**Section 1: Sampling Questions**

1. True or False: Partitioned triers must be inserted into the containers diagonally or horizontally and should never be used when sampling vertically from the containers?
2. Explain sampling by hand? Name two situations where you would have to hand sample?
3. What is a primary sample?
4. What is a composite sample?
5. If you were to find non-uniformity in a primary sample what would you do?
6. For lots of more than six containers, sample \_\_\_\_\_\_\_\_ containers plus at least \_\_\_\_\_\_\_\_% of

the number of containers in the lot.

1. How many primary samples should be taken in the following situations?
	1. 5 containers
	2. 100 containers
	3. 300 containers
2. What is the maximum weight in grams needed for the noxious weed exam for coated, encrusted, or pelleted seed?

**Section 2: Preparation of working samples Questions**

1. Define the following
	1. Coated or encrusted seed-
	2. Film-coated seed-
	3. Inoculated seed-
	4. Pelleted seed-
	5. Raw seed-
	6. Treated seed-
2. Please list the step by step process one would use when using a Centrifugal divider (Gamet type) when working with a sample?
3. Please explain the Hand halving method?
4. Please fill in the blanks

|  |  |
| --- | --- |
| **WEIGHT OF WORKING SAMPLES (g)** | **NUMBER OF DECIMAL PLACES** |
|  | **4** |
|  | **3** |
|  | **2** |
|  | **1** |
|  | **0** |

1. The working weights listed in Table 2A are based on the approximate weight of \_\_\_\_\_\_\_\_\_\_\_ pure seed units for the purity analysis and \_\_\_\_\_\_\_\_\_\_\_ pure seed units for the noxious weed seed and bulk examinations.
2. Please describe what you would do if a single seed kind is not listed in table 2A?
3. Please round the following weights of a purity sample to the correct weighted average?
	1. 0.2367g
	2. 3.4256g
	3. 6.0278g
4. Please calculate the Purity and Noxious weed weights for the following mixture.

|  |  |
| --- | --- |
| KIND | PERCENTAGE IN SAMPLE |
| *Festuca arundinacea* | 34.54 |
| *Lolium perenne* | 23.99 |
| *Festuca rubra* | 18.08 |
| *Poa pratensis* | 12.90 |
| *Dactylis glomerata* | 6.05 |

1. Please explain how you would calculate the working weights in the following:
	1. Single Kind Coated seed:
	2. Please calculate the working weights for the following example, where the weight of 100 coated units weighs 3.2345g, and weight of 100 uncoated units weighs 1.6819g (assume entire sample is coated) (Please show work)

Pure Seed Variety/Kind Germination Origin

14.75% Esquire Perennial Ryegrass 85.00 OR

13.06% Diligent Perennial Ryegrass 85.00 OR

12.29% Maxima 1 Red Fescue 80.00 OR

6.15% Balin Kentucky Bluegrass 80.00 OR

3.09% Wrigley 2 Chewings Fescue 80.00 OR

**Section 3: The Purity Analysis Questions**

1. When calculating percent of component parts in a sample. What is the difference between samples composed of single kind or mixture of kinds with a minimum working sample less than 25g and 25g or more?
2. if any component is determined to be present in any amount calculated to be less than 0.015 percent, then that component shall be reported as \_\_\_\_\_\_\_\_\_\_\_\_\_\_ percent.
3. True or False: If the total percentages of the components does not add up to 100.00 percent, then add to or subtract from the smallest value?
4. Which of the following shall be included with the pure seed (select all that apply)?
	1. Immature or shriveled seed units, and seed units that are cracked or otherwise damaged.
	2. Insect-damaged seeds provided that the damage is entirely internal, or the opening in the seed coat is not sufficiently large to allow the remaining mass of tissue to be readily determined.
	3. Seeds that have started germinating
	4. Seed units with nematode galls, fungus bodies (e.g., ergot, smut, etc.), and spongy or corky caryopses that are entirely enclosed within the seed unit.
5. When are Wild Garlic and Wild Onion Bulbets considered Weed seed?
6. True or False: a Quackgrass caryopsis of 2mm is considered inert matter?
7. Name the five plant families that when the seed coat is removed entirely they are considered inert?
8. Please explain when the following three seeds are classified as inert matter?
	1. Dodder-
	2. Buckhorn Plantain-
	3. Ragweed-
9. Name the 8 seed kinds that we use the Uniform Blowing Procedure for?
10. Please use the Multiple Unit Calculations to figure out the final purity analysis:

