

**Professional Foresters Registration Examination, April 7, 2023**

**PART I**

**Instructions: APPLICANTS, PLEASE READ THESE INSTRUCTIONS CAREFULLY.**

**Complete any Three (3) of Questions I through V.**

**Question I Short Answer  
Question II - Forest Ecology  
Question III - Forest Economics  
Question IV- Silviculture  
Question V - Forest Protection**

Professional Foresters Registration  
1416 9th Street, Room 1506-16  
Sacramento, CA 95814

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

### **ACRONYMS AND ABBREVIATIONS USED IN THIS EXAMINATION**

The following Acronyms and /or Abbreviations **may be used** in this examination.

Technical abbreviations that should be known by a forester are NOT included here (e.g., DBH, MAI, MBF). You may remove this page for reference throughout this examination. **It need not be returned.**

<b><u>Acronym or Abbreviation</u></b>	<b><u>Full Text</u></b>
BLM	Bureau of Land Management, USDI
BOF	California State Board of Forestry and Fire Protection
CA	California
CCR	California Code of Regulations
CAL FIRE	California Dept. of Forestry and Fire Protection
CDF&W	California Department of Fish and Wildlife
FPR	California Forest Practice Rules
PRC	California Public Resources Code
RPF	California Registered Professional Forester
THP	California Timber Harvest Plan
TPZ	California Timber Production Zone
USFS	United States Forest Service, USDA

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

**April 2023 RPF EXAMINATION**

3%    1. What is a forest seed orchard? What is their value?



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2%    2. What are the two main types of seed orchards?

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3%    3. What type of Timberlands may need an **Accepted/ Approved Document from CAL FIRE to move forward with A HARVEST Project?**

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Applicant #: \_\_\_\_\_

Question #   I  

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3%    4. Describe three (3) issues you must address before you begin a water drafting project to help determine if it may have the potential to affect fish and wildlife resources.

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3%    5. In a forest project financial analysis, what are sunk costs?

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3%    6. How are sunk costs accounted for when making decisions about **continued investment in a project**?

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**



#7



3% 7. What caused these ~ 8" high by 10+" wide black holes in this seven-foot-tall cedar stump? What does this tell you about the method and ~ date of this tree's harvest?

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Applicant #: \_\_\_\_\_

Question #   I  

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

#8



3% 8. How might modeling rate the fire resilience in this site class III PP stand? Explain your conclusion.

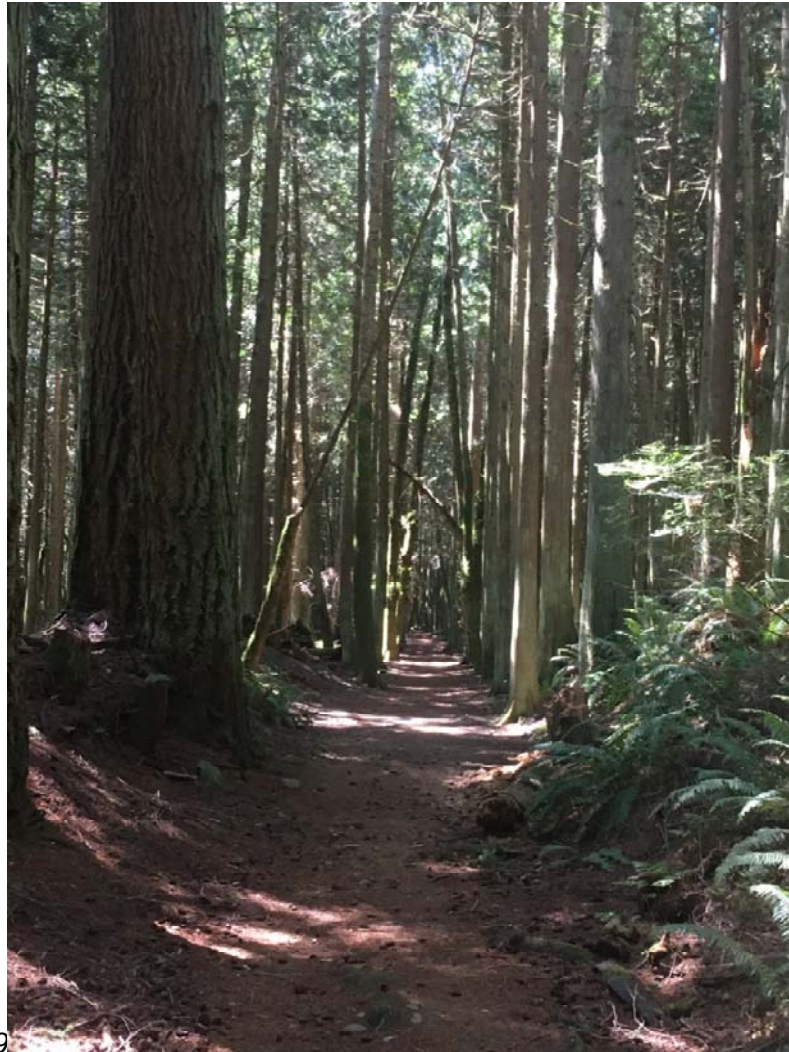
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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**



#9

3 % 9. In the above photo, what does this artifact forest opening with constant ~10 foot wide, 2-3% grade, and 4 to 8 foot deep through-cuts tell you about the likely log transport method used in the primary forest harvest?

