Land, Labor, Capital and Machinery

A. Circle the best answer. Put a square around your second choice, if you want. (4 pts. each)

1. The arrangement by which the use of a machine is obtained by paying a set rate for each hour or day it is used is called:
   a. custom hire
   b. ownership
   c. leasing
   d. rental

2. “Timeliness cost” refers to:
   a. the reduction of an employee’s wages for showing up late to work
   b. the value of crop yield lost due to late planting or harvesting
   c. the gradual decrease in value of a machine due to obsolescence and wear
   d. the changes levied by a bank for making loan payments late

3. When a farmer obtains a marketing loan from the Farm Service Agency (FSA) on grain:
   a. the funds come from a private lender and FSA guarantees payment of 90% of the loan if the farmer defaults
   b. the farmer has to repay less than the original loan if the market price of the grain is below the USDA loan rate
   c. the farmer must be too risky to get credit from a private lender
   d. the funds come from selling bonds that pay tax-free interest

4. Under which type of agreement does the landowner pay all the seed, fertilizer and herbicide costs?
   a. crop-share lease
   b. fixed cash lease
   c. flexible cash lease
   d. custom farming agreement

5. When farm land is purchased with an installment contract:
   a. a larger down payment is often required than with a loan from a lender
   b. FSA will guarantee 90% of the debt if the buyer is in a risky financial position
   c. a higher selling price and lower interest rate provides a tax advantage to the seller
   d. the buyer and seller split seed, fertilizer and pesticide costs

6. Based on a recent Iowa survey about compensation of full-time farm employees, which type of farm paid the lowest average total compensation per year?
   a. dairy
   b. beef
   c. swine
   d. crops
7. Which type of employee bonus plan would a farm operator who wanted to avoid hiring new employees frequently be likely to use?
   a. based on pigs weaned per litter
   b. based on a fixed payment for each year worked on the farm
   c. based on a percent of net farm income each year
   d. based on the average price of hogs per year

8. The labor environment in U.S. agriculture is different than in most other industries because:
   a. most labor laws such as immigration laws, OSHA and minimum wage do not apply to farm workers
   b. less than half the farm labor force is made up of paid workers
   c. there are typically multiple layers of management on farms
   d. most workers are hired through employment agencies

9. Refinancing $60,000 of carryover operating debt as a 15-year repayment loan secured by farmland would most likely improve a farm’s:
   a. liquidity
   b. profitability
   c. leverage
   d. solvency

10. The Iowa Agricultural Development Authority makes loans:
    a. to farmers who are too risky to obtain a loan from a private lender
    b. to help beginning farmers purchase seed, fertilizer and pesticides
    c. to help beginning farmers purchase land, machinery and breeding livestock
    d. on harvested grain, which guarantees a minimum price

11. One advantage of leasing farm machinery for three years instead of purchasing it with a three-year loan is:
    a. the lease payments will usually be smaller than the loan payments
    b. there is more flexibility in how large of a tax deduction to take in the first year
    c. the farmer does not have to pay for any repairs
    d. the farmer can build up equity faster

B. Answer as directed.

12. List two advantages to owning farm machinery jointly with another farmer instead of owning it individually: (4 pts.)

   a. ..............................................................................................................................

   b. ..............................................................................................................................
13. Give three reasons why a farmer might justify purchasing a tract of farmland instead of renting for cash, even though the principal and interest payment on the loan plus property taxes are somewhat higher than the cash rent. (6 pts.)

a) ______________________________________________________________________

b) ______________________________________________________________________

c) ______________________________________________________________________

14. Assume that the cost and return estimates below represent realistic expectations for a tract of land. Fill in the blanks. (2 pts.)

<table>
<thead>
<tr>
<th>Income</th>
<th>Corn-Acre</th>
<th>Soybeans-Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>170 bu.</td>
<td>56 bu.</td>
</tr>
<tr>
<td>Price</td>
<td>$3.10</td>
<td>$7.50</td>
</tr>
<tr>
<td>Gross income</td>
<td>$_________</td>
<td>$_________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th>Corn-Acre</th>
<th>Soybeans-Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed, fertilizer, pesticides, etc.</td>
<td>$220</td>
<td>$120</td>
</tr>
<tr>
<td>Variable machinery</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Fixed machinery</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Labor (fixed)</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>Property taxes</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Return to land</td>
<td>$361</td>
<td>$242</td>
</tr>
</tbody>
</table>

Assuming a 50% corn, 50% soybean rotation, what would the average net return to land ownership be? (3 pts.)

