

Team Number:

Team Name:

**2010 California Envirothon  
Forestry Station  
Total 100 Points Possible  
Time Allowed: 30 Minutes**

Please write the team number and name on top of each page of the test. You may unstaple the test and work on questions in any order; however, pages should be returned to correct order when test is turned in. You may choose to split your team up and work on multiple questions at once or work on questions together. Please show all work, as you may receive partial credit where possible.

1. Trees and other woody plants common to the Mojave Desert, San Bernardino, and White Mountains are listed below. Fill in appropriate blanks with either: the common name, Genus, or species that corresponds to each. **(8 Points)**

COMMON NAME	GENUS	SPECIES
Great Basin Bristlecone Pine	Pinus	
	Yucca	brevifolia
	Pinus	monophylla
Ponderosa Pine	Pinus	
Desert Scrub Oak		turbinella
California Ephedra		californica
	Quercus	chrysolepis
California Juniper		californica

2. List three examples of federal or state environmental legislation relating to the practice of forestry. **(6 Points)**

- A.
- B.
- C.

3. You are measuring a Ponderosa Pine tree with a clinometer. However, due to the tall brush you cannot get a good view to the top of the tree. To get a better view, you measure out 100 feet (horizontal distance) uphill from the tree. The reading you get at the base of the tree is (-9%). The reading to the top of the tree is (+90%). **(4 Points)**

Team Number:

Team Name:

The height of the tree is \_\_\_\_\_feet.

4. Match each of the silvicultural systems (also referred to as regeneration methods) A through E below **(10 Points)**.

A) Clearcut

B) Seedtree

C) Shelterwood

D) Single-Tree Selection

E) Group Selection

\_\_\_ A stand in which essentially all the trees are removed in one operation.

\_\_\_ Individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration.

\_\_\_ The cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderate microenvironment

\_\_\_ Trees are removed and new age classes are established in small groups.

\_\_\_ The cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment.

5. You are measuring one variable cruise plot with a 30 factor prism. You measure 2 trees as being "in." What is the average square feet of basal area per acre? **(4 Points)**

\_\_\_\_\_square feet of basal area per acre

6. Using the clinometers, what is the total height (to the nearest foot) of the tree marked with blue flagging? **(5 Points)**

+/- 1 or 2 feet = 5 points

+/- 3 or 4 feet = 4 points

+/- 5 or 6 feet = 3 points

+/- 7 or 8 feet = 2 points

+/- 9 or 10 feet = 1 points

Team Number:

Team Name:

7. If you were asked to measure a trees diameter at breast height or DBH, how high above the ground would you measure the tree? (1 Point)

                     from the high side of the tree

8. Name two damaging agents that are currently threatening forests in the San Bernardino and White Mountains? (2 Points)

1.

2.

9. Circle the letter of the statement that best describes trees considered "shade intolerant"? (2 Points)

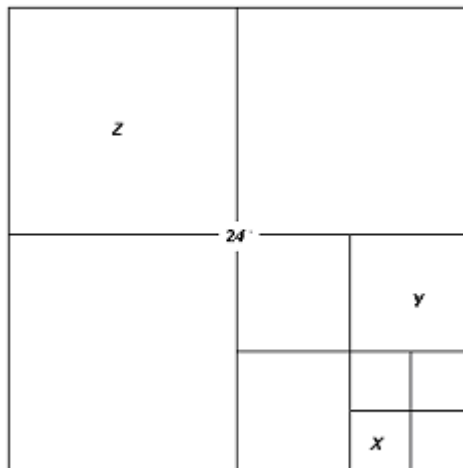
A) Trees that can withstand extreme amounts of water

B) Trees that cannot withstand shade

C) Trees that can withstand insects while in the shade

D) Trees that cannot withstand full sun

10. Using the Section diagram below, provide a detailed legal description for X: (2 points)



X:   1/4 of the   1/4 of the   1/4 of section 24

Team Number:

Team Name:

(10 cont.) Again, referring to the Section diagram, determine the acreage of the box associated with letters Y, and Z? **(2 points)**

Y)

Z)

11. Name 3 trees common to the San Bernardino Mountains and/or the White Mountains, common names are fine. All reasonable answers will be considered. **(3 Points)**

A)

B)

C)

