

1999 Envirothon Sample Test

SOILS

LANDSCAPE

1. What is **this Landscape Poition?** (4 points)
 - a. Residual Upland
 - b. Colluvial Footslope
 - c. Old Alluvial Stream Terrace
 - d. Low Bottom Floodplain
 - e. High Bottom Floodplain

2. What is the **Parent Material?** (4 points)
 - a. Residual Bedrock
 - b. Colluvial Soil and Rock Materials
 - c. Old Alluvial Sediments
 - d. Recent Alluvial Sediments
 - e. Glacial Outwash

3. What is the **Slope** between the Flagged Stakes (stakes are 5 feet apart?) (4 points)
 - a. 0-3% Nearly Level
 - b. 3 to 8% Gently Sloping
 - c. 8 to 15% Moderately Sloping
 - d. 15 to 25% Strongly Sloping
 - e. 25 to 35% Steep
 - f. 35 to 75% Very Steep

4. What is the total **thickness** of the **A and BA Horizons?** (4 points)
 - a. 10 to 12 inches
 - b. 12 to 20 inches
 - c. ½ to 2 inches
 - d. 5 to 8 inches

5. What is the **color** of the Subsoil at a depth of 12 to 16 inches (use Munsell Soil Color Charts?) (4 points)
 - a. Very Pale Brown (10YR 8/4)
 - b. Yellowish Brown (10YR 5/6)
 - c. Brown (7.5YR 4/3)
 - d. Reddish Brown (5YR 5/4)

6. What is the **Soil Drainage Class** (Depth to Gray Mottles?) (4 points)
 - a. Well Drained (no mottles above 36 inches)
 - b. Moderately Well Drained (no mottles above 16 inches)
 - c. Somewhat Poorly Drained (no mottles above 8 inches)
 - d. Poorly Drained (mottles above 8 inches)

7. At what depth does the **Fragipan*** start in this soil? (4 points)
 - a. 10 to 16 inches
 - b. 18 to 22 inches
 - c. 26 to 30 inches
 - d. 32 to 36 inches

8. What is the **Soil Permeability**** (a fragipan is found in this soil?) (4 points)
 - a. Moderate to Slow
 - b. Slow to Moderate
 - c. Rapid to Moderate
 - d. Slow to Very Slow

9. This Soil has a thin A (dark brown to very dark brown) horizon (1/2 to 2 inches) just under the 0 horizon. Where did the **0 Horizon** come from? (4 points)
 - a. Overwash from flood waters
 - b. Coal Dust
 - c. Decomposed leaf and stick litter

10. What is the **pH** of the Subsoil at a depth of 16 inches (closest range using the field pH kit?) (4 points)
 - a. 4.0 to 5.0 pH
 - b. 5.0 to 6.0 pH
 - c. 6.0 to 7.0 pH
 - d. 7.0 to 8.0 pH

GENERAL SOILS

11. What is the **Soil Texture** of the Soil Sample labeled “Unknown Soil” (Use the Flow diagram for estimating soil texture by feel?) (4 points)
 - a. Loam or Silt Loam
 - b. Silty Clay Loam or Clay Loam
 - c. Silty Clay or Clay
 - d. Sand or Loamy Sand

12. Which of these subsoil textures has or would have the **highest bulk density***?** (4 points)
 - a. Silt Loam
 - b. Clay
 - c. Loamy Sand
 - d. Clay Loam

13. This area was all farmed in the late 1800’s and early 1900’s and most likely corn or some row crop was grown at this site. Sheet and/or Rill Erosion has occurred removing most of the top soil and with continuous cropping the farmer continued to plow the fields mixing the top soil with the subsoil. **What caused the Sheet and/or Rill Erosion?** (4 points)

- a. Wind
 - b. Water
14. Can we assume this soil is **no longer eroding** at the same rate as in the late 1800's and early 1900's when these soils were continuously cropped. (You can use soil properties to verify present erosion?) **(4 points)**
- a. Yes
 - b. No
15. Which of these soil properties, with the same land use would have the **least impact to nonpoint source pollution?** **(4 points)**
- a. Coarse gravelly soil textures, throughout the soil profile
 - b. Seasonal high water table
 - c. Clayey subsoil, developed from upland shale parent materials
 - d. Soil developed in residual Limestone
16. Which of these soils did the **West Virginia** Legislature adopt as the **State Soil** **(4 points?)**
- a. Gilpin
 - b. Upshur
 - c. Hackers
 - d. Monogahela

