2017 Kansas State FFA CDE Agronomy Event – Lab Practical

2017: KANSAS STATE CDE AGRONOMY EVENT
LABORATORY PRACTICAL

Contestant # _______ Name: KEY _______ Score: _______

PRINT OR WRITE LEGIBLY (4 points each)

1. a. coleoptile b. hypocotyl
2. yellow nutsedge
3. Da. trent
4. D
5. a. flowering b. shoot
6. C. wheat sask
7. D. alfalfa weed
8. C.... sidewall compaction
9. common ragweed
10. a. C b. B
11. B. bacterial wilt of soybean
12. A. rhizome
13. E. aphid
14. B. parussis acid poisoning
15. a. little bluestem b. rape
16. E
17. yellow foxtail
18. 4
19. a. CAUTION b. 3
20. a. 0.2 gpm b. 4G
21. soil team
22. B. simple, opposite
23. B. hairy yellowroot
24. a. V3 b. VI
25. B. TIRI Annia orcuttii (dormant)
26. E. European corn borer
27. C. Embolisma stalk r.
28. C. they are all invasive
29. a. B. raceme b. D. silique
30. C. cotton picker
31. C. pinnaate
32. F. all of the above
33. F. mesocotyl
34. a. R1, silking b. R5 or R6 c. full seed
35. rotary hoe
36. cocklebur (common cocklebur)
37. C. (soil C)
38. E. ker.
1. TWO PARTS  Use the seedlings shown to identify the parts marked by the pins.

   a. The structure marked by the WHITE pin on the corn: _______________.

   b. The structure marked by the YELLOW pin on soybean: _______________.

   Word bank for this question:

   radicle, cotyledon, hypocotyl, endosperm, coleoptile, mesocotyl, first true leaf

   List both answers in correct order.
2. This weed is ____________________
NUTRIENT DEFICIENCY

3. The interveinal chlorotic stripes on the upper leaves of this corn plant is typical of the following nutrient deficiency:
   A) Nitrogen
   B) Potassium
   C) Phosphorus
   D) Iron
   E) Sulfur
FERTILIZERS

4. Which is of the above fertilizers is the potassium (K) source?

ANSWER: A, B, C, or D
CROP GROWTH AND DEVELOPMENT

5. **TWO PARTS.** For wheat and sorghum, crop developmental stages are generally defined using descriptive terms. For the plants on display, give the closest descriptive developmental stage.

Word bank for this question: tillering, jointing, heading, first hollow stem, boot, growing point differentiation, flag leaf emergence, milk, flowering, soft dough, hard dough, physiological maturity

a. The descriptive stage for the wheat plants is: _____________________.

b. The descriptive stage for the sorghum plant is:_____________________.

**List both answers in correct order.**
6. This seed disease is:

A) blacktip of wheat  
B) blue eye mold  
C) wheat scab  
D) ergot of wheat  
E) loose smut of wheat  
F) wheat streak mosaic virus
CROP INSECT

Also see larval form and injury symptoms on the plants provided

7. This insect is:

A) stinkbug  D) alfalfa weevil
B) lady beetle  E) bean leaf beetle
C) blister beetle  F) chinch bug
CROP MANAGEMENT PROBLEM

8. This corn seedling was dug up and placed in the pot with the surrounding soil just as it appeared in the field. What is a production problem that is demonstrated by this display?

A. planted too shallow and will not likely develop a good crown root system
B. planted too deep and will not likely develop a good crown root system
C. planted in too wet soil causing side-wall compaction that roots may not penetrate
D. planted with a planter that did not have a good closing wheel to cover the seed
E. planted with a planter that did not have good down pressure to keep it in the soil
VEGETATIVE WEED ID

9. This weed is ______________
10. **TWO PARTS** ANSWER: A, B, C, or D for each.

   a. Which feed ingredient is made from cotton?
   
   b. Which feed ingredient is made from corn?