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

#10



3% 10. In what secondary successional stage is this DF, cedar, alder stand?

Forest floor primarily down trees 6" to 12" diameter in various states of decay, branch and leaf debris. Main canopy 90% closed, codominant trees 16 to 28" dbh with < 30 % live crown.

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3% 11. What succession stage will follow that which you identified from the # 10 photo on the previous page (absent harvest or catastrophic disturbance)? When will it occur and how long will it last?



#12

3% 12. Assume you must cut only one of the two PP codominant trees at above photo center in this mixed conifer stand managed by single tree selection for timber production. The next subsequent harvest is 15 years in the future. Which do you cut? Explain your conclusion.

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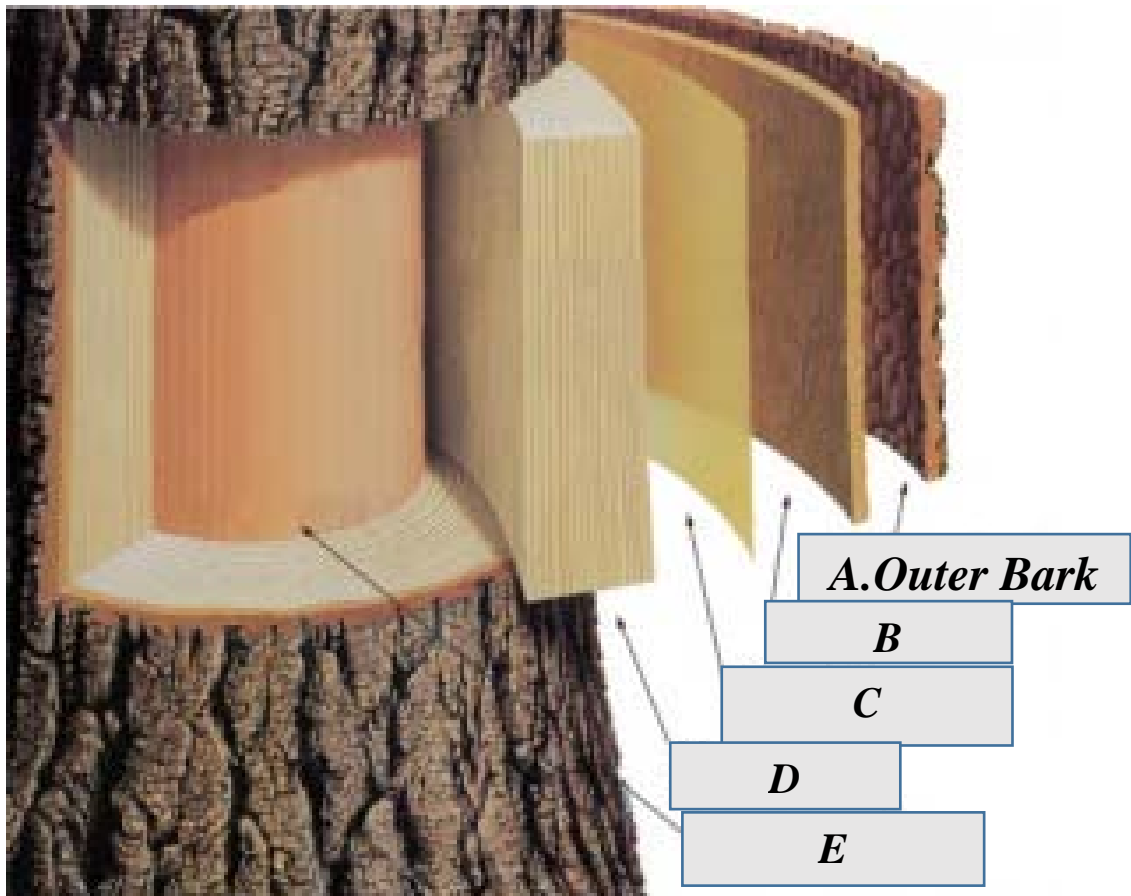
**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3%    13. What is a Basal Area Factor (BAF)? How is BAF applied in sampling?