LEWIS COUNTY SOIL SURVEY REPORT

17. What best describes the **JaE Map Unit?** **(4 points)**
- a. Low bottom floodplain soil
 - b. Natural soil developed from interbedded bedrock on upland ridgetops
 - c. Natural soil developed from interbedded bedrock on upland hillsides
 - d. Disturbed soil developed from a variety of rock fragments like sandstone, coal, mudstone, and siltstone
18. Which of these soil map units would not be **Prime Farmland?** **(4 points)**
- a. Cn
 - b. Ha
 - c. Lh
 - d. Sn
19. Which of these soils would be considered as a **hydric soil** (hydric soils have a seasonal high water table at or near the soil surface during wet times of the year – check tables?) **(4 points)**
- a. Gilpin (GaC)
 - b. Hackers (Ha)
 - c. Senecaville (Sn)
 - d. Holly (Lh)

20. If you were going to build a **house/dwelling without a basement**, which of these soil map units would have fewer limitations? **(4 points)**

- a. MoB
- b. Po
- c. VaD
- d. BuC

21. Which **Soil Series** and **Map Unit** have the **highest Site Index for Red Oak** and what is the Site Index?

- a. Map Unit _____ **(4 points)**
- b. Soil Series _____ **(4 points)**
- c. Site Index _____ **(4 points)**

22. Agriculture and urban land uses contribute to nonpoint source pollution of lakes and streams resulting in impairments to fisheries, recreation, drinking water, irrigation water and aesthetic values. Which of the following soil map units if they were continuously cropped under the same management would contribute more to **nonpoint source pollution? (4 points)**

- a. Chagrin
- b. Moshannon
- c. Senecaville
- d. Hackers

23. The Erosion (K) factor is based on surface texture, % organic matter, permeability and soil structure. A higher Erosion Factor (K) means the soil is less susceptible to sheet and rill erosion. **(4 points)**

- a. True
- b. False

* Fragipan – A loamy, brittle subsurface horizon low in porosity and appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizons above.

** Soil Permeability – The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

| | |
|------------------|---------------------------|
| Very slow | Less than 0.06 inches/hr. |
| Slow | 0.06 to 0.2 inches/hr. |
| Moderately slow | 0.2 to 0.6 inches/hr. |
| Moderate | 0.6 to 2 inches/hr. |
| Moderately rapid | 2.0 to 6.0 inches/hr. |
| Rapid | 6.0 to 20 inches/hr. |
| Very rapid | more than 20 inches/hr. |

*** Bulk Density – Bulk density is the ratio of soil mass to its volume, usually measured

in g/cc. The soil mass is particle size (mineral fraction), intermixed with voids or pores between the different size particles (sand, silt or clay.)

FORESTRY

TRUE OR FALSE

1. Standing dead trees should be removed from this stand because they compete for growing space with surrounding trees. **(2 points)**
2. West Virginia is 76% forested and ranks third in the nation for acres of forest land. **(2 points)**
3. Soil characteristics are of no importance to forest management – all trees grow equally well on all types of soil. **(2 points)**
4. The identification and classification of trees is known as dendrology. **(2 points)**
5. Cattle grazing in forests is a widely recommended practice as it helps in reducing weed and shrub competition. **(2 points)**
6. If trucks must cross streams during a timber harvest, the streams should be crossed at right angles and approaches should be graveled. **(2 points)**
7. As a mature trees ages, it uses more carbon dioxide and produces more oxygen. **(2 points)**
8. When pruning a tree, the branch collar should be removed to allow the tree to heal properly. **(2 points)**
9. City trees have shorter average life spans than forest trees. **(2 points)**
10. A major reason that exotic forest insect pests often become a serious problem in our forests is: **(2 points)**
 - a. More favorable weather conditions
 - b. Resistance to pesticides
 - c. Resistance to herbicides
 - d. Lack of natural parasites
11. The tissue directly below the bark responsible for cell division and growth is: **(2 points)**
 - a. Cambium
 - b. Phloem
 - c. Inner bark
 - d. Xylem

