Professional Foresters Registration Examination, April 2025

PART I

INSTRUCTIONS: APPLICANTS, PLEASE READ THESE INSTRUCTIONS CAREFULLY.

You MAY complete PART I by:

ANSWERING 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
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Sacramento, CA

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.**

Acronym or Abbreviation	Full Text
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

Applicant #:_____

Question # __1__

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

There are 32 questions in the Short Answer section

3% 1. What are three (3) main individual tree characteristics that determine a tree's relative resistance to fire mortality?

3% 2. List three (3) physical locations in a forested watershed that are most at risk of fire ignitions.

3% 4. What are Unstable Soils characteristics?

4% 4. List **four** (**4**) separate **State** regulatory agencies, Boards or Commissions with which you may have to work in preparing and administering a THP.

Continued on the Next Page

Applicant #:_____

Question # 1

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

3% 5. How do the FPRs define the Fire Protection Zone?

3% 6. According to the FPRs, what is the intent and process of the Clearcutting regeneration method?

4% 7. List four (4) of the traditional methods of obtaining forest growth data.

3% 8. As used in Forest Ecology, what is a Dioecious?

3% 9. Define Magnetic Declination.

3% 10. What is a Community Fuelbreak area?

Continued on the Next Page

Applicant #:_____

Question # __1__

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

3% 11. When is a LTO not responsible for operational THP Forest Practice Rule violations that result from work required by an RPF?

3% 12. According to the FPRs, what are the intent and process of the Commercial Thinning intermediate treatment?

3% 13. Describe a Timber Sale Agreement?

3% 14. What is Science?

3% 15. What are the three traditional approaches to timberland valuation?

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Applicant #:_____

Question #__1__

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

3% 16. List three (3) results of intense forest wildfire on carbon stocks and sequestration.

3% 17. Typically, riparian vegetation is more important as a source of energy "inputs" in the headwaters areas of California and other western U.S. rivers than towards the lower end. Briefly explain why.

3% 18. You have been doing THP fieldwork near a lake following a strong windstorm. You find a very large bird nest on the ground near a clump of recently downed tall snags. The nest is comprised of large to small sticks and contains a variety of odd items (tin cans bottles, rope, shells) and three oval broken pinkish-white eggs about 2 inches long. What have you likely found?

3% 19. List three (3) general effects of sawtimber harvesting on forest carbon stocks and sequestration?

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Applicant :_____

Question # ___1__

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

3% 20. As used in forest archaeology, describe a characteristic that will indicate whether something you find in the forest might be a chipped stone tool made by prehistoric people thus warrant disclosure.

3% 21. As applied to the growth of an even-aged stand of trees, which parameter peaks first, the volumetric MAI or the volumetric PAI?

3% 22. What is "**Discounted cash flow**"? What is its utility for managerial decisions?

3% 23. Anthropogenic effects on global climate include cultural practices associated with agriculture and livestock, clearing and burning of forests, and burning fossil fuels each of which in turn elevate carbon dioxide and methane far above natural levels. Describe the effect of increased carbon dioxide on forest growth.

4% 24. *Describe a hierarchical (structured, ordered) tree marking rule. Used to decide which individual trees to mark for cutting or retention.*

Continued on the Next Page

Applicant #:_____

Question # __I_____

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

3% 25. Name three (3) types of deductions (not defects) taken by log scalers for observable defects.

_____

_____

4% 26. List four (4) types of defects that log volumes will be deducted for by a scaler.

_____

_____

3% 27. What is a forest pest? List three (3) life forms of forest pests.

_____

_____

3% 28. What is an Engineered Wood Composite?

_____

_____

3% 29. What is a genetically improved tree?

_____

_____

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Applicant #:_____

Question #_1__

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

3% 30. As defined in the CA FPRs, what is a **Deactivated Road?**

_____

_____

3% 31. Define integrated pest management.

_____

_____

3% 32. What type of Timberlands may need an Accepted/ Approved Document from CAL FIRE to move forward with A HARVEST Project?

_____

_____

End of Short Answer Question #1

QUESTION II - ECOLOGY

OBJECTIVE

To demonstrate your understanding of ecological tradeoffs present when making management decisions.

SITUATION

California black oak (Quercus kelloggii) is common in a large portion of California. California black oak exceeds all other California oaks in volume, distribution, and altitudinal range. California black oak is a component of six forest cover types. California black oak is a commercial species under the FPR. Yet this hardwood has had little sustained commercial use and very little management directed at its sustainability. In some parts of the Sierra Nevada it was common practice to fall all California black oak as part of commercial forest practices.

QUESTIONS:

15% 1. Briefly describe (five) 5 identification characteristics of California black oak that would positively distinguish it from other Quercus species.

45% 2. Discuss the significance of California black oak as a component of the mixed conifer forest ecosystem. Discuss both positive and negative effects on the ecosystem if California black oak is eradicated in regenerated areas.

40% 3. Describe why sprouting appears to be the dominant source of most black oak regeneration and its effect on the resulting stand. Discuss how this affects black oak control when it is desirable to reduce the California black oak component in a stand (thinning, sanitation removal for mistletoe, etc.), Discuss five (5) effective control methods that are available.

END OF QUESTION

QUESTION III – FOREST ECONOMICS

OBJECTIVE:

Demonstrate your ability to effectively contract for timber harvest and market timber from a THP you have prepared.

SITUATION:

You are discussing the economics of a timber sale for a Non-industrial Forest landowner client of yours. You present an approved THP for 125 acres of ground based skidding selection plus a few small group selection regeneration units.

You have solicited three sealed bids from Licensed Timber Operators to conduct the harvesting and a separate price to reconstruct ½ mile of legacy 4WD trail into a permanent logging road suitable for owner access year-round. The sale is estimated to produce 1,000 MBF of average young growth conifers. Fortunately, the existing 4WD trail is located on gentle mid slope ground (<30%) across soils and parent materials suitable for side cast and cut & fill construction with two class II watercourse crossings.

You have sealed bids for delivered logs to open from four sawmills and one log purchaser. The 100% marked tree tally for this sale is below.

Species	Volume in MBF	QMD DBH
DF	200	18”
True Fir	400	19”
PP	300	22”
IC	100	18”

All parties have inspected the sale area.

QUESTIONS