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4%    14. Name the tree parts. B, C, D, E.

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3% 15. What is the most important tree improvement genetic consideration when developing seed orchards?

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3% 16. As used in ecology, list three causative processes of Evolution.

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3% 17. What is the term for a timber sale in which the buyer and seller agree on a total price for marked standing trees or for trees within a defined area before the wood is removed? —note the timber is often paid for before harvesting begins.

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3% 18. When managing the density of forest stands for sawtimber that have trees large enough to harvest, what is the most important factor external to the managed forest?

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3% 19. What characteristic of true fir requires that special attention be paid to during partial cutting?

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Applicant #: \_\_\_\_\_

Question #   I  

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3%    20. As used in Forest Economics, define Elasticity of supply and demand.

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3%    21. Briefly define a "blind lead or area" in logging terminology

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3%    22. As used in Forest Engineering, what is a Planimetric Map?

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3%    23. What makes an orthophotograph different from other aerial photographs?

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Applicant #: \_\_\_\_\_

Question #   I  

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

4% 24. What is a forest pest? List three (3) life forms of forest pests.

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3% 25. How do the FPRs describe "good" stand vigor within the definition of Stand Vigor?

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2% 26. California's recent Strategic Fire Plan focuses on two primary activities. List them and briefly describe their intended results.

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4% 27. List four (4) legislative intentions of the **Timber Regulation and Forest Restoration Fund**.

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Applicant #: \_\_\_\_\_

Question #   I  

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3% 28. A written analysis of pre-harvest and proposed post-harvest timber stand conditions and a description of the silvicultural practices and systems to be used in lieu of the standard methods in a Timber Harvest Plan (THP) is termed a:

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3% 29. The area on which timber operations are being conducted as shown on the map accompanying the Timber Harvesting Plan, and within 100 feet, as measured on the surface of the ground, from the edge of the traveled surface of appurtenant roads owned or controlled by the timberland owner is called the:

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3% 30. What is the radius of a circular **1/3-acre** inventory plot? Round to the nearest tenth. Show your work: \_\_\_\_\_

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3% 31. List three (3) in-stream conditions that can result from land management activities and can negatively impact fish populations.

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**Answer on these pages, tear from the booklet and submit with the answer packet if you chose to answer Question I of this examination.**

3% 32. Define the term hyporheic flow and describe one important effect it has on fish habitat.

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3% 33. Next to the regulatory programs given below, give the correct name of the CA State Agency or Department that administers that program.

A. Streambed Alteration >

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B. Watershed Basin Plans>

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C. Forest Burning smoke discharge>

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**End of Short Answer Question #1**

## QUESTION II-FOREST ECOLOGY

### OBJECTIVE:

To demonstrate understanding of ecological principles and their application to forest management.

### QUESTIONS:

- 5% 1. What is **forest succession**?
- 5% 2. What is **primary forest succession**?
- 5% 3. What is **secondary forest succession**?
- 5% 4. What **causes** forest succession? Briefly describe the **process** of natural succession.
- 20% 5. What is a **disturbance-recovery regime**? Name **five (5) natural** (primarily non-human caused) and **three (3) anthropogenic** disturbance-recovery regimes that have affected western forests in the USA. Why are disturbance-recovery regimes important?
- 5% 6. What is **biological diversity**?
- 5% 7. How is **biological diversity described or measured**?

### SITUATION for questions 8, 9, 10 and 11

Hypothesize a **50-year old** California forest stand on good timber site **of your choosing**, which has been **managed for commercial wood production since its inception**.

- 15% 8. Describe your stand in **physical**, **abiotic** and **vegetative** terms. Please be both thorough and well organized.
- 10% 9. Describe your stand history in **terms of disturbance and succession**.
- 5% 10. Describe the **vegetative biological diversity** of your 50-year old stand.
- 10% 11. What **changes** in forest management (**do not** consider a change in the basic beginning condition (tree regeneration strategy) of your stand) might have been done shortly before and **after** the **time of your stand inception** and **over the past 50 years** to increase biological diversity over the life of the stand while retaining the basic timber production objective?
- 10% 12. Why is it **not** sufficient to manage for biological diversity at the stand level alone?

END OF QUESTION



## QUESTION III-FOREST ECONOMICS

### OBJECTIVE

To demonstrate your understanding of the interacting economic factors involved in the multiple-use approach to forest management.

### SITUATION

Most public forest properties and many private forest properties are managed on what is variously termed a multiple use, multiple products or multiple services approach. One method of evaluating the economics of multiple use is to use a present net worth criterion.

### QUESTIONS

10% 1. Briefly, describe what is meant by a multiple use approach to management.