12. Define the following: **(3 Points)**

A) A board foot measures \_\_\_ inch(es) by \_\_\_ inches by \_\_\_ inches

B) A cord measures \_\_\_ feet by \_\_\_ feet by \_\_\_ feet

C) MMBf means:

13. Using the Net Volume Table (table 1) (Scribner Volume Table), determine the volume of a pine tree that is 90 feet tall and has a DBH of 24 inches. **(2 Points)**

Volume =

14. Forested land can be classified by its productivity. This classification is based on tree height, growth, and age. Use the attached site index table (Appendix, Table 2) and site classification table (Appendix, Table 3) to determine the site index and site class of a hypothetical pine stand that has an average height of 70 feet at an age of 50 years. **(2 points)**

Site index:

Site class:

15. Trees in an area that are classified as site class V will grow very slow, while trees in an area that are classified as site class I will grow very vigorously. Based on your answer to question 14 above: (a) What would you say about the productivity of the hypothetical pine stand? (b) Is the land that the stand occupies a good place to grow trees for lumber? **(2 points)**

a)

b)

Team Number:

Team Name:

16. Thinning forest stands (density management) allows resources, such as light, moisture, and nutrients, to be concentrated on fewer trees, thus allowing healthier and faster growing trees. These trees may also be better situated to withstand root-rot and fire, with better spacing and thicker bark development, in some cases, for fire protection. You are marking an "understory" or "low" thinning or "thinning from below". Crown classes have been used to describe tree by the amount of light they receive and their position in the canopy. Which trees, by crown position, do you concentrate on marking for logging an understory thinning? **(2 points)**

- a. Dominant and Co-dominant trees
- b. Co-dominant and intermediate trees
- c. Intermediate and suppressed trees

17. Name four advantages and four disadvantages of fire. All reasonable answers will be considered. **(16 points)**

Advantages	Disadvantages
1.	1.
2.	2.
3.	3.
4.	4.

18. Name the forestry equipment placed on the table and labeled A through E: **(10 Points)**

- A)
- B)
- C)
- D)
- E)

19. Using answers from question 18, what piece of equipment would you use if you wanted to get a rough estimate of 16-foot logs from a tree? **(1 Point)**

20. Using answers from question 18, what piece of equipment would you use if you wanted to know the percent slope of a timber unit? **(1 Point)**

Team Number:

Team Name:

21. Heat is a necessary part of the fire triangle. Name 3 ways that heat may be transferred from one particle to another particle. **(3 Points)**

22. Young xylem conducts sap and strengthens the stem of a tree. As xylem tissue ages it dies and forms a dark colored central cylinder called? **(1 Point)**

23. In gymnosperms earlywood is formed early in the season and consists of wood that is \_\_\_\_\_ in density than wood formed later in the season. **(1 Point)**

24. The stems of woody plants perform several important functions, name 2 of these functions. **(2 Points)**

25. Using the compass provided shoot a bearing to the tree marked in orange & white flagging, what is it's bearing, what is it's back bearing? **(5 Points)**

Team Number:  
Team Name:

