University of Minnesota Invitational
FFA Forestry 2017 Contest
Written Examination

This exam consists of 15 multiple choice and 5 true or false questions. Mark your answers on the front side of your scantron bubble sheet. DO NOT mark on this exam.

1. There are _____ square feet in an acre.
   a. 36,450
   b. 43,560
   c. 53,630
   d. 56,360

2. If a landowner's goal is to increase the variety of organisms on their property, habitat _____ should be maximized.
   a. diversity
   b. length
   c. sunlight
   d. age

3. The number of seed trees required on a site depends on the species' ability to produce seed and the distance that seed can be dispersed by _____.
   a. wind
   b. water
   c. animal
   d. human

4. The NE ¼ of the SW ¼ of section 15 contains _____ acres:
   a. 80
   b. 40
   c. 160
   d. 320

5. The official log rule in the state of Minnesota is the:
   a. Doyle
   b. Scribner decimal C
   c. International one inch
   d. DBH standard

6. Shearing is a cultural practice used with:
   a. Hardwood timber
   b. Veneer logs
   c. A "sugar bush"
   d. Christmas trees

7. The alternate host for the white pine blister rust is:
   a. Aspen
   b. Winter wheat
   c. Gooseberries and currants
   d. Eastern red cedar

8. In time, thinning a forest generally increases:
   a. Soil fertility
   b. Diameter growth
   c. Excurrent growth
   d. Tree height

9. New growth of wood is initiated in the _____ layer.
   a. Cambium
   b. Heartwood
   c. Summerwood
   d. Sapwood

10. Planting stock with the designation 2-2 indicates the:
   a. Trees are 2 years old
   b. Trees are transplants
   c. Trees are 4 inches long
   d. Root to shoot ratio is 1

11. All other factors being equal, a quartersawn 2 x 12 will shrink _____ in width than/as a flatsawn plank of the same size:
   a. More
   b. Less
   c. About the same
   d. None of the above

12. Which of the following trees does <u>not</u> have compound leaves?
   a. Boxelder
   b. White ash
   c. Paper birch
   d. Butternut

13. A farm building project requires 1500 board feet of 1" x 8" boards priced at $380/MBF (per thousand board feet). What will this material cost?
   a. $1000
   b. $380
   c. $570
   d. None of the above

14. If wood is used for flooring, you would prefer a species which is:
   a. Dense and strong so that it does not dent
   b. Able to shrink and swell a lot during the seasonal climate changes
   c. Weaker and more pliable for easy installation
   d. None of the above

15. Bark is frequently removed before lumber is sawn. This bark may be used for:
    a. The production of water treatment chemicals
    b. The synthesis of family multivitamin tablets
    c. Heat (burned) for the sawmill and the dry kilns
    d. Exotic fertilizer when combined with specially aged swine manure

True-False questions

For the following seven true or false questions, mark A on the scantron bubble sheet if the statement is true and B if the statement is false.

	True	False	
16.	A	B	Declination for a given location does not change over time.
17.	A	B	Spruce are recommended for the inner two rows of a shelterbelt.
18.	A	B	A cherry is an example of a drupe.
19.	A	B	The sapwood of redwood, white oak, and many of the cedars is highly resistant to decay.
20.	A	B	As a sawblade or chainsaw cuts through wood, the space left by the removal of wood is called a kerf.

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Wood Identification

This exam consists of 5 multiple choice questions. Mark your answer on the scantron bubble sheet. DO NOT mark on this exam.

1. Sample 1
   a. Northern red oak
   b. Cherry
   c. Red (Norway) pine
   d. White oak

2. Sample 2
   a. Tamarack
   b. Elm
   c. Ash
   d. Ponderosa pine

3. Sample 3
   a. White pine
   b. Sugar maple
   c. Hickory
   d. Hackberry

4. Sample 4
   a. Butternut
   b. Birch
   c. Eastern red cedar
   d. Cottonwood

5. Sample 5
   a. Aspen
   b. Douglas-fir
   c. Northern white cedar
   d. Spruce

FFA Forestry CDE
Timber Cruising

On your score sheet, record individual tree DBH to the nearest inch and merchantable height to the nearest ½ sawlog converted to feet (e.g., 1 ½ sawlogs equals 24 feet). Then utilizing that diameter and height information, determine individual tree volume from the table below and record that information on your score sheet.