10% 2. Briefly, describe the patterns of land use allocations which emerge under the multiple use approach **and** possible reasons for such patterns.

20% 3. Utilizing economic price theory, briefly discuss how the criterion of present net worth can be used by the manager to **determine if an optimum balance of uses is being achieved** at a given level of management expenditures.

20% 4. If this present net worth criterion were used, **what economic relationship would exist between the various multiple use options at the optimum level?** (Use economic theory to describe the conditions).

40% 5. Briefly discuss **four practical problems** or limitations of using the present net worth criterion for management decisions in real life situations.

**END OF QUESTION**

## QUESTION IV FOREST SILVICULTURE

### OBJECTIVE

To demonstrate your ability to develop a silvicultural prescription and your understanding of specific regulatory requirements providing maximum sustained production of high-quality timber products (MSP).

### QUESTION

Listed below are the essential sequential elements of a complete silvicultural prescription. Consider a forest stand with an upper canopy of primarily merchantable sized trees, on private property with which you are familiar. In outline format, based on the elements listed below, describe how you would develop a silvicultural prescription for partial harvest of the stand. Make this your “showcase” prescription so the chief forester will know you are ready for independent work. Include the **procedure** you would use, the **information** you would obtain, the **analysis** and justify the **recommendation** you would make. It is more important to list and describe the type of information and processes you will undertake than to provide specific details about the assumed stand.

- 10% I. Description of physical setting
- 15% II. Description of existing stand condition
- 15% III. Goals, objectives and constraints
- 10% IV. Projection of existing stand and vegetation changes into future (at least 20 years) **without** treatment
- 5% V. Departure of projected future stand (**without** treatment) from goals
- 15% VI. Description of proposed stand treatment
- 10% VII Projection of **post-harvest** conditions immediately after proposed treatment.
- 5% VIII. Projection of post-harvest stand and vegetation changes into future (at least 20 years) **after treatment**.
- 10% IX. Analysis of how well projected future conditions (at least 20 years) **after treatment** meet goals and objectives in item III.
- 5% X. Schedule for monitoring and adaptation

**END OF QUESTION**

## QUESTION V- FOREST PROTECTION

### OBJECTIVE

To demonstrate knowledge of the role and effects of insects and diseases in forest stands.

### QUESTIONS

40% 1. Discuss **four (4)** major ecological roles/effects of insects in forest ecosystems. Give examples for each.

20% 2. Annosus root rot has become more widespread and abundant in partially cut stands in California. Describe how it spreads and mitigations for prevention and control.

20% 3. Name the most important disease of sugar pine and western white pine in California. Discuss the life cycle and dynamics of this disease including environmental and biological interactions. You may draw a chart or table to aid your discussion.

20% 4. Early logging practices in the mixed conifer forests of the Sierra Nevada were highly selective for pines and many entries were made over time. Discuss what affect this logging had on the complex of insects and disease-causing pathogens in these forests that is apparent today.

**END OF QUESTION**

**Professional Foresters Registration Examination April 2023**

**Part II**

**Applicant Must Also Answer Three (3) of the Remaining Five  
Essay Questions in Part II**

Question VI-Forest Mensuration  
Question VII-Engineering  
Question VIII-Forest Administration  
Question IX-Forest Policy  
Question X-Forest Management

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## Question VI-Forest Mensuration

**OBJECTIVE:** To evaluate your mensuration knowledge and ability to estimate the standing volume and annual growth of timber stands.

**SITUATION:** You are a consulting forester working for a family forest owner with 40 acres of pure, young growth Ponderosa pine that was planted after a stand replacing wildfire, 70 years ago. The owner states that her grandfather and father have both managed the property before her. She knows that there have been firewood and both non-commercial and commercial thinning cuts done in the past at irregular intervals to remove poorly formed trees, improve spacing, and to improve growth on future crop trees.

The owner would like to have you do a **preliminary forest stand description** of what she has on her small forest. For the present, she is only willing to pay you for no more than three days work, but in the future she may decide to have a long-term forest management plan drafted. You inform her that for the time and money she is presently willing to spend, you can only do a cruise sufficient to produce a stand and stock table for gross volumes and some limited growth information and prediction, but you will **not be able to address** net volumes, log grades, or monetary values.

Your preliminary walk-through evaluation of the 40 acres is that the entire property is quite homogeneous with the similar site class and stand characteristics (density, diameter distribution, etc). Therefore, you do not see a need to stratify the ownership. The 40 acres looks to be pure Ponderosa pine and well to slightly over-stocked. You decide on the following cruise methods to match the owner's objectives and the time and money available for this work:

### **Methods Used:**

1. Fixed radius plot cruise- 10 plots systematically located across the farm forest, 1/20 ac. plots;
2. Volume determination by Ponderosa pine Tariff Access Table (condensed from VARPLOT Scribner Tables, 32 ft logs to a 5inch top);
3. Growth data from 10 sample trees which will also be the Tariff tree on each plot; last 5 years of radial growth collected.

