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***** EXAMINATION *****

ENERGY AND ENVIRONMENTAL ASPECTS OF USING CORN STOVER FOR FUEL ETHANOL

1. **To maximize the amount of collectible corn stover,**
 - a) farmers must use continuous production of corn
 - b) farmers must use conventional corn cropping methods
 - c) farmers must use no-till practices
 - d) Both a and c

2. **The maximum model for ethanol production from corn stover**
 - a) incorporates soil carbon dynamics
 - b) incorporates soil erosion
 - c) incorporates bioconversion from stover to ethanol
 - d) All of the above

3. **Soil organic matter**
 - a) increases slightly in the early years of stover collection
 - b) decreases slightly in the early years of stover collection
 - c) remains the same in the early years of stover collection
 - d) either a or b

4. **Greenhouse gas emissions include**
 - a) methane
 - b) propane
 - c) butane
 - d) hydrogen

5. **Environmental and energy resource debates usually include**
 - a) climate change
 - b) air quality
 - c) water quality
 - d) All of the above

6. **Eutrophication is the study of the effect on**
 - a) air quality
 - b) soil quality
 - c) water quality
 - d) All of the above

7. **More aggressive conventional tilling is known to release**
 - a) carbon dioxide from the soil
 - b) carbon monoxide from the soil
 - c) hydrogen from the soil
 - d) All of the above

8. **Computer models for the conversion of corn stover to ethanol**
 - a) assumes no increase in technology
 - b) assumes an increase in technology
 - c) assumes both a and b
 - d) assumes neither a nor b apply

9. **Assumptions regarding soil erosion include**
 - a) soil erosion will happen regardless of farmers' actions
 - b) soil erosion can be controlled somewhat
 - c) soil erosion should have a limit
 - d) All of the above

10. **Collecting stover and grain in a single pass**
 - a) increases the amount of stover
 - b) increases the amount of grain
 - c) reduces fuel and labor costs
 - d) increases fuel and labor costs

11. **Collection costs for baling corn stover include**
 - a) fuel
 - b) mesh wrap
 - c) labor
 - d) All of the above

12. **Conditioning in the conversion of corn stover to ethanol**
 - a) refers to the removal of unwanted by-products
 - b) refers to the addition of sugars
 - c) refers to the addition of dioxides
 - d) All of the above

13. **Carbon leaves the conversion facility as**
 - a) combustion exhaust
 - b) ethanol product
 - c) fermentation-generated carbon dioxide
 - d) All of the above

14. **The largest source of greenhouse gases is**
 - a) the conversion facility
 - b) the farm
 - c) the transportation of stover
 - d) the delivery of the ethanol

15. **The substitution of ethanol for gasoline causes a**
- a) small increase in ozone-forming hydrocarbons
 - b) large increase in ozone-forming hydrocarbons
 - c) small decrease in ozone-forming hydrocarbons
 - d) large decrease in ozone-forming hydrocarbons
16. **The substitution of ethanol for gasoline causes a**
- a) small increase in the life-cycle emission of CO
 - b) large increase in the life-cycle emission of CO
 - c) small decrease in the life-cycle emission of CO
 - d) small decrease in the life-cycle emission of CO
17. **Nitrogen oxide emissions are almost exclusively the**
- a) result of emissions from the soil on the farm
 - b) result of emissions from the conversion refinery
 - c) result of emissions during transportation
 - d) None of the above
18. **Sulfur oxide emissions are almost exclusively the**
- a) result of emissions from the soil on the farm
 - b) result of emissions from the conversion refinery
 - c) result of emissions during transportation
 - d) None of the above
19. **Sulfur oxide emissions in the ethanol facility**
- a) could be corrected by better pollution controls
 - b) could be corrected by a better boiler/burner system
 - c) could be corrected by slower processing
 - d) both a and b
20. **The advantage of no-till methods for soil erosion**
- a) is the heat generated
 - b) is the water generated
 - c) is leaving the soil undisturbed
 - d) All of the above

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