4 pts 1. List two factors which would contribute to an increased risk of herbicide carryover injury to next year’s crop where a soil-applied herbicide has been used for weed control in the current year.

6 pts 2. A seed corn production field is scheduled to produce the single cross hybrid A X B (A is the seed parent while B is the pollen parent). Previous experience with these inbreds indicates that inbred B reaches pollen shed about 45 Growing Degree Days (GDD) quicker than inbred A reaches silking. Please note two ways that a seed corn production manager might deal with this difference in inbred developmental rates in order to best accomplish the intended cross in this field?

   a)  
   b)  

5 pts 3. Why is seed corn generally harvested at high moisture (compared with commercial corn) and on the ear (as compared with commercial corn which is generally shelled by a combine at harvest)?
4. A corn hybrid is listed as 120 days relative maturity from planting to physiological maturity. How would this hybrid be listed in terms of GDD relative maturity? (please show your work for partial credit)

GDD relative maturity from planting to physiological maturity

5. Briefly describe five factors which may contribute to increased harvested yield and/or profit potential for corn planted early (e.g. April 25 vs. May 15) in central Indiana. Please explain each answer briefly.

a) 

b) 

c) 

d) 

e) 

6. Note an example of conditions where a pre-sidedress nitrate soil test (PSNT) might be a meaningful tool to use in determining sidedressed N rate for corn.

7. Explain the reasoning behind the each of the following conditions which are recommended as prerequisites when considering a possible Fall application of nitrogen fertilizer.

a) Use ammonia (e.g. anhydrous ammonia or DAP) fertilizer form only.

b) Soil temperature at or below 50 degrees F.

c) Fall apply N only at northern latitudes.

d) Fall apply N only on soils with C.E.C. greater than 10.
e) Fall apply only on well drained soils

10 pts. 8. I. Note two advantages for side dressing N for corn during the first 30 days of growth as opposed to the application of N in the preceding Fall or pre-plant in the Spring.

a) b) 

The following information pertains to questions 9, 10, and 11

Corn Yield Goal: 190 bu/acre
Previous Crop: 55 bu/acre soybeans
P₁ Soil Test: 25 ppm available P/acre
K Soil Test: 130 ppm exchangeable K/acre
C.E.C. = 17 meq / 100 grams of soil

18 pounds of N are to be applied per acre as DAP in the Fall. During the first 30 days of the season the remainder of N fertilizer will be sidedressed, using anhydrous ammonia at 82% N content.

Please make the appropriate fertilizer recommendations for next year's corn crop (include your calculations).

7 pts. 9. a) Total pounds of N to be applied as fertilizer per acre (include both DAP and sidedress N).

2 pts. b) Pounds of NH₃ at 82% N content to be side-dressed per acre:

7 pts. 10. Annual maintenance P₂O₅ (pounds P₂O₅ per acre):

2 pts. Total annual pounds 0-46-0 per acre to apply maintenance rate of P₂O₅:

7 pts. 11. Annual maintenance K₂O (pounds per acre):

2 pts. Total annual pounds 0-0-60 per acre to apply maintenance rate of K₂O.
4 pts. 12. Note two conditions where the application of \( P_2O_5 \) or \( K_2O \) as a side-banded "starter" may be expected to produce a yield increase greater than a broadcast application at the same \( P_2O_5 \) or \( K_2O \) fertilizer rate.

a) 

b) 

5 pts. 13. Describe in general how and why recommended planting depth changes for corn planted on April 20 versus May 20 in central Indiana.

12 pts. 14. A portion of a row is uncovered to check planter calibration in the field. The following distances are recorded between successive seeds in this row segment. Row width is 30 inches. Please show your work.

3 inches
2 inches
17 inches
7 inches
1 inches

a) The actual seeding rate for this row segment is 

\[ \text{seeds/acre} \]

b) What level of standard deviation (from uniform spacing) is presented in this row segment?

c) What average yield loss due to poor precision is likely at this level of planting precision?

\[ \text{bushels per acre} \]

d) Note a possible way to improve seed spacing precision in cases where it is deemed to be unacceptably high.
Please answer your choice of only one of the following Bonus Questions

Bonus Option I.
You have harvested an on farm corn hybrid test strip which is **1240 feet long** and 8 rows wide. Row width is 30 inches so the **overall width of the test area is 20 feet**. **Total grain weight is measured at 6657.6 pounds at 19% moisture.** What is the grain yield for this test strip (please show your work and report your answer as bushels per acre adjusted to 15.5% moisture)?

Bonus Option II.
Question 14 involved the determination of seeding rate and seed spacing precision and asked for a prediction of the likely average yield penalty at that level of planting precision.

To solve this problem you used a constant to represent the relationship between standard deviation and yield penalty. This constant reflects the average response of many Indiana fields surveyed.

What conditions might cause this relationship between standard deviation and yield penalty for poor planting precision to increase or decrease.