### **Resources and Data Provided:**

1. The plot data collected are shown on the Sample Tree Tally Card on page 12. Note that this Sample Tree Tally Card is Incomplete as given.
2. A blank Volume Computation Form on page 13.
3. Tariff Access Table for Ponderosa pine on page 14.
4. A Tree Volume Table (Scribner volume table, 32 ft. logs to a 5-inch top) on page 15.

**IMPORTANT-READ THIS BEFORE BEGINNING WORK:** For all questions, **the answer must be written in the box provided with the question.** The computational worksheets are provided to help you organize your data and computations. However, while you may remove the various worksheets and tables from the examination, to help in your progress with this question, **you must turn in the various worksheets and tables with your examination. Put your application number in the space provided on each Resources and Data page provided for this question. Failure to do so will result in failing the ENTIRE question.**

**QUESTIONS: FOREST MENSURATION TURN THIS PAGE IN WITH EXAM**

5% 1. Based on the plot-sampling scheme, what is the sampling intensity of this cruise?

Cruise Sampling intensity (nearest 0.1%) =	
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15% 2. For the diameter classes present in the sample, determine the Total Trees Per Acre (TPA) by diameter class and for the average stand acre. Enter the TPA answers in the appropriate spaces below.

Diameter (inches)	Trees Talled All Plots	Total Trees Per Acre
9	2	
10	6	
11	4	
12	9	
13	11	
14	10	
15	7	
16	8	
17	6	
18	7	
19	2	
20	3	

5% 3. Determine the average radial growth for the stand for the last 5 years. Enter the average stand radial growth in the answer space below.

Average Radial Growth (nearest 0.01 inches) =	
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**Tree Tally Card**

User name \_\_\_\_\_ Plot size \_\_\_\_\_ Multiplication factor\* \_\_\_\_\_  
 Stand name PETER'S PINES Species PP Average tariff number \_\_\_\_\_  
 Date RPF TEST DAY Stand age ~70 yrs

DBH (in.)	Plot number										Total trees	Total trees per acre
	1	2	3	4	5	6	7	8	9	10		
7												
8												
9	•				•						2	
10		••		•		•	•			•	6	
11		•		•		•	•				4	
12	•	••	•	•	•	•	•			•	9	
13	•	•	•	••		••		•	••		11	
14	••		•		••		•	•	•	•	10	
15	•	•	•				••	••			7	
16	•	•	••	•		•				••	8	
17		•			•	•			••	•	6	
18	•		•		••	•		•			7	
19		•		•							2	
20						•		•	•		3	
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
Total												

Tariff Trees				
1	2	3	4	5
Plot no.	DBH (in.)	Height to nearest 5 ft.	Radial growth for 5 yrs. (in.)	Tariff no. from access tables
1	18	95	0.6	
2	12	70	0.5	
3	14	75	0.4	
4	19	100	0.6	
5	17	90	0.5	
6	13	70	0.6	
7	15	85	0.5	
8	15	80	0.6	
9	20	110	0.7	
10	10	50	0.5	
Total				
Average				

\* Multiplication factor =  $\frac{\text{Plot size correction factor}}{\text{Number of plots}}$

- Dot count key
- = 1
  - = 2
  - = 3
  - = 4
  - = 5
  - ◻ = 6
  - ◻ = 7
  - ◻ = 8
  - ◻ = 9
  - ◻ = 10

**Remember**  
 The first tree from each plot is recorded as a Plot Tree **and** as a Tariff Tree.

Recommended plot sizes	Distance between trees			
	less than 8 ft.	8-16 ft.	16-24 ft.	more than 24 ft.
Plot size (acres)	1/100th	1/50th	1/20th	1/10th
Plot radius (ft. & in.)	11'10"	16'8"	26'4"	37'2"
Plot radius (ft.)	11.8	16.7	26.3	37.2
Plot size correction factor	100	50	20	10

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Applicant #: \_\_\_\_\_

**Volume Computation Form**

Stand name \_\_\_\_\_ Date \_\_\_\_\_  
 Species \_\_\_\_\_ Average radial growth \_\_\_\_\_  
 Stand age \_\_\_\_\_ Average basal area/tree \_\_\_\_\_  
 Average tariff number \_\_\_\_\_ Average stand diameter \_\_\_\_\_  
 Multiplication factor \_\_\_\_\_ Board-foot volumes (16' or 32') \_\_\_\_\_

