

Louisiana Examination of Advanced forestry

9-19-2018 Stuart Lake, Kisatchie National Forest

Test validated and monitored by Robbie Hutchins LSU Agcenter Extension Agent ANR
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Name KEY

School _____

Louisiana Ag-Tech Certificate number _____

Qualifying CDE date _____

Notes:

Merchantable heights are estimated to the upper point on a tree where it becomes 10 inches in diameter, OR, where a major fork in a tree stem occurs, OR, where a limb or cluster of limbs have a combined diameter equal to $\frac{1}{2}$ of the diameter of the tree at that point. These upper limit rules are called “stoppers”.

When figuring tree volumes, all trees are considered sound for the purpose of this exercise (no cull deductions).

Measure the tree diameters in 1-inch diameter classes
Measure merchantable tree heights in 16-foot logs (to the nearest $\frac{1}{2}$ log) Assume no declination (0*) when using compasses

Needed Equipment: Logger tape, clinometer, compass, calculator, and volume table. Use the tree volume table provided.

Each question is worth 1 point unless otherwise noted.

A. Tree Study, Mensuration, Insects/Disorders, Wood Products Manufacturing

- 1) Identify this tree. (2 points) Longleaf
- 2) What is the diameter of this tree (2 points)? 19"
- 3) What is the merchantable height? 4 logs
- 4) What is the board foot volume? (3 points) 324
- 5) Name at least two damages/disorders on this tree (2 points). fire, mechanical, cicada
- 6) Name a manufactured wood product made from this tree. Lumber, plywood, poles, pulp, paper, wood pellets. Byproducts: turpentine, ink, paint

B. Tree Study, Mensuration, Wood Products Manufacturing

- 7) Identify this tree. (2 points) Southern Red Oak
- 8) What is the diameter of this tree? 18"
- 9) What is the merchantable height? 2 logs
- 10) What is the board foot volume? (3 points) 179
- 11) Name a manufactured wood product made from this tree. Flooring, pallets, cabinets, trim, veneer, furniture

C. Tree Study, Mensuration, Wood Products Manufacturing

- 12) Identify this tree. (2 points) Loblolly Pine
- 13) What is the diameter of this tree (2 points)? 18"
- 14) What is the merchantable height? 4 logs
- 15) What is the board foot volume? (3 points) 273
- 16) Name 3 wood products made from this tree (3 points). Wood chips, paper, pulp, lumber, veneer, plywood, trim, stakes, OSB, particle board, wood pellets
- 17) Name a manufacturer in Louisiana that utilizes this species for paper production. International Paper, West Rock, Weyerhaeuser, Georgia Pacific, Graphic Packaging, Packaging Corp. of America, KPAQ

18) Name a manufacturer in Louisiana that utilizes this species for plywood production.

Roy O Martin, Boise Cascade, Hunt, Weyerhaeuser,

D. Tree Study, Wood Products, Insects/Disorders

19) Identify this tree. (2 points) Ash (white)

20) Name two products made from this tree (2 points)? Baseball bats, furniture, flooring, pool sticks, hockey sticks, tool handles

21) Circle the type of leaf this tree has. A. Simple B. Pinnate C. Palmate

22) Which invasive insect currently threatens the future of this tree species? Emerald Ash Borer

E. Tree Study, Insects/Disorders, Forest ecology

23) Identify this tree. (2 points) Maple (red)

24) What disorder does this tree have? Heart rot, butt rot, mechanical damage

25) What characteristic allows this species to grow in the understory of this forest?
Phototrophic broadleaf that is able to capture filtered sunlight effectively.