$_________/acre

15. Assuming the observed capitalization rate is currently 5%, what is the estimated value of this land using the income approach? (3 pts.)

$_________/acre

16. What would a maximum cash rent offer be for this same land, using the tenant’s residual approach? (3 pts.)

$_________/acre
17. Illustrate two other approaches to estimating a fair cash rent value for this same land. Assume whatever numerical values you need to and show an example. (6 pts.)

   a. $_____/acre

   b. $_____/acre

18. Rank the following types of farm lease agreements 1 through 4 in order of most financial risk for the tenant/operator to least financial risk for the tenant/operator. (4 pts.)

   _______ fixed cash lease
   _______ flexible cash lease
   _______ 50-50 crop share lease
   _______ custom farming agreement

19. The total capital of a farm business is composed of ______________________ capital and ______________________ capital. (fill in the blanks) (4 pts.)

20. If a farm business with a debt-to-asset ratio of .40 had a return on equity (ROE) of 4% and paid an average interest rate on its liabilities of 9%, what was its overall % return on assets (ROA)? (4 pts.)

   ___________%

21. If this same farm had an average return on assets (ROA) of 5%, what is the maximum debt-to-asset ratio it could support? (4 pts.)

   ______________

22. Famous Feedyards borrowed $150,000 at a 6.75% fixed annual interest rate and repaid it 275 days later. How much interest did they have to pay? Show your work. (4 pts.)

   $____________

23. They also borrowed $100,000 to make environmental improvements, on a 10-year amortized loan with even total annual payments, at 6.5 % interest rate. The amortization factor for a 10-year, 6.5 % loan is 0.1391. How much is their first year’s payment, how much is interest, and how much is principal? The payment is due one year after the loan is made. (4 pts)

   Total payment $____________ Interest $____________ Principal $____________
12. a. spread fixed costs over more acres 
b. two operators are available

13. a. allows net worth to be built up by paying principal 
b. land may appreciate in value 
c. operator has more security than under a lease

14. Gross income: Corn-Acre $527
    Soybeans-Acre $420

Return to land: Corn-Acre $166
    Soybeans-Acre $178

\[
\frac{166 + 178}{2} = \frac{\$172}{\text{acre}}
\]

15. \[
\frac{172}{.05} = \$3,440/\text{acre}
\]

16. \[
\frac{(527 - 341) + (420 - 158)}{2} = \frac{186 + 198}{2} = \frac{\$192}{\text{acre}}
\]

17. a. return on investment 
   land value = $4,000 
   expected rate of return = 5% 
   rent = $4,000 x 5% = $200

   \[
   \frac{500}{2} - \frac{160}{2} = \frac{\$170}{\text{acre}}
   \]

   b. crop share equivalent 
   gross income = $500 
   shared input cost = 160

   \[
   \frac{500}{2} - \frac{160}{2} = \frac{\$170}{\text{acre}}
   \]
18. 1 = fixed cash lease  
    2 = flexible cash lease  
    3 = 50-50 crop share lease  
    4 = custom farming agreement  

19. equity, debt  

20. \( (4\% \times 0.60) + (9\% \times 0.40) = 2.4 + 3.6 = 6\% \)  

21. \[
    \text{Max } \frac{D}{A} = \frac{\text{ROA}}{\text{avg. int. rate}} = \frac{5\%}{9\%} = 55\%
    \]

22. $150,000 + 0.0675 \times \frac{275}{365} = $7,628.42  

23. payment = $100,000 \times 0.1391  
    interest = $100,000 \times 0.065  
    principal = $13,910 – 6,500  

    Total payment \$13,910 \hspace{1cm} \text{Interest } \$6,500 \hspace{1cm} \text{Principal } \$7,410