	1	2	3	4	5	6	7
DBH	Trees/acre	Board ft. vol./tree (from Tree Volume Tables)	Board ft. vol./acre (col. 1 x col. 2)			Basal area/tree	Basal area/acre by diameter class (col. 1 x col. 6)
7						0.267	
8						0.349	
9						0.442	
10						0.545	
11						0.66	
12						0.785	
13						0.922	
14						1.069	
15						1.227	
16						1.396	
17						1.576	
18						1.767	
19						1.969	
20						2.182	
21						2.405	
22						2.64	
23						2.885	
24						3.142	
25						3.409	
26						3.687	
27						3.976	
28						4.276	
29						4.587	
30						4.909	
31						5.241	
32						5.585	
33						5.939	
34						6.305	
35						6.681	
36						7.068	
	Total trees/acre		Total board-foot volume/acre		Total cubic-foot volume/acre		Total basal area/acre

**FOREST MENSURATION TURN THIS PAGE IN WITH EXAM**



Appendix A3.—Tariff access table for ponderosa pine. Condensed from VARILOT Tree Volume Tariff Access Tables (2002).

	Height (feet)																											
	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165
7	16	20	22	24	27	29	31	32	34	38	40	43	45															
8	15	16	18	21	23	25	27	28	31	34	36	38	40	42	45													
9	15	16	18	20	22	24	26	28	30	32	34	37	38	40	43	45												
10	15	17	19	20	23	25	27	29	31	33	35	37	39	41	43	45												
11	15	17	18	20	22	24	26	28	30	32	34	36	38	40	42	45												
12	15	16	18	20	22	23	25	27	29	31	33	35	37	38	40	42	44											
13	15	16	18	19	21	23	25	27	28	30	32	34	36	37	39	41	43	45										
14	15	18	19	21	22	24	26	28	30	31	33	35	37	38	40	42	44											
15	15	17	18	20	22	24	25	27	29	31	33	34	36	38	40	41	43	45										
16	15	16	18	20	21	23	25	27	28	30	32	34	35	37	39	41	43	44										
17	15	16	18	19	21	23	25	26	28	30	31	33	35	36	38	40	42	44	45									
18	15	16	18	19	21	23	24	26	28	30	31	33	34	36	38	39	41	43	45									
19	15	16	17	19	21	23	24	25	27	29	30	32	34	36	37	39	41	42	44									
20	15	16	17	19	20	22	24	25	27	28	30	32	33	35	37	38	40	42	44	45								
21	15	17	19	20	22	23	25	27	28	30	31	33	35	36	38	40	41	43	45									
22	15	17	18	20	21	23	25	26	28	29	31	33	34	36	38	39	41	43	44									
23	15	17	18	20	21	23	24	26	28	29	31	32	34	36	37	39	41	42	44									
24	15	17	18	20	21	23	24	26	28	29	31	32	34	35	37	38	40	42	43	45								
25	15	16	18	19	21	22	24	26	27	29	30	32	33	35	37	38	40	41	43	45								
26	15	16	18	19	21	22	24	25	27	28	30	32	33	35	36	38	40	41	43	44								
27	15	16	18	19	21	22	24	25	27	28	30	31	33	35	36	38	39	41	42	44								
28	15	16	17	19	20	22	23	25	27	28	30	31	33	34	36	37	39	41	42	44	45							
29	15	16	17	19	20	22	23	25	26	28	29	31	33	34	36	37	39	40	42	43	45							
30	15	16	17	19	20	22	23	25	26	28	29	31	33	34	35	37	38	40	42	43	45							
31	15	16	17	19	20	22	23	25	26	28	29	31	32	34	35	37	38	40	41	43	44							
32	15	16	17	19	20	21	23	24	26	27	29	30	32	33	35	36	38	40	41	43	44							
33	15	16	17	18	20	21	23	24	26	27	29	30	32	33	35	36	38	39	41	42	44	45						
34	15	17	18	20	21	23	24	26	27	29	30	32	33	35	36	38	39	41	42	44	45							
35	15	17	18	20	21	23	24	25	27	28	30	31	33	34	36	37	39	41	42	43	45							
36	15	17	18	20	21	22	24	25	27	28	30	31	33	34	36	37	39	41	42	43	45							

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Appendix B1.—Tree volume table (Scribner volume table, 32' logs to 5" top). Condensed from VARILOT Scribner Volume Tables.

DBH (inches)	Log numbers																																							
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45									
7	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
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15% 4. Determine the Average Board Foot Volume per Acre for this stand (Scribner, 32 ft logs, 5 inch top). Write the answer in the space provided below.