Tree Volume (Scribner Rule by Number of 16 foot logs)

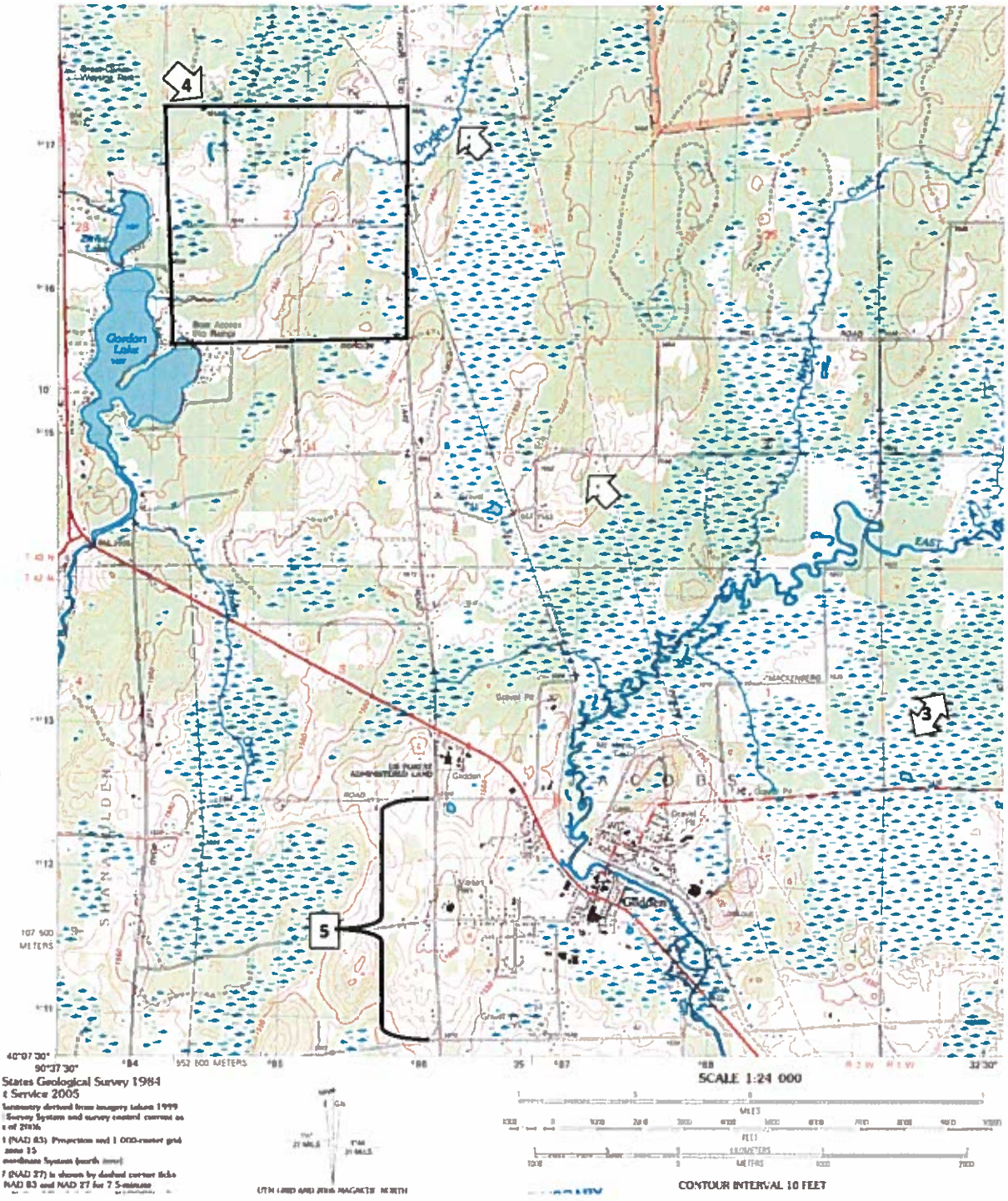
Diameter breast high	Volume (board feet) when number of 16-foot logs is:					
(inches)	*½*	*1*	*1 ½*	*2*	*2 ½*	*3*
10	**17**	**28**	**36**	**44**	**48**	**52**
11	**22**	**38**	**49**	**60**	**67**	**74**
12	**28**	**47**	**61**	**75**	**85**	**95**
13	**34**	**58**	**76**	**94**	**107**	**120**
14	**40**	**69**	**92**	**114**	**130**	**146**
15	**47**	**82**	**109**	**136**	**157**	**178**
16	**54**	**95**	**127**	**159**	**185**	**211**
17	**63**	**109**	**146**	**184**	**215**	**246**
18	**72**	**123**	**166**	**209**	**244**	**280**
19	**81**	**140**	**190**	**240**	**281**	**322**
20	**90**	**157**	**214**	**270**	**317**	**364**
21	**100**	**176**	**240**	**304**	**358**	**411**
22	**111**	**194**	**266**	**338**	**398**	**458**
23	**123**	**214**	**294**	**374**	**441**	**508**
24	**137**	**234**	**322**	**409**	**484**	**558**
25	**149**	**258**	**355**	**452**	**534**	**617**
26	**165**	**281**	**388**	**494**	**585**	**676**
27	**179**	**304**	**420**	**536**	**636**	**736**
28	**195**	**327**	**452**	**578**	**686**	**795**
29	**210**	**354**	**491**	**628**	**746**	**864**
30	**277**	**382**	**530**	**678**	**806**	**933**

