Chapter 17-18 review questions

1. Define tissue culture.

2. Why is micropropagation based on the principle of totipotency?

3. What are the advantages and disadvantages to micropropagation?

4. What are some things that might happen during the tissue culture process?

5. What are the four primary categories of structures formed in tissue culture and what techniques are used for regeneration of each?

6. Distinguish between axillary and adventitious shoot formation.

7. What happens during each of the 4 developmental stages in micropropagation?

8. How can plant growth regulators be manipulated to achieve these stages?

9. Why do you need to use a laminar flow hood when micro-propagating plants?

10. How do you know what to include in your culture medium?

11. How does the tissue culture environment differ from the greenhouse environment?

12. If air exchange is important, why do micro-propagators use tightly closed systems?

13. What is a propagation ratio and how can this be beneficial to a commercial micropropagation facility?

14. Why and how often do you have to subculture?

15. What is organogenesis?

16. Why does the formation of callus increase the possibility of physiological and morphological variation in culture.

17. What do dedifferentiation, differentiation, competency, and determination have to do with organogenesis?

18. What are some examples of plant tissue that can be used to regenerate adventitious shoots?

19. What might happen if you have high levels of cytokinin (kinetin) and low levels of auxin (IAA) when culturing tobacco callus on nutrient agar-See picture on slide.

20. What are some applications to somatic embryogenesis?