Average Board Foot Volume per Acre =	
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(Graders' Note: Answer is requested in Scribner, not Scribner Dec. C)

10% 5. What is the Total Basal Area Per Acre for this stand, based on the sampling data? Write the answer in the space provided below.

Total Basal Area Per Acre (ft <sup>2</sup> ) =	
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5% 6. What is the Average Basal Area Per Tree? Write the answer in the space provided below (nearest 0.1 ft<sup>2</sup>).

Average Basal Area Per Tree (ft <sup>2</sup> ) =	
--	--

15% 7. What is the Quadratic Mean Diameter (QMD) of this stand? Write the answer in the space provided below.

Quadratic Mean Diameter (nearest 0.1 inches) =	
--	--

$$\sqrt{\frac{\sum D_i^2}{n}}$$

Formula for QMD=  $\sqrt{\frac{\sum D_i^2}{n}}$  D = tree diameter, i = for each tree, n = number of trees

10% 8. Why is the QMD often favored in Mensuration descriptions of a stand rather than the arithmetic average diameter?

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**FOREST MENSURATION TURN THIS PAGE IN WITH EXAM  
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FOREST MENSURATION **TURN THIS PAGE IN WITH EXAM**

15% 9. Determine the Board Ft. Volume/acre (32 foot logs, 5-inch top diameter, Scribner Log Rule) by diameter class and for a typical acre. Write the answers in the appropriate spaces provided below.

Diameter (inches)	Board Feet Volume/Acre
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

5% 10. Assume that instead of the uniform stand that is in this problem, this property has a predominately younger stand with several significantly older and larger Ponderosa pine trees per acre scattered throughout. Briefly discuss how you would adjust your sampling and volume estimation methods, using the same basic tariff table methodology?

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FOREST MENSURATION **TURN THIS PAGE IN WITH EXAM**  
**END OF QUESTION VI**

## QUESTION VII- FOREST ADMINISTRATION

### OBJECTIVE

To demonstrate your understanding of the requirements and responsibilities of a professional forester, and of enforcement alternatives when violations of the Forest Practice Act or Professional Foresters Law occur.

### QUESTIONS

15% 1. What **three (3)** qualifications must an APPLICANT meet to qualify for licensing as a registered professional forester in California?

10% 2. Under Article 3, Section 750 of the Public Resources Code of the State of California known as the **Professional Foresters Law**, what **two types** of acts are declared unlawful for any person who is **not** a registered professional forester?

10% 3. Name **two (2)** other laws of California (other than the **Professional Foresters Law**) which specify particular functions to be performed by registered professional foresters **and identify** the nature of the function under each of these two laws.

5% 4. What organization of state government is charged with directing the licensing of professional foresters?

25% 5. Discuss five (5) acts that are considered violations of the **Professional Foresters Law** **subjecting an RPF to discipline?**

5% 6. List five (5) actions may result from alleged violations of the **Professional Foresters Law?**

30% 7. Under the Z'berg-Nejedly Forest Practice Act of 1973, any person who willfully violates any provision of the Act or Rules or Regulations of the Board of Forestry may be subject to one of several types of penalties or enforcement actions.

Briefly discuss each of the **five (5)** of the following items as they relate to forest practices under the Forest Practice Act:

(6% each).

- a. Misdemeanor
- b. Administrative Stop Order
- c. Temporary Restraining Order or Action to Enjoin
- d. Injunction
- e. Corrective Action

**(END OF QUESTION)**

## QUESTION VIII-FOREST ENGINEERING

### OBJECTIVE:

To demonstrate ability to independently develop THP preharvest information.

### SITUATION:

As a newly licensed RPF, you meet with your first client. She requests you prepare a plan to harvest her quarter section of timberland in the Northern forest district. She has no prior experience with timber harvesting. She wants to become knowledgeable about forest management and harvesting. She provides ownership documentation, and you agree to be her RPF for both plan development and advice during the plan operations.

After some office research and an initial brief site visit you meet again. You describe her property as a Southwest facing moderate slope area at 3,500 to 4,500-foot elevation extending from a main West – East trending ridge down through several mid slope benches to a Class I stream. The granitic soils are good site II, well but irregularly stocked with mixed conifer and hardwood young growth sawtimber. There are several springs originating class II watercourses. Access is good with existing ranch style roads that will require reconstruction for logging use.