12. Site index is a measure of: **(2 points)**
- Diameter a tree will reach in 50 years
 - Number of logs a tree will produce in 100 years
 - Number of board feet a tree will produce in 75 years
 - Height a tree can be expected to reach in a specific number of years
13. When planting a forest plantation, the primary reason many more trees are planted per acre than will eventually become a crop of trees at harvest is: **(2 points)**
- To better protect soil
 - To provide better wildlife habitat
 - To allow for crop tree selection
 - To allow for mortality
14. The loss of moisture from tree leaves is: **(2 points)**
- Evaporation
 - Respiration
 - Photosynthesis
 - Transpiration
15. The gradual lessening of diameter in a stem of a tree or a log from the base to the top is called: **(2 points)**
- Kerf
 - Defect
 - Taper
 - Cooperage
16. The soft spongy tissue in the stem/twig center is the: **(2 points)**
- Pith
 - Heartwood
 - Sapwood (xylem)
 - Inner bark (phloem)
 - Cambium
17. Trees that need full sunlight to grow best are said to be: **(2 points)**
- Tolerant
 - Intolerant
 - Epicormic
 - Suppressed
 - Resistant
18. The sequence of plant communities that replace one another in a given area culminating in a climax community is called: **(2 points)**
- Regeneration
 - Evolution
 - Succession
 - Reforestation

19. Climax tree species are generally more tolerant to this than sub-climax tree species: **(2 points)**
- Shade
 - Sunlight
 - Drought
 - Insect attack
20. Streamside forests or riparian buffers are valuable along waterways because they: **(2 points)**
- Moderate stream temperature
 - Provide food in the form of leaves for aquatic animals
 - Trap sediments and excess nutrients from adjacent land
 - All of the above
21. Which of the following factors can influence regeneration? **(2 points)**
- Harvesting method
 - Over-browsing by animals
 - Fire
 - Soil type
 - All of the above
22. These trees are overtopped members of the forest community having almost no free overhead light. They are slow growing **(2 points)**
- Codominant trees
 - Suppressed trees
 - Wolf trees
 - Intermediate trees
23. The study and interpretation of annual growth rings of trees and their use in dating past variations in climate and in archaeological investigations is: **(2 points)**
- silviculture
 - dendrocronology
 - remote sensing
 - forest meteorology
24. Entire, serrated and lobed are examples of: **(2 points)**
- leaf margins
 - leaf bases
 - leaf venation
 - leaf shape
25. Conifers belong to which group: **(2 points)**
- angiosperms
 - gymnosperms

26. A tree with compound leaves is: **(2 points)**
- red maple
 - shagbark hickory
 - black gum
 - red oak
 - yellow-poplar
27. When leaves are paired at the same height, one on each side of the twig, they are: **(2 points)**
- opposite
 - whorled
 - alternate
 - compound
28. These can be used on logging roads to reduce soil erosion and sedimentation of streams: **(2 points)**
- Culverts
 - Waterbars
 - Broad-base dips
 - All of the above
 - Both A & C
 - None of the above
29. Repeatedly harvesting the best trees from a forest and leaving the poorer, less desirable trees to grow is not a recommended forest management practice and is referred to as: **(2 points)**
- Clear cutting
 - Crop Tree Release
 - High Grading
 - Shelterwood Harvesting
 - Regeneration Harvesting
 - None of the above
30. Best Management Practices (BMP's) in logging operations are guidelines designed to control: **(2 points)**
- Slash
 - Regeneration
 - Soil erosion
 - Deer
 - All of the above
 - None of the above
31. Using the chart attached, what size culvert would be needed for a 50 acre area that is expected to flood every 20 years: **(2 points)**
- 20 inch
 - 22 inch

- c. 24 inch
 - d. 26 inch
 - e. None of the above
32. Using the topographical map attached, which of the circled areas would be the most logical location for the log landing when the stand is logged. **(2 points)**
- a. A
 - b. B
 - c. C
 - d. D
 - e. E
 - f. A or C
33. Which of the following are hazards to look for when evaluating the health of a tree? **(2 points)**
- a. Root rots
 - b. Tight Crotches and cracks
 - c. Trunk cracks
 - d. All of the above
34. Once a tree has become weakened, it is often attacked by secondary agents. Which of the following is a secondary agent? **(2 points)**
- a. Drought
 - b. Fire
 - c. Insects
 - d. All of the above
 - e. None of the above
35. When removing living or dying branches from a tree, it is important to: **(2 points)**
- a. Paint all cuts
 - b. Not leave stubs
 - c. Remove the branch collar
 - d. All of the above
 - e. A and B only
36. When managing for trees tolerant of shade, the accepted harvest method is: **(2 points)**
- a. Strip cuts
 - b. Individual selection
 - c. Clearcuts
 - d. None of the above
 - e. A and B
37. In crop tree management planning, as with any forest management planning, the first step in the management process is to: **(2 points)**
- a. Identify the landowner's property goals