2017 Fall Minnesota FFA Forestry Contest: Map Interpretation Practicum

Contestant Name _____ Team Number_____

School _____ Code Number _____

1. What is the elevation of the highest point in Section 35?
   a. 1575 feet
   b. 1600 feet
   c. 1575 yards
   d. 1650 feet
2. How many different Townships does Dryden Creek flow through between the north end of the map and Gordon Lake?
   a. 1
   b. 2
   c. 3
   d. 4
3. Which best describes the primary difference between the land at the two ends of the arrow?
   a. Wetland vs. upland
   b. Public vs. private ownership
   c. Forest vs. non-forest
   d. Open water vs. swamp
4. Approximately how many acres are inside the area delineated in black?
   a. 800
   b. 400
   c. 240
   d. 640
5. About how long is the north-south road between the ends of the marker?
   a. ¾ mile
   b. 1 mile
   c. 4 miles
   d. 3 miles



States Geological Survey 1984
t Service 2005

trimetry derived from imagery taken 1999
Survey System and survey control current as
s of 2000.

1 (NAD 83) Projection and 1 000-meter grid
zone 15
coordinate system (north zone)

7 (NAD 27) is shown by dashed corner ticks
NAD 83 and NAD 27 for 7 5-minute

2017-18 Fall FFA Forestry Contest
Indoor GPS and Compass Contest

This exam consists of 6 multiple choice questions. For scores to be counted, your answers must be marked on the answer sheet, NOT on this page.

16. Navigating with a compass is often more challenging near the Iron Range than in other parts of Minnesota. Why?
    a. Deep mine pits and tall tailings piles can make it hard to see a long distance.
    b. Heavy forest cover impedes visibility.
    c. Northern lights are more common on the Range, and they can change the orientation of your compass needle.
    d. Instead of consistently pointing toward magnetic north, your compass needle is often attracted by underground iron deposits.