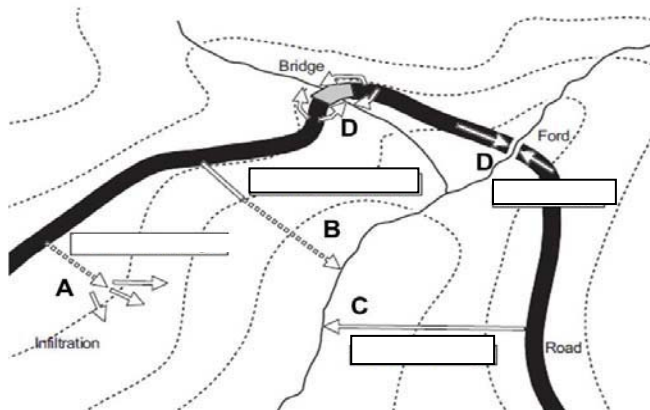
You begin to explain the THP planning process. Your landowner has several questions during the explanation.

### QUESTIONS:

20% 1. You indicate that while the existing roads are well located for timber harvesting, they are inadequate for log truck traffic and must be reconstructed. Fortunately, the side slope (<40%) and road grades (< 15%) are not steep. However, the roads are hydrologically connected and exhibit one potentially significant erosion site.

She asks you to explain **what is hydrologic connection and why is it bad.**

15% 2. You show her the diagram below. She asks you to explain the areas of potential connectivity at points A, B, C and at the two crossings at points D.  $\Longrightarrow$  Indicates sediment flow, dashed arrows indicate partial sediment flow.





## QUESTION IX- FOREST POLICY

### OBJECTIVE

To demonstrate your awareness of issues which can influence the balance of growth and harvest in sustained yield management decision-making situations.

### SITUATION

As California RPFs, you are required to manage a client's forestland by 14 CCR 913.11,933.11 or 953.11 that states (in part):

“The goal of this section is to achieve Maximum Sustained Production of High Quality Timber Products (MSP).”

For this question, assume that sustained production is synonymous with sustained yield which is defined as: “the yield of commercial wood that an area of commercial timberland can produce continuously at a given intensity of management consistent with required environmental protection and which is professionally planned to achieve over time a balance between growth and removal”.

Many factors and issues that may be classified as physical/biological and social can influence the actual level of sustained yield. These factors can tip the balance toward either the growth or harvest side of sustained yield with resulting changes in residual inventory. Regulatory policies also exert pressures that may tip the balance towards either the growth or harvest side of the sustained yield equation. The costs and benefits associated with timberland ownership also affect the balance of growth and harvest.

### QUESTION

30% 1. LIST five (5) issues that you indicate are physical/biological and five (5) social/regulatory issues that are pressures or forces that can create an imbalance in the sustained yield equation. Briefly indicate why you consider each issue to be either a physical/biological or social issue.

40% 2. From your list for Question 1, select two (2) social/regulatory AND two (2) physical/biological issues and discuss in more detail how they create influence the sustained yield equation, the costs and benefits (biological, social, financial etc.), and how you might adjust for that influence over time.

20% 3. A CalFire publication (**Forest Fire, Drought, Restoration Treatments, and Carbon Dynamics: A Way Forward** David Sapsis. *et al.*) stated: “climate change continues to exacerbate the potential for drought, wildfire, insects, and disease.” The report proposes “to promote fewer, but larger tree distributions...” and use “...carbon stability as a guiding principle for ... long-term forest management...”

Discuss how these concepts might influence the sustained yield equation.

10% 4. If you were revising the definition of MSP, what factors not currently in the FPRs would you add or change?

**END OF QUESTION**

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**April 2023 RPF EXAMINATION**



## QUESTION X- FOREST MANAGEMENT

### OBJECTIVE:

To demonstrate your understanding of dry, frequent fire adapted forests in California relative to modern pressures on forest health and long-term carbon dynamics.

### SETTING:

The timberland of California interior forests.

### QUESTIONS:

- 10% 1. It is widely recognized that fire has a major historic and evolutionary ecological influence on western dry forests. What changes have occurred in composition, structure and function of current forests that have been subject to modern era pressures?
- 20% 2. Describe the basic forest carbon cycle. Include wildland fire in your description.
- 10% 3. Compare the quantity and quality of forest carbon pools in current low- to mid-elevation dry mixed and coniferous forests where wildfire has been effectively excluded, to historic forest conditions.
- 5% 4. What has been the trend in California forests carbon stocks during this century?
- 15% 5. What are the results of intense forest wildfire on public health and carbon stocks? How is this likely to change as climate changes over this century?
- 5% 6. Compare the long-term carbon storage of two otherwise similar stands, one normally stocked and untreated, the other well managed for fire resilience and high-quality timber?
- 5% 7. What are the objectives of forest fuel treatments?
- 5% 8. What are the desired effects on carbon stocks over time of forest fuel treatments?
- 10% 9. What are the general effects of sawtimber harvesting on forest carbon sequestration?
- 15% 10. Discuss five (5) major policy recommendations that might support carbon stability in the face of increasing wildfire, pest complexes and climate.

END OF QUESTION

END OF EXAM