- b. Determine which trees to cut
 - c. Inventory the property Establish stand-specific objectives
 - d. Girdle all undesirable trees
38. If a forest landowner has as one of their property goals to increase squirrel habitat, which of the following recommendations would be included in their management plan? **(2 points)**
- a. Release smaller, younger trees
 - b. Retain squirrel den trees
 - c. Retain trees that have colorful foliage and attractive flowers
 - d. Remove all hard mast producing trees
 - e. None of the above
39. If timber is the **only** management objective that the forest landowner has, which tree(s) should be removed at this time? **(2 points)**
- a. A
 - b. B
 - c. C
 - d. None of the above
 - e. A and B only
 - f. A, B and C
40. 84% of the forest land in West Virginia is owned by: **(2 points)**
- a. The Federal Government
 - b. Forest industry companies
 - c. Private non-industrial landowners
 - d. The State Government

FILL IN THE BLANK

Measure trees A, B, and C. Then answer Questions 41 – 43

41. What is the diameter of Tree A? **(2 points)**
- a. 14
 - b. 16
 - c. 18
 - d. 20
 - e. 24
42. Which volume is closest to the total combined volume of all **three** trees? **(2 points)**
- a. 500 bft
 - b. 1,000 bft
 - c. 1,500 bft
 - d. 2,000 bft
 - e. More than 2,000 bft

43. Many factors affect the economics of the forest industry – from landowner to wood products company. Some of these factors are listed in Column A. If you are a forest landowner, how will the events in Column A affect the value of **your** timber? Will it **increase** or **decrease**? (2 points)

| Column A | Column B |
|--|----------|
| An 8-month drought occurs | |
| There is a decrease in wood exports | |
| Nationally, there are low interest rates | |
| Workers' compensation rates for loggers increase | |

44. What is the scientific name of West Virginia's state tree? _____ . (2 points)
45. The _____ tree can have three different shaped leaves and many people make tea from its bark and roots. (2 points)
46. What is the common name of:
 Tree A _____ . (2 points)
 Tree B _____ . (2 points)
 Tree C _____ . (2 points)
47. What is the scientific name of Tree C _____ . (2 points)
48. How many 16-ft logs are in Tree B? (2 points)
- 1
 - 2
 - 3

AQUATICS

MULTIPLE CHOICE

- The importance of wetlands preservation was recognized in 1977 when a law was passed which required a permit to dredge and fill these resources. This law is called the: (2 points)
 - Wetland Preservation Act
 - National Environmental Policy Act
 - Clean Water Act
 - Water Conservation Act
 - Fish and Wildlife Coordination Act
- If a spill of a hazardous material occurs in the stream that runs through your Barbour County farm, which agency(ies) is/are legislatively responsible and should be called to investigate the incident. (2 points)

- a. U.S. Fish and Wildlife Service
 - b. WV Division of Natural Resources
 - c. WV Department of Agriculture
 - d. US Environmental Protection Agency
 - e. WV Division of Environmental Protection
 - f. A and B
 - g. B and C
 - h. B and E
 - i. C and d
3. The amount of ground water available worldwide is: **(2 points)**
- a. 2.14%
 - b. 0.61%
 - c. 97.2%
 - d. 0.009%
 - e. 0.005%
4. A farmer built a $\frac{1}{4}$ acre pond on his property and asked a biologist which species he should stock. He was most likely advised to introduce: **(2 points)**
- a. Brown trout and fathead minnows
 - b. Bluegill sunfish and channel catfish
 - c. Musky and largemouth bass
 - d. Largemouth bass and bluegill sunfish
 - e. Smallmouth bass and bluegill sunfish
 - f. Brook trout and bluegill sunfish
5. The body segments of an insect are called: **(2 points)**
- a. Head, thorax, abdomen
 - b. Rostrum, abdomen, tail section
 - c. Carapace, chest, legs
 - d. Head, neck, abdomen
 - e. Head, abdomen, tail section
6. The oldest river in North America is thought to be the: **(2 points)**
- a. Snake River
 - b. Mississippi River
 - c. Rio Grande River
 - d. Ohio River
 - e. Colorado River
 - f. Nile River
7. Pond or stream water freezes at the surface because it: **(2 points)**
- a. Captures dissolved oxygen when freezing
 - b. Is less dense when colder than 39°F
 - c. Traps helium when it freezes
 - d. Reacts with oxygen and nitrogen and becomes lighter below 38°F