   **List both answers in correct order.**
CROP DISEASE

11. This soybean disease is:

   A) pod and stem rot of soybean
   B) bacterial blight of soybean
   C) bean pod mottle virus
   D) soybean rust
   E) Phytophthora root rot
   F) purple stain of soybean
PLANT STRUCTURE - SPECIALIZED STEMS

12. The type of specialized underground stem shown here that is used for asexual propagation of this weed is called a:

A) Rhizome  
B) Bulb  
C) Tuber  
D) Stolon  
E) Crown
13. Identify the insects on the sorghum plant on display. Use the hand lens and look on the stem and leaf sheaths of the tallest shoot. This insect is:

A) blister beetle  D) chinch bug
B) lacewing  E) aphid
C) stinkbug  F) painted lady
14. Assume this plant is from a grain sorghum field that has been harvested 1 month ago when it was dry. Because of favorable growing conditions lately, it has started to regrow from the crown and stem. The farmer would like to graze his cows on the stalks and regrowth. Which of the following would be a potential concern?

A) aflatoxin from the old cut stems  
B) prussic acid poisoning from the new regrowth leaves  
C) nitrate poisoning from the new regrowth leaves  
D) vomitoxin from the seed that may have been dropped on the ground  
E) none of the above are concerns related to sorghum
15. **TWO PARTS.** Shown are five plants commonly used as forages in Kansas. ANSWER with the name of the forage crop that fits these descriptions.

a. Which one is classified as a perennial, warm-season, native forage grass?

b. Which one is classified as a winter annual, cool-season, introduced, temporary forage crop?

**List both answers in correct order.**
16. Shown are three standard tags that may be found on pedigreed seed regulated by state crop improvement associations. The correct order of generation of production for these three seed classes is:

A. Certified → Registered → Foundation  
B. Foundation → Certified → Registered  
C. Registered → Certified → Foundation  
D. Certified → Foundation → Registered  
E. Foundation → Registered → Certified  
F. Registered → Foundation → Certified
17. This weed is ________________
18. Use the Asgrow seed bag provided. How many different chemicals are in the seed treatment?
19. **TWO PARTS**  Use the Lumax EZ containers to answer the following questions.

   a. What is the signal word for this herbicide?

   b. How many different sites of action are represented in the active ingredients.

List both answers in correct order.
20. **TWO PARTS.** Use the nozzle tips on display to answer the following two statements.

   a. At standard 40 PSI pressure, the nozzle delivery rate of these nozzle tips should be ___________________ gallons per minute (GPM)

   b. The angle of the spray pattern will be ________________ degrees.

   **List both answers in correct order.**
21. The correct soil textural class for a soil with 10% clay, 60% silt, and 30% sand is a ____________________________.
PLANT STRUCTURE – DICOT LEAVES

22. The proper description of the leaf type and leaf arrangement for this plant is:
A) Simple leaf, alternate arrangement
B) Simple leaf, opposite arrangement
C) Palmately compound leaf, alternate arrangement
D) Palmately compound leaf, opposite arrangement
E) Pinnately compound leaf, alternate arrangement
F) Pinnately compound leaf, opposite arrangement
CROP DISEASE

23. This disease is:

A) loose smut of wheat
B) barley yellow dwarf virus
C) wheat streak mosaic virus
D) wheat scab
E) stem rust of wheat
F) leaf rust of wheat
24. **TWO PARTS.** Give the correct *vegetative developmental stage* for the plants shown.

   a. The vegetative stage is of the corn plant is __________ (letter and number).

   b. The vegetative stage is of the soybean plant is __________ (letter and number).

   **List both answers in correct order.**
CHEMICAL WEED CONTROL

25. A herbicide was applied POST-EMERGENCE to this plant several weeks ago. Based on the symptoms, the most likely site of action and herbicide used was:

A) EPSP Synthase Inhibitor (glyphosate)
B) T1R1 Auxin Receptor/Growth Regulator (dicamba)
C) Photosystem II Inhibitor (atrazine)
D) HPPD Inhibitor (mesotrione)
E) PPO Inhibitor (acifluorfen)

You may refer to the herbicide group number classification chart on the glass door.
26. This insect is

A) corn earworm  
B) green cloverworm  
C) corn rootworm  
D) fall armyworm  
E) European corn borer  
F) black cutworm
CROP DISEASE

27. This disease is:

A) charcoal rot  
B) pod and stem rot  
C) Gibberella stalk rot  
D) stem rust  
E) corn smut  
F) blue eye mold
28. What is common about the four weeds on display here?