**Purity Analysis Results:**

Components Weight (g)

Single Units (Crested Wheatgrass) = 1.725

Multiple Units (Crested Wheatgrass) = 1.471

Single Units (Smooth Brome) = 1.965

Multiple Units (Smooth Brome) = 0.136

Other Crop Seed = 0.500

Inert Matter = 0.250

Weed Seed = 0.006

Total =

**Section 5: Examinations**

1. The perennial ryegrass variety tested has a VFL description of 3.52%. The TFL result was found to be 8.78%. The pure ryegrass found in purity analysis was 98.96%. What are the percentages of annual and perennial ryegrass in the sample?
2. The annual ryegrass variety tested has a VFL description of 99.58%. The TFL was found to be 97.54%. The pure ryegrass found in purity analysis was 99.64%. What are the percentages of perennial and annual ryegrass in this sample?
3. Please discuss what you would do in the following scenarios:
	1. When testing a variety of perennial ryegrass, if the test fluorescence (TFL) is equal to or less than the described VFLP of the variety?
	2. When testing a variety of annual ryegrass, if the test fluorescence (TFL) is equal to or greater than the described VFLA of the variety?
4. Please calculate the number of seeds per pound for each number found in a sample whose noxious weed weight is 60.56g
	1. 10 Bedstraw
	2. 5 Buckhorn Plantain
	3. 10 Dodder
	4. 12 Timothy

**Section 11: Seed Moisture Determination**

1. Define the following:
	1. Primary Methods-
	2. Secondary Methods-
	3. The Air-Oven Method-
	4. Electronic Moisture Balance Method-

**Section 12: Mechanical Seed Count**

1. Please write the weights of the following seeds needed to complete a mechanical seed count?
	1. Soybean \_\_\_\_\_\_\_\_\_\_\_\_\_ grams
	2. Corn \_\_\_\_\_\_\_\_\_\_\_\_\_ grams
	3. Field Beans \_\_\_\_\_\_\_\_\_\_\_\_\_ grams
	4. Wheat \_\_\_\_\_\_\_\_\_\_\_\_\_ grams
	5. Rice \_\_\_\_\_\_\_\_\_\_\_\_\_ grams
2. True or False: The seed count should not vary more than + or – 5 seeds from 1,000?
3. Please explain in detail the steps needed to calibrate a seed counter?

**Section 14: Tolerances**

1. Use Table 14A to test whether the results of two analyses on sub-samples from the same submitted sample from a lot of unmixed chaffy seed are within tolerance at P=0.05
	1. Test Results: Pure Seed in Analysis 1: 85.45%; Analysis 2: 92.78%
2. Use Table 14B to test whether results of two analyses on sub-samples from different submitted samples from a lot of unmixed non-chaffy seed are within tolerance at P=0.05
	1. Test Results: Pure Seed in Analysis 1= 98.25%; Analysis 2 = 95.64%
3. Define the following:
	1. Achene-
	2. Aril-
	3. Calyx-
	4. Carpophore-
	5. Caruncle-
	6. Caryopsis-
	7. Drupe-
	8. Funiculus-
	9. Hypanthium-
	10. Indehiscent Fruit-
	11. Involucre-
	12. Lemma-
	13. Palea-
	14. Mericarp-
	15. Perianth-
	16. Pericarp-
	17. Samara-
	18. Utricle-

**UNIFORM BLOWING PROCEDURE**:

1. What is the advantage for using the Uniform Blowing Procedure?
2. What seeds calibration samples are only available to purchase through a loan from USDA?
3. How many minutes do you set the timer for?
4. True or False: The setting on the Anemometer when determining equivalent air velocity is meters per square feet?
5. Which seeds must be divided into four equal parts before blowing?
6. True or False: If the seed kind that is being blown is not changed, the EAV value is not required to be confirmed with an anemometer?
7. How many seeds of Blue grama do you check in the heavy fraction for empty florets using light pressure and magnification?
8. What is the purpose of preconditioning?
9. What factor do you multiply each of the following seed kinds by the optimum calibration point for Kentucky Bluegrass to achieve the EAV value?
	1. Rough Bluegrass-
	2. Blue grama-
	3. Side-Oats grama-
	4. Weeping alkaligrass-