8. Many fishes have an organ that allows it to suspend itself in water. This structure is called the: **(2 points)**
- Buoyancy control organ
 - Gas bladder
 - Suspension gland
 - Oxygen control gland
 - Air sac
9. The Nation's largest water quality problem is from non-point source pollution. The leading source of such pollution in rivers is related to: **(2 points)**
- Logging activities
 - Agriculture
 - Stream alterations
 - Urban runoff
 - Gas and oil projects
 - Construction activities
10. The US Environmental Protection Agency administers grants to reduce non-point source pollution pursuant to which section of the Clean Water Act: **(2 points)**
- Section 404
 - Section 401
 - Section 319
 - Section 305b
 - Section 205
11. Three orders of invertebrates that are used to characterize water quality as excellent are: **(2 points)**
- Stoneflies, beetles, crayfish
 - Clams, snails, mayflies
 - Sow bugs, true flies, caddisflies
 - Caddisflies, mayflies, stoneflies
 - Crayfish, caddisflies, dobsonflies
12. The cutting of streambank vegetation will probably result in: **(2 points)**
- An increase of bank erosion
 - Elevated water temperatures
 - Increase of outside food sources for aquatic animals
 - An increase of pollutants that reach the stream
 - A, B, and D
 - A and B
 - A, B, C, and D
13. The only trout species that is native to Appalachian Mountain streams is: **(2 points)**
- Cottthroat trout

- b. Rainbow trout
 - c. Brown trout
 - d. Brook trout
 - e. Golden trout
14. The best definition of pH is: **(2 points)**
- a. The amount of lime in water
 - b. The logarithm of the reciprocal of the hydronium ion
 - c. The indirect assessment of acidity in water
 - d. The wide range assessment of phosphates and hydrogen in water
 - e. The measure of neutral ions in water
15. The base of an aquatic energy pyramid is made up of: **(2 points)**
- a. Plant life
 - b. Game fishes
 - c. Zooplankton
 - d. Insects and vertebrates
 - e. Invertebrates
16. Water released from the hypolimnion of a deep reservoir will be: **(2 points)**
- a. Very warm
 - b. Oxygen poor
 - c. Phytoplankton rich
 - d. Very cold
 - e. All of the above
 - f. B and D
 - g. A and C
17. Most state fish agencies rely primarily on fishing license sales and funds derived from excise taxes on fishing equipment and marine fuel to administer their program. The law that generates the taxes or gamefish research and management endeavors for the states is called: **(2 points)**
- a. Endangered Gamefish Act
 - b. Fish Conservation Act
 - c. Federal Aid in Sportfish Restoration Act
 - d. Gamefish Management Act
 - e. Sportfish Enhancement Act
18. Which of the following species can tolerate the lowest oxygen levels: **(2 points)**
- a. Largemouth bass
 - b. Common carp
 - c. Brook trout
 - d. Brown bullhead
 - e. Walleye

19. WV was once covered by an inland ocean. When the Appalachian Mountains were formed, freshwater fishes from central North America dispersed into the mountain areas. Biologists believe that one way fishes were able to migrate to the other side of the mountains was by a theory called: **(2 points)**
- Mountain capture
 - Stream evolution
 - Underground dispersal
 - Stream piracy
 - River transfer
20. Acid rain would not be a problem in streams, if one of the following were plentiful in the geology of the watershed: **(2 points)**
- Phosphates
 - Nitrates
 - Calcium
 - Sodium
 - Magnesium

TRUE OR FALSE

21. ___ High pH values (> 9) are common in natural aquatic environments. **(1 point)**
22. ___ The majority of freshwater is found in oceans. **(1 point)**
23. ___ Most dissolved oxygen in lotic environments comes from plants. **(1 point)**
24. ___ Freshwater mussels are excellent indicators of water quality. **(1 point)**
25. ___ Rivers are classified as wetlands. **(1 point)**
26. ___ Summertime waters can hold more dissolved oxygen than in winter. **(1 point)**
27. ___ To enhance fishing opportunities, fish agencies encourage fishermen to move gamefish to different locations around the state. **(1 point)**
28. ___ An ethical fisherman always releases his unused baitfish. **(1 point)**
29. ___ The most productive macrohabitat in a stream is the riffle. **(1 point)**
30. ___ High technological advances in filtration systems has made it easy to restore contaminated underground water reserves. **(1 point)**

