tractor ownership, what is the annual depreciation? (Use straight line as you did in Lab 6)
   a. $18,571.43
   b. $7,000.00
   c. $14,285.71
   d. $12,975.22
   c. None of the above.

26. In a budget for tractor ownership, what is the annual level of taxes?
   a. $1,000
   b. $1,100
   c. $950
   d. $1,500
   e. None of the above.

27. What is the level of fuel cost per hour? (As indicated, you will use the combine on 600 acres.)
   a. $11.25
   b. $16.00
   c. $10.67
   d. $6.50
   e. None of the above.
28. In a budget for tractor operating cost, what is the annual repair cost per acre?
   a. $6.67
   b. $7.50
   c. $13.75
   d. $9.50
   e. None of the above.

29. In a budget for tractor operating cost, what is the annual labor cost?
   a. $7,200
   b. $9,000
   c. $10,800
   d. $15,000
   e. None of the above.

30. If you use the combine for 800 acres rather than the 600 acres, what happens to your annual fixed cost?
   a. Remains unchanged.
   b. Decreases.
   c. Increases.
   d. None of the above.

The following information is used for the next two questions.

You have the option of purchasing a self-propelled combine or having your neighbors, Joyce and her daughter Heather, custom harvest your crop. They will custom harvest the crop for $30.00 per acre. The purchase cost of the combine is $180,000. Given this, you calculate the annual fixed ownership cost to be $23,000 per year. Your operating cost per acre is $10.00 per acre while your fixed cost per acre is calculated to be $40.00 per acre.

31. Given this, how many acres are needed before you can justify ownership? (Don't consider any factors such as potential yield differences, etc.)
   a. At least 2,300 acres
   b. At least 766.67 acres
   c. At least 1,150 acres
   d. At least 2,300 acres
   e. None of the above.
32. With further calculation, you conclude that if you have Joyce and Heather custom combine your soybean crop they will have a combine with more current harvesting technology. However, you are paying them $30.00 per acre so they travel at a rapid speed for harvesting so they can get over as many areas as possible. The net effect is you get one bushel more of soybeans per acre. You project that the soybean price will be $7.50 per bushel. Given this, what is the break even number of acres? (However, with this calculation, assume that the annual fixed ownership cost is $20,000 per year; the custom rate per acre is $25.00, the operating cost is $15.00 per acre, and the fixed cost per acre is $40.00.)
   a. At least 2,000 acres
   b. At least 8,000 acres
   c. At least 942.76 acres
   d. At least 1,142.86 acres
   e. None of the above.

33. You are producing corn and soybeans. Given the following information, what corn price is needed to return the same gross margin per acre as soybeans?
   - Corn yield = 170 bushels
   - Soybean yield = 50 bushels
   - Soybean price = $6.75 per bushel
   - Soybean variable cost = $108 per acre
   - Corn variable cost = $200 per acre

   a. $2.00
   b. $2.54
   c. $1.36
   d. $3.81
   e. $2.26

Part II. Bonus (3 points)

What is the name of the person that sits next to you (closest to you) in this class (on most days)?
Supporting Information