17. It takes you 32 steps (footfalls) to walk 100 feet. What is your pacing factor?
    a. 16
    b. 32
    c. 3.13 feet
    d. 6.25 feet

18. Your compass and pacing course starts at point 1. To get to point 2, you pace 200 feet at 180 degrees. Then, to get to point 3, you pace 100 feet at 135 degrees. Is point 3 closer to point 1 or point 2?
    a. Point 3 is closer to Point 2
    b. Point 3 is closer to Point 1
    c. No way to know
    d. Same distance from both point 1 and point 2

19. When navigating toward a waypoint, which of the following is **NOT** a screen view available on the Garmin GPSmap 76 receiver?
    a. A view showing your current position relative to that of nearby waypoints
    b. A view similar to the face of a compass with an arrow pointing toward the correct bearing
    c. An interactive Google Maps screen showing your current location
    d. A view displaying your trip computer with distance to the destination, moving average speed, and other information.

20. Which of the following best describes how a GPS receiver works?
    a. Satellites orbiting the earth send a signal to your receiver every second. Your receiver uses these signals to compute your location.
    b. The receiver sends your location every second to satellites orbiting the earth, thereby tracking where you are at all times.

c. Cell towers send a signal to your receiver every second. Your receiver uses these signals to compute your location.
d. If available, wifi internet, satellites, and cell towers all send signals to your receiver every second. Your receiver chooses which signals are most accurate and uses those to compute your location.

21. True or False: Most inexpensive GPS receivers can accurately display your bearing if you are standing still.
    a. True
    b. False

FFA Forestry Contest
2017 Forest Business Management Problem

Bass Wood, a logging business owner, is trying to decide whether he can make a profit on a timber sale that was recently advertised by a private landowner. Use the background information provided below to answer the 5 multiple-choice questions. Excluding stumpage, assume that the total of all other costs (equipment, hauling, labor, move equipment profit) is $39,482. Record your answer on the scantron bubble sheet.

Equipment		
Type of equipment	Number of pieces of equipment	Owning and operating cost per scheduled hour per machine
Feller-processor	1	$68.00
Forwarder	1	$50.00
Total for all machines		$118.00
Operating Data		
Number of employees (including owner)	2	
Employee wages (including owner)	$15.00 per hour	
Fringe benefit rate (% of wages)	30%	
Contract hauling to market	$15.50 per cord	
Harvest Site Data		
Move cost to get equipment to site	$575/piece of equipment	
Stumpage cost	$36.00 per cord	
Sale area	40 acres	
Yield per acre	24 cords	
Harvesting rate	60 cords per day	
Scheduled hours worked per day/machine Feller-processor Forwarder	 8 hours 9 hours	
Owner's Profit Requirement		
Minimum profit required (percent of revenue received at the mill)	2.75%	
Marketing Information		
Delivered price received at mill	$85.00 per cord	

FFA Forestry Contest

Contestant name: _____ Contestant No.: _____

School: _____

2017 Forest Business Management Problem
Note: All dollar ($) values are rounded to the nearest whole dollar amount

This portion of the contest consists of 5 multiple choice questions. Mark your answers on the scantron bubble sheet. DO NOT mark on this exam.

1. What is the total number of cords to be harvested at this sale?

   a) 840 b) 960 c) 1020 d) 1110

2. How many work days are required to harvest the sale?

   a) 8 b) 12 c) 16 d) 20

3. What is the total revenue that would be received from the mill for this sale?

   a) $72,100 b) $75,700 c) $79,300 d) $81,600

4. What is the total cost of stumpage for this sale?

   a) $32,640 b) $34,560 c) $36,040 d) $38,135

5. What is the net profit (Total Revenue – Total Expenses) for this sale?

   a) $2,107 b) $4,528 c) $6,476 d) $7,558

2017-18 Fall FFA Forestry Contest: Tree ID (90 points)

List of species codes to enter on Scantron bubble sheet

This portion of the contest consists of 15 plant identification specimens, each worth 6 points. Mark your answers on the Scantron bubble sheet using the three-digit codes noted below.