F. Tree Study and Mensuration

26) Identify this tree. (2 points) Loblolly Pine

27) What is the diameter of this tree? 27"

28) What is the merchantable height? 4 logs

29) What is the board foot volume? (3 points) 877

30) What health issue does this tree have? Bored holes from wildlife (woodpecker)

G. Tree Study, Mensuration, Forest products

31) Identify this tree. (2 points) Sweetgum

32) What is the diameter of this tree? 13"

33) What is the merchantable height? 1 log

34) What is the board foot volume? (3 points) 42

- 35) Name a manufactured wood product made from this tree. Veneer, plywood, furniture (speaker/acoustic cabinets), interior trim, boxes/crates, and turned objects
- 36) Name two types of deer browse within a chain of this tree (2 points) wild grape (muscadine), French mulberry, green briar,

H. Tree Study, Wood Products, Silviculture Practices

- 37) Identify this tree. (2 points) White Oak
- 38) Name a product that is made from this tree? Cabinetry, furniture, interior trim, flooring, boatbuilding, barrels, and veneer.
- 39) Circle the leaf type that best describes this species leaves.
A. entire B. palmately compound C. pinnately compound D. Lobed
- 40) Is this tree inside a stream management zone? No
- 41) According to Louisiana's BMP guide, how wide should an SMZ be for a perennial stream that is less than 20 feet wide? 50'

I. Land Measurement. Use the topo map to answer these questions:

- 42) What is the Scale of this USGS Topography Map? 1:24,000
- 43) What is the Contour Interval of this USGS Topography Map? 5 feet
- 44) How many acres are forested in S28, T14N, R11E? 160
- 45) What is the highest elevation in S5, T13N, R11E? 75'
- 46) What two state routes meet East of Dearborn in S28, T14N, R12E (2 points)?
888, 575

J. Silviculture practices, Harvesting, Reforestation (stocking)

- 47) A. What is this tool? Wedge Prism (10 factor)
Use the tool to take a reading at the point marked by the stake.
- B. What is the basal area of this plot? 160 (3 points)

K. Wood products, Paper and pulp products

- 48) Identify the tree this wood sample came from Red Cedar
- 49) Identify the tree this wood sample came from Red Oak
- 50) Identify the tree this wood product (axe handle) came from Hickory
- 51) Identify the tree this wood product (stake) came from yellow pine
- 52) What are the layers of this plywood called? veneer
- 53) Name a finished product made from this brown Kraft paper? Cardboard, packaging, corrugated liner,

L. Forest Ecology

For question 53, refer to the print out of the Arcgis screen "Canopy Cover" from <https://www.arcgis.com/home/item.html?id=71b23b15e9ad439d9b9a9e135b825fed>

- 54) Which quadrant of the Tonto National forest has the largest timber? NE

For question 54, use printout C-CAP Class Name

- 55) Which type of forest are we currently working in? mixed forest

M. Land Measurement, Silviculture Practices

Refer to the two stakes

- 56) Along what azimuth does the marked "boundary" line extend? (3 points) 139
- 57) How many feet is this leg of the boundary? (3 points) 57'
- 58) What is the slope between the two stakes? (3 points) +13%

N. Land Measurement, Silviculture Practices

Refer the two stakes

- 59) Along what azimuth does this line of the boundary extend? (2 points) 242
- 60) How many feet is this leg of the boundary? (3 points) 63'
- 61) What is the slope of the land between the stakes (3 points) -8%

O. Silviculture Practices, Harvesting, Safety

- 62) Identify this cut. Face cut/notch (was a humbolt notch). What is the purpose of making this cut when felling a tree with a chainsaw? Strategic felling, direction.
- 63) Identify this cut. Back cut/felling cut What is the purpose of making this cut when felling a tree? To fell the tree while leaving enough wood on the stump to guide it in the intended direction
- 64) What is the wood called in this area between the two cuts? Hinge/holding wood
- 65) When processing these lay downs with a chainsaw, which area should be cut first? Area B Why? Area B is safer than area A. Area A is a pinch point for the saw. There is no pressure on area B.

P. Fire in the forest

- 66) Explain the benefits of prescribed fire as a management tool. (3 points)
- Safely reducing excessive amounts of brush, shrubs and trees.
- Encouraging the new growth of native vegetation.
- Maintaining the many plant and animal species whose habitats depend on periodic fire.
- 67) What are two purposes for a dozer line surrounding a prescribed burn (2 points)
- Sets a perimeter, creates access, prevents spreading to adjacent property

Q. Job Seeking Skills

- 68) About how many forestry related jobs are there in Louisiana? 45,000-46,000 accepted
- 69) How many primary wood using industries (sawmills, paper mills, plywood plants etc.) are in Louisiana? 150
- 70) How many secondary wood using industries (cabinet makers, furniture manufacturers etc.) are in Louisiana? 720
- 71) Name two Universities in Louisiana with degrees in forestry (2 points). LSU, Southern, LA Tech

72) Name two characteristics all entry level employees should demonstrate to their employer (2 points). Various answer accepted.