A) they are all perennials
B) they are all dicots
C) they are all noxious in Kansas
D) they are all resistant to essentially every common herbicide group
E) all of the above
29. **TWO PARTS.** Canola is a relatively new crop in Kansas. Shown here are plants in three stages – rosette, flowering and mature (with fruit). Answer the following questions about the botany of canola:

a. The inflorescence type shown on the flowering or mature plant is called a (an):
   A) spike
   B) raceme
   C) panicle
   D) umbel
   E) composite head

b. The dry fruit type shown on the mature plant or in the pan is called a (an):
   A) capsule
   B) achene
   C) berry
   D) silique
   E) caryopsis
30. This piece of equipment is a (an) _______________________________
31. The venation pattern on the leaves of this tobacco plant is:

A) palmate
B) parallel
C) pinnate
D) alternate
E) opposite
32. Shown here are three crop plants that have been increasing in popularity recently. What do they have in common?

A) They are all from the legume family
B) They all do symbiotic nitrogen fixation with the help of *Rhizobium* bacteria
C) They are all popular in cover crop seed mixes that are gaining popularity
D) They all have compound leaves
E) All of the above features are common to these three plants
PLANT STRUCTURE – CROP SEEDLINGS

33. Name the part marked by the pins on these corn seedlings. It is the structure that adjusts for different planting depths so that the crown develops at about the same point just below the soil surface no matter how deep the seed is planted.

A) cotyledon  
B) plumule  
C) coleoptile  
D) radicle  
E) hypocotyl  
F) mesocotyl
TWO PARTS. For both corn and soybean, reproductive developmental stages are identified by both a numerical stage (R1, R2…etc.) and a descriptive stage. Give the correct reproductive developmental stage for the plants shown using EITHER the appropriate numerical or descriptive stage.

b. The reproductive stage for the corn plant is: ______________________. (numerical OR descriptive)

b. The reproductive stage for the soybean plant is ______________________. (numerical OR descriptive)

List both answers in correct order.
35. This piece of equipment is a (an)________________________.
VEGETATIVE WEED ID

36. This weed is _____________________
37. Which of the soils on display has the highest silt content? (you may do texture by feel – water and towels provided)

Answer: Soil A, Soil B, or Soil C
38. The plant shown here is wild indigo, a native forb found in the tall grass prairie. We can tell it is from the legume family as it has the typical flower structure of legumes with three different shaped petals that we give specific names. What is the name of the petal marked by the pins? (2 points)

A. banner  
B. wing  
C. sepal  
D. bract  
E. keel
1. a. coleoptile  b. hypocotyl
2. yellow nutsedge
3. D. Iris
4. 
5. a. flowering  b. boot
6. C. wheat scab
7. D. alfalfa weevil
8. C. sidewall compaction
9. common ragweed
10. a. C  b. B
11. B. bacterial blight of soybean
12. A. rhizome
13. E. aphid
14. B. prussic acid poisoning
15. a. Little bluestem  b. rye
16. E. 
17. yellow foxtail
18. 
19. a. CAUTION  b. 3
20. a. 0.2 gpa  b. 110
21. silt loam
22. B. simple, opposite
23. B. barley yellow dwarf virus
24. a. V3  b. VI
25. B. TIR1 Auxin receptor (dicamba)
26. E. European corn borer
27. C. Gibberella stalk rot
28. C. they are all noxious
29. a. B. raceme  b. D. silique
30. C. cotton picker
31. C. pinnate
32. E. all of the above
33. F. mesocotyl
34. a. RL^m silking  b. R5 or R6
35. rotary hoe
36. cocklebur (common cocklebur)
37. C. (soil C)
38. E. keel (2 pt)