Hardwoods

201. American elm
202. Balsam poplar
203. Basswood
204. Bigtooth aspen
205. Black ash
206. Black cherry
207. Black walnut
208. Boxelder
209. Bur oak
210. Butternut
211. Cottonwood
212. Green ash
213. Hackberry
214. Hickory
215. Honey locust
216. Ironwood (*Ostrya* sp)
217. Northern pin oak
218. Northern red oak
219. Paper birch
220. Quaking aspen
221. Red maple
222. Russian olive
223. Silver maple
224. Slippery elm
225. Sugar maple
226. White ash
227. White oak
228. Willow

Softwoods

229. Balsam fir
230. Black spruce
231. Colorado (blue) spruce
232. Eastern hemlock
233. Eastern red cedar
234. Eastern white pine
235. Jack pine
236. Northern white cedar
237. Norway spruce
238. Red (Norway) pine
239. Scotch pine
240. Tamarack (Eastern larch)
241. White spruce

2017-18 Fall FFA Forestry Contest: Forestry Tools & Equipment

List of codes to enter on Scantron bubble sheet

Identify 5 forestry tools or pieces of equipment from the following list at five points each. Enter your answers on the provided Scantron bubble sheet.

501. Aerial photo
502. Angle gauge (Cruz-all style)
503. Backpack fire pump
504. Bow saw
505. Bulldozer
506. Canthook
507. Chainsaw
508. Chainsaw chaps
509. Chipper/Grinder
510. Clinometer
511. Containerized seedling block
512. Cruising vest
513. Data recorder
514. Diameter tape
515. Dot grid
516. Drip torch
517. Ear protectors
518. Feller-buncher
519. Fire rake
520. Fire swatter (flap)
521. Forwarder
522. Fire weather kit
523. GIS map
524. GPS receiver
525. Hand compass
526. Hand lens
527. Harvester/processor
528. Hip chain
529. Hookeroon
530. Increment borer
531. Laser rangefinder
532. Log truck
533. Logger's tape
534. Lopping shears
535. Mattock
536. Peavy
537. Planimeter
538. Plant press
539. Planting hoe or bar
540. Pruning saw
541. Plastic flagging
542. Pruning shears
543. Pulaski-Forester Axe
544. Relaskop
545. Safety glasses
546. Safety hardhat
547. Shearing knife
548. Skidder
549. Slasher
550. Soils map
551. Steel tape
552. Stereoscope
553. Tally book
554. Topographic map
555. Tree caliper
556. Tree injector/hypo hatchet
557. Tree marking gun
558. Tree stick
559. Wedge prism

2017 Fall Invite Forestry Officials

Exam

1. B
2. A
3. A
4. B
5. B
6. D
7. C
8. B
9. A
10. B
11. B
12. C
13. C
14. A
15. C
16. B
17. A
18. A
19. B
20. A

Wood ID

1. A
2. C
3. B
4. B
5. D

Indoor Timber Cruising

6. B
7. B
8. A
9. C
10. D

Map Interpretation

11. A
12. A
13. C
14. D
15. B

Indoor GPS and Compass

16. D
17. D
18. A
19. C
20. A
21. B

Forest Business Management

1. B
2. C
3. B
4. D

Tree ID

1. 241 – White Spruce
2. 230 – Black Spruce
3. 229 – Balsam Fir
4. 234 – Eastern White Pine
5. 238 – Red (Norway) Pine
6. 235 – Jack Pine
7. 236 – Northern White Cedar
8. 209 – Bur Oak
9. 227- White Oak
10. 207 – Black Walnut
11. 213 – Hackberry
12. 201 – American Elm
13. 221 – Red Maple
14. 223 – Silver Maple
15. 225 – Sugar Maple

Forest Tool ID

1. 530 – Increment borer
2. 548 – Skidder
3. 540 – Pruning saw
4. 541 – Plastic flagging
5. 508 – Chainsaw chaps