FILL IN THE BLANK

31. Plants produce oxygen in water by a process called _____. **(2 points)**

32. In North America, lakes were formed primarily by _____. (2 points)
33. The total volume of stream water passing a point in a given period of time is termed _____. (2 points)
34. In spring and fall, lakes go through a water mixing process called _____. (2 points)
35. Trees release moisture into the air by a process called _____. (2 points)
36. An aquatic animal that is native and globally restricted to a single drainage is said to be _____. (2 points)
37. A new sewage treatment plant must acquire a _____ permit to comply with the Clean Water Act's requirement for point source discharges. (2 points)
38. Large underground water reserves are stored in areas called _____. (2 points)
39. An easy and inexpensive way to delineate a watershed is to use a (be specific) _____. (2 points)
40. Fishes that spend their life in the oceans, but spawn in freshwater are said to be _____. (2 points)
41. A species of fish in North America (also in West Virginia) that lives in freshwater, but spawns in the Sargasso Sea of the Atlantic Ocean. This behavior is called catadromous. Name this species _____. (2 points)
42. The first vertebrates were fishes and related to present day lamprey eels. Name the primitive character that links the modern representatives to the first vertebrates _____. (2 points)
43. An area vegetation associated with a stream corridor is called the _____(one word). (2 points)
44. Bones and scales are used to age fishes. The most common bony structure used to age fishes is also part of a fish's hearing system. This bone is called an _____. (2 points)
45. A drainage pattern that resembles a tree root is said to be _____. (2 points)
46. Sink holes in West Virginia are common in Greenbrier County. They occur because the geology of the area is dominated by porous limestone that has dissolved. This type of geology is called _____. (2 points)

47. The _____ zone is that portion of a body of water extending from the shoreline lakeward to the limit of occupancy by rooted plants. **(2 points)**

48. Name the order of the stream that your station presenters point to _____. **(2 points)**

KEYING FISH

49. Key the fish in the plastic container (in water) to the correct family. **(4 points)**

PARTS OF A FISH

50. Name the parts of the catfish provided.

- a. _____ **(2 points)**
- b. _____ **(2 points)**
- c. _____ **(2 points)**
- d. _____ **(2 points)**
- e. _____ **(2 points)**

WILDLIFE

1. To what physical characteristic of snakes is this cartoon referring? **(2 points)**

2. Name the animal which made each track

- a. _____ **(2 points)**
- b. _____ **(2 points)**
- c. _____ **(2 points)**
- d. _____ **(2 points)**

3. List two differences between horns and antlers.

- a. _____ **(2 points)**
- b. _____ **(2 points)**

4. Identify the mounted wildlife species.

- a. _____ **(2 points)**
- b. List three adaptations this animal has to detect, capture, and eat its prey.
 - (1) _____ **(1 point)**
 - (2) _____ **(1 point)**
 - (3) _____ **(1 point)**

5. Which of the following are reasons mussels in West Virginia have become endangered? **(3 points)**

- a. Increased siltation smothers mussels
- b. Competition for food and oxygen from zebra mussels
- c. Toxins filtered out of the water
- d. Decreased water temperatures

- e. Trampling by livestock
 - f. Increased ultraviolet light reduces reproduction
6. Circle T (true) or F (false)
- T F It is illegal to smoke wildlife from den trees **(1 point)**
 - T F Each raccoon trapped must be tagged with a field tag **(1 point)**
 - T F Two deer may be killed in one day during the antlerless season **(1 point)**
 - T F A 12-year old who has completed a hunter safety course may not hunt without an adult **(1 point)**
 - T F Power bait is legal on catch-and-release trout streams **(1 point)**
 - T F The main purpose of a 12-inch minimum size limit on black bass in a few lakes and rivers is to protect the breeding stock of fish **(1 point)**
 - T F You may not use a seine to catch game fish **(1 point)**
 - T F Restrictions on firearms are set by the Division of Natural Resources Commissioners **(1 point)**
7. Read the following definitions of various ecological relationships among animals.
- a. Commensalism – one species is benefited and the other is neither harmed nor helped
 - b. Mutualism – both species benefit
 - c. Parasitism – one species benefits at the expense of the other
 - d. Amensalism – one species inhibits the other, while remaining unaffected itself

Using any of the four relationships provided above, identify the following relationships.