Exam II

Econ 330
Fall 2004
### Soybeans following Corn

<table>
<thead>
<tr>
<th></th>
<th>Fixed</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preharvest Machinery</strong></td>
<td>$15.99</td>
<td>$8.30</td>
</tr>
<tr>
<td>Seed, Chemical, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seed @ $19.00 per 50 lb.</td>
<td>1.2</td>
<td>$22.80</td>
</tr>
<tr>
<td>Phosphate @ $0.28 per lb.</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Potash @ $0.15 per lb.</td>
<td>60</td>
<td>9.00</td>
</tr>
<tr>
<td>Lime (yearly cost)</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Herbicide</td>
<td>26.00</td>
<td></td>
</tr>
<tr>
<td>Crop Insurance</td>
<td>4.85</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Interest on preharvest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>variable costs</td>
<td>3.65</td>
<td></td>
</tr>
<tr>
<td>(8 months @ 6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>$86.70</td>
</tr>
<tr>
<td><strong>Harvest Machinery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combine</td>
<td>$9.64</td>
<td>$5.32</td>
</tr>
<tr>
<td>Haul</td>
<td>0.77</td>
<td>0.53</td>
</tr>
<tr>
<td>Handle</td>
<td>0.45</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$10.86</td>
<td>$6.05</td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.45 hours @ $9.50</td>
<td>$23.28</td>
<td></td>
</tr>
<tr>
<td><strong>Land</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash rent equivalent</td>
<td>$115.00</td>
<td></td>
</tr>
<tr>
<td><strong>Total fixed, variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per acre</td>
<td>$165.12</td>
<td>$101.05</td>
</tr>
<tr>
<td>Per bushel</td>
<td>$10.86</td>
<td></td>
</tr>
</tbody>
</table>

**Total cost per acre**

**Total cost per bushel**

---

"Chisel plow, tandem disk, field cultivate, plant, cultivate, and spray. See the Estimated Machinery Costs table."
### Swine Production -- One Litter

<table>
<thead>
<tr>
<th>INCOME a/</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Hogs (250 lb x $___/lb x 7.80 hd)</td>
<td>$___</td>
</tr>
<tr>
<td>Cull Sows (400 lb x $___/lb x 0.38 hd)</td>
<td>$___</td>
</tr>
</tbody>
</table>

**GROSS INCOME**

$___

**VARIABLE COSTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn @ $2.40 per bushel</td>
<td>105 bu</td>
<td>$232.80</td>
</tr>
<tr>
<td>Supplement &amp; minerals @ per lb</td>
<td>1,500 lbs</td>
<td>240.00</td>
</tr>
<tr>
<td>Feed Additives</td>
<td></td>
<td>25.00</td>
</tr>
<tr>
<td>Total Feed Costs</td>
<td></td>
<td>$517.00</td>
</tr>
<tr>
<td>Veterinary and health</td>
<td></td>
<td>$25.00</td>
</tr>
<tr>
<td>Fuel, repairs, utilities</td>
<td></td>
<td>45.00</td>
</tr>
<tr>
<td>Bedding, marketing, miscellaneous</td>
<td></td>
<td>30.00</td>
</tr>
<tr>
<td>Interest on variable costs @ 6.5%</td>
<td>5 months</td>
<td>16.71</td>
</tr>
<tr>
<td>Labor @ $9.00 per hour</td>
<td>13 hours</td>
<td>117.00</td>
</tr>
<tr>
<td><strong>TOTAL VARIABLE COSTS</strong></td>
<td></td>
<td>$750.71</td>
</tr>
</tbody>
</table>

**INCOME OVER VARIABLE COSTS**

$___ $___

**FIXED COSTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery, facilities</td>
<td></td>
<td>$137.89</td>
</tr>
<tr>
<td>Boar depreciation/replacement</td>
<td></td>
<td>10.00</td>
</tr>
<tr>
<td>Interest, insurance on breeding herd @ 10% annually</td>
<td></td>
<td>10.55</td>
</tr>
<tr>
<td><strong>TOTAL FIXED COSTS</strong></td>
<td></td>
<td>$158.44</td>
</tr>
</tbody>
</table>

**TOTAL ALL COSTS**

$909.15 $389.84

**INCOME OVER ALL COSTS**

$___ $___

- Break-even selling price for variable costs b/ per cwt
- Break-even selling price for all costs b/ per cwt

**Notes:**

a/ Weaning average of 8.80 pigs per litter assumed minus 0.60 head death loss (0.20 for feeder pig production) and 0.40 head for replacement gilts. Sow death loss is 5%.

b/ Cull sow income of $42.67 per litter is assumed (sows sold after 3 litters).