Table 1  
 REGION 5 SCHOLARSHIP SET VALUE TABLES TO A UTILIZATION TOP  
 NATIONAL CIVILISE PROGRAM  
 PINE  
 MAY 1996

MARKET	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62
30	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140
40	19	39	58	77	96	115	134	153	172	191	210	229	248	267	286	305	324	343	362	381	400	419	438	457	476	495	514
50	29	58	87	116	145	174	203	232	261	290	319	348	377	406	435	464	493	522	551	580	609	638	667	696	725	754	783
60	39	78	117	156	195	234	273	312	351	390	429	468	507	546	585	624	663	702	741	780	819	858	897	936	975	1014	1053
70	49	98	147	196	245	294	343	392	441	490	539	588	637	686	735	784	833	882	931	980	1029	1078	1127	1176	1225	1274	1323
80	59	118	177	236	295	354	413	472	531	590	649	708	767	826	885	944	1003	1062	1121	1180	1239	1298	1357	1416	1475	1534	1593
90	69	138	207	276	345	414	483	552	621	690	759	828	897	966	1035	1104	1173	1242	1311	1380	1449	1518	1587	1656	1725	1794	1863
100	79	158	237	316	395	474	553	632	711	790	869	948	1027	1106	1185	1264	1343	1422	1501	1580	1659	1738	1817	1896	1975	2054	2133
110	89	178	267	356	445	534	623	712	801	890	979	1068	1157	1246	1335	1424	1513	1602	1691	1780	1869	1958	2047	2136	2225	2314	2403
120	99	198	297	396	495	594	693	792	891	990	1089	1188	1287	1386	1485	1584	1683	1782	1881	1980	2079	2178	2277	2376	2475	2574	2673
130	109	218	327	436	545	654	763	872	981	1090	1199	1308	1417	1526	1635	1744	1853	1962	2071	2180	2289	2398	2507	2616	2725	2834	2943
140	119	238	357	476	595	714	833	952	1071	1190	1309	1428	1547	1666	1785	1904	2023	2142	2261	2380	2499	2618	2737	2856	2975	3094	3213
150	129	258	387	516	645	774	903	1032	1161	1290	1419	1548	1677	1806	1935	2064	2193	2322	2451	2580	2709	2838	2967	3096	3225	3354	3483
160	139	278	417	556	695	834	973	1112	1251	1390	1529	1668	1807	1946	2085	2224	2363	2502	2641	2780	2919	3058	3197	3336	3475	3614	3753
170	149	298	447	596	745	894	1043	1192	1341	1490	1639	1788	1937	2086	2235	2384	2533	2682	2831	2980	3129	3278	3427	3576	3725	3874	4023
180	159	318	477	636	795	954	1113	1272	1431	1590	1749	1908	2067	2226	2385	2544	2703	2862	3021	3180	3339	3498	3657	3816	3975	4134	4293
190	169	338	507	676	845	1014	1183	1352	1521	1690	1859	2028	2197	2366	2535	2704	2873	3042	3211	3380	3549	3718	3887	4056	4225	4394	4563
200	179	358	537	716	895	1074	1253	1432	1611	1790	1969	2148	2327	2506	2685	2864	3043	3222	3401	3580	3759	3938	4117	4296	4475	4654	4833

Team Number:

Team Name:

Table 2 - Site Index Values  
Height of Average Dominant and Codominant  
Pine at 100 years (USFS, Meyer, 1938)

AGE	HEIGHT BY SITE INDEX												
	55	60	70	80	90	100	110	120	130	140	150	160	
	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet
20	9	12	16	20	25	30	35	40	45	50	55	60	
30	15	20	26	32	38	44	51	57	64	70	77	84	
40	22	28	35	42	49	56	63	70	77	85	92	100	
50	28	35	43	51	58	65	73	80	88	97	106	113	
60	34	42	50	58	66	73	80	89	97	107	115	124	
70	39	47	56	64	73	80	89	98	108	116	125	134	
80	43	52	61	70	79	88	97	106	116	124	133	143	
90	47	57	66	76	86	94	104	113	123	132	142	152	
100	50	60	70	80	90	100	110	120	130	140	150	160	
110	53	63	74	84	95	106	116	127	137	147	158	168	
120	55	66	77	88	100	111	122	133	144	154	165	175	
130	57	69	80	92	104	116	128	139	151	161	172	182	
140	59	71	83	96	108	121	133	145	157	167	179	189	
150	60	73	85	99	112	125	138	151	163	173	185	196	
160	61	75	89	102	116	129	143	156	169	179	191	201	
170	62	77	91	106	119	133	147	161	174	184	196	206	
180	63	78	93	108	122	136	149	163	176	186	198	208	
190	63	79	95	110	125	139	154	168	181	191	203	213	
200	64	80	97	112	127	141	157	171	184	194	206	216	

TABLE 3 - TIMBER SITE CLASSIFICATION SYSTEMS IN CALIFORNIA  
(CALIFORNIA BOARD OF FORESTRY, CAC 14-1060, 1974)

Young Growth Coast Redwood		Douglas-Fir		Ponderosa Pine	
Site Class	Site Index *	Site Class	Site Index *	Site Class	Site Index *
I.....	180 or more	I.....	124 or more	I.....	114 or more
II.....	155 - 179	II.....	104 - 123	II.....	92 - 113
III.....	130 - 154	III.....	134 - 163	III.....	75 - 91
IV.....	105 - 129	IV.....	103 - 133	IV.....	50 - 74
V.....	Less than 100	V.....	Less than 103	V.....	Less than 50

\* Site Index is same as total tree height in feet at 100 years old