- a. Tapeworm in red fox _____ **(2 points)**
 - b. Flying squirrel nesting in abandoned woodpecker hole _____ **(2 points)**
 - c. Zebra mussels attached to native mussels _____ **(2 points)**
8. Which of the following species are not native to West Virginia? **(3 points)**
- a. Coyote
 - b. Carp
 - c. Mink
 - d. Mourning dove
 - e. Bown trout
 - f. Elk
 - g. Green heron
 - h. Five-lined skink
 - i. Eastern spiny softshell
 - j. Brown-headed cowbird
9. Which phrase best describes a type of animal which as a low number of offspring? **(3 points)**
- a. Has long period of parental care for young
 - b. Has few enemies
 - c. Both A and B

- d. A, B, and C
10. Which species of fish is more likely to contain unacceptable levels of PCBs or dioxin? **(3 points)**
- Bluegill
 - Rainbow trout
 - Channel catfish
 - White crappie
 - Walleye
11. Carrying capacity for the wild turkey can be increased by: **(3 points)**
- Supplemental feeding
 - Prohibiting hunting on the property
 - Planting food-producing shrubs and grasses
 - Killing predators
 - Building brush piles
12. What habitat management technique(s) would you use to manage the area surrounding you for: (write letter answers)
- | | |
|---------------------------------|--------------------------------------|
| Ruffed grouse (3 points) | Eastern cottontail (3 points) |
|---------------------------------|--------------------------------------|
- Prescribed burning
 - Planting trees and shrubs
 - Livestock grazing management
 - Build brush piles
 - Construct nesting boxes
 - Plant mast trees
 - Clear cut timber harvest
 - Selective timber harvest
13. Which factor(s) affect(s) the setting of dates for bear hunting? **(3 points)**
- Amount of daylight
 - Amount of foliage
 - Time females enter dens for winter
 - Mating season
 - Time hunters prefer
14. By studying the feathers, correctly identify whether this turkey is *male* or *female* and whether it is an *adult* or *juvenile*?
- | | |
|-----------------------|-----------------------|
| Sex (2 points) | Age (2 points) |
|-----------------------|-----------------------|
15. On the benches are pelts of animals which live in West Virginia.
- Write down the letter(s) of the pelt(s) which correspond(s) to animals closely associated with the riparian habitat? _____ **(3 points)**
 - Which animal pelt found in a riparian habitat would you see in greater abundance than the others? (letter answer only) _____. **(2 points)**
 - The reason this animal is more abundant is related to: **(2 points)**

- (a). Succession
- (b). Ecological (food) pyramid
- (c). Hydrological cycle
- (d). Migration

16. Allowing a stand of eastern deciduous forest to attain the climax stage would accomplish which [of the two] goal of habitat management? _____ (3 points)

17. Which of the following is (are) a reason(s) for the decline of neotropical migratory birds? (3 points)

- a. Forest Fragmentation
- b. Increased hunting
- c. Increased use of insecticides and herbicides
- d. Increased hole in ozone layer
- e. Decreased water quality

18. Match the animal to the adaptation(s) possessed by that animal

| | |
|-------------------------------|--------------------------|
| black rat snake (2 points) | Retractable claws |
| snowshoe hare (2 points) | Extremely long tongue |
| Opossum (2 points) | Barbell |
| big brown bat (2 points) | Jacobsen's organ |
| slimy salamander (2 points) | Bioluminescence |
| woodpecker (2 points) | Echolocation |
| short-tailed shrew (2 points) | Hinged lower jaw |
| catfish (2 points) | Prehensile tail |
| red-tailed hawk (2 points) | Changes color seasonally |
| | Poison |
| | Breathes through skin |
| | Lateral line |
| | Hooked beak |
| | Opposable thumb |

19. Aldo Leopold wrote in the 1940s,

“...in land, just as in the human body, the symptoms may lie in one organ and the cause in another. The practices we now call conservation are, to a large extent, local alleviations of biotic pain. They are necessary, but they must not be confused with cures.”

Which of the following fish and wildlife management practices is **not** an example of this analogy? (4 points)

- a. Stocking catchable-size trout in native trout streams
- b. Placing limestone fines in a stream to neutralize acid
- c. Placement of structures in streams to enhance fish habitat
- d. Denying permits to drain wetlands
- e. Erecting wood duck nest boxes

20. Using the key provided, identify the species of snake. _____ . (4 points)