73) What town has a community college campus in Louisiana with a 2 year degree in forestry Winnfield or Oakdale

Business Problem

Mrs. Jones has 40 acres of timber you would like to purchase. Figure out how much you can offer Mrs. Jones for her timber while making a 20% profit over expenses. This problem does not consider taxes or insurance costs.

Species	Total Volume (bd ft) on the 40 acres (not per acre)	Price Delivered to Mill (\$/1,000 bd ft)
Southern Pine	100,000	\$250/1000 Board feet
Red Oak	25,000	\$400/1000 Board feet
Sweet gum	20,000	\$150/1000 Board feet
White Oak	20,000	\$400/1000 Board feet
Cherry	2,000	\$800/1000 Board feet

In this area it costs \$150 per thousand to operate your logging crew (stump to log deck), \$50 per thousand to haul to the mill, and \$100 per acre to retire your roads, trails and landings.

74) What is your total logging crew cost (stump to log deck)? \$25,050

$$\text{\$150/1000} \times 167,000$$

$$\text{\$150/1000} \times 167,000$$

$$\text{\$150} \times 167 = \text{\$25,050}$$

75) What is your total hauling cost? \$8,350

$$\text{\$50/1000} \times 167,000$$

$$\text{\$50/1000} \times 167,000$$

$$\text{\$50} \times 167 = \text{\$8,350}$$

76) What is your total site retirement cost? \$4,000

$$40 \text{ acres} \times \text{\$100/acre}$$

$$40 \times 100 = \text{\$4,000}$$

77) What are your total costs? \$37,400

$$\text{\$25,050} + \text{\$8,350} + \text{\$4,000} = \text{\$37,400}$$

78) What will you get by the mill for all 40 acres of timber delivered? \$47,600

$$\$25,000 + \$10,000 + \$3,000 + \$8,000 + \$1,600 = \$47,600$$

Southern pine 100,000 x \$250/1000

$$100,000 \times \$250/1000$$

\$25,000

Red Oak 25,000 x \$400/1000

$$25,000 \times \$400/1000$$

\$10,000

Sweet gum 25,000 x \$150/1000

$$25,000 \times \$150/1000$$

\$3,000

White Oak 20,000 x \$400/1000

$$20,000 \times \$400/1000$$

\$8,000

Cherry 2,000 x \$800/1000

$$2,000 \times \$800/1000$$

\$1,600

79) What is your profit margin? 21.4 %

Profit is Total revenue minus cost \$47,600 - \$37,400 = \$10,200

Profit margin = divide profit (\$10,200) by total revenue (\$47,600) and express it as percentages.

$$\$10,200/\$47,600 = .21428571$$

$$.21428571 \times 100 = 21.4 \%$$

Doyle Log Rule

Volume (Board Feet) by Number of 16 Foot Logs									
DBH Inches	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
10	16	20	23	24	26				
11	24	30	35	38	42				
12	31	39	47	52	57	60	62		
13	42	53	64	72	80	84	88		
14	52	67	82	93	104	109	114		
15	64	84	104	118	132	141	150		
16	77	101	125	143	161	174	186		
17	92	122	152	175	198	214	230		
18	108	144	179	206	234	254	273		
19	126	168	210	244	278	301	324		
20	144	193	242	282	321	348	374	396	417
21	164	221	278	324	370	403	436	462	489
22	185	250	315	368	420	458	497	529	561
23	208	282	356	417	478	521	564	604	643
24	231	314	397	466	536	583	630	678	725
25	256	350	443	522	600	655	710	764	818
26	282	386	489	576	663	727	791	852	912
27	310	425	540	638	735	806	877	946	1015
28	339	466	592	700	807	885	963	1040	1118
29	370	509	648	766	884	970	1056	1144	1232
30	400	552	703	832	961	1055	1149	1248	1346

