

Name _____

FES 457/557 - Tree Pests and Disease
Example Questions for Exam 1

Short answer or fill-in:

Insert the best term or statement for answering the following questions. Note: up to 5 extra credit points can be earned if answers give more information than required.

1. (2 pt) Before you decide that *Cronartium ribicola* is on a tree, what do you want to see?

2. (4 pt) What age trees are most likely to be killed by *C. ribicola*, young (<10 yr old) or older (>10 yr old)? YOUNG OLDER (circle one). Explain why this is true.

3. (4 pt) What age trees are most likely to be killed in White Pine Decline, young (<10 yr old) or older (>10 yr old)? YOUNG OLDER (circle one). Explain why this is true.

4. (5 pt) *Pissodes strobi* is most likely to attack the terminal leader of a tree. Give two reasons why the insect evolved this behavior, in other words, how does this behavior help increase the species' survival?

a) _____

b) _____

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5. (7 pt) What do you consider to be the most valuable preemptive measure in a health management plan for white pine? Justify your answer with as least two reasons.

Recommendation: _____

Reason 1: _____

Reason 2: _____

6. (6 pt) What do you recommend looking for when monitoring white pine in a stand of trees (< 10 yr old) that are developing under full sunshine? Indicate two items and justify your choices.

a) _____

b) _____

7. (6 pt) What do you consider to be the most valuable reactive measures if *C. ribicola* is found in a young stand of white pine? Explain why the recommendation are effective.

Recommendation 1: _____

Recommendation 2 _____

8. (6 pt) What is it about the predisposing factors in beech bark disease that explains why the complex has developed an advance front, killing front, and aftermath zone?

Reason 1: _____

Reason 2: _____

4

9. (7 pt) What do you consider to be the most valuable reactive measure in the aftermath zone for beech bark disease? Explain why the recommendation is needed (1 reasons) and why it is effective (1 reason).

Recommendation: _____

Why needed: _____

Why effective: _____

10. (6 pt) Give three reasons why *Cryphonectria parasitica* is a super pathogen on American chestnut:

a) _____

b) _____

c) _____

11. (7 pt) Give two recommendations for planting and growing American chestnut in Maine and explain why (1 reason each):

Recommendation:_____

Reason:_____

Recommendation:_____

Reason:_____

12. (4 pt) B.t. can be used to protect oak from gypsy moth defoliation. In order to take advantage of other mortality factors, at which life stage of the insect (egg, early instars, late instars, pupae, adults) would you recommend applying this insecticide. Justify your answer.

6

13. (8 pt) Dutch elm disease and elm yellows are both very effective in killing trees, but Dutch elm disease has killed many more. Use 2 aspects of each pathogen cycles to explain why elm yellows kills fewer trees and Dutch elm disease kills more:

Elm yellows:

a) _____

b) _____

Dutch elm disease:

a) _____

b) _____

14. (4 pt) Gypsy moth no longer kills many white oak trees in the northeast. Give two major reasons why this is so.

a) _____

b) _____

- 15. (7 pt) Give two recommendations for planting and growing American elm in Maine and explain why (1 reason each):

Recommendation:_____

Reason:_____

Recommendation:_____

Reason:_____

- 16. (3 pt) Thinning a stand of white oak can be very effective in increasing oak tree energy levels and growth rates. Why is this so?

- 17. (4 pt) Under what situations will thinning a stand of white oak result in oak mortality? List the stresses involved in causing the mortality.

18. (10 pt) Of the disease complexes that we have discussed so far, which one do you believe has had the most adverse impact on forest health (urban or naturally regenerated) in Maine? (Be sure to write enough to get full credit - need to discuss at least 5 points)

Complex _____

Explain why: _____

Explain why one other complex has not had as much impact or little impact of forest health: (Be sure to write enough to get full credit - need to discuss at least 5 points)

Complex _____

Explain why

(4 pt) *Choristoneura fumiferana* is native to North America. How has balsam fir adapted to the presence of this pest? (2 ways)

a) _____

b) _____

19. (4 pt) How has red spruce adapted to *C. fumiferana*? (2 ways)

a) _____

b) _____

20. (3 pt) Which insect stage of the spruce budworm would you want to use for monitoring?

_____ Why? (1 reason) _____

21. (4 pt) The spruce budworm does not need an aggregating pheromone but the southern pine beetle does. Knowing what you do about the population dynamics of these insects, why does this make sense? Give one reason for each insect

a) _____

b) _____

22. (4 pt) What is one major mistake that was made in response to the last spruce budworm outbreak?

What is one major fact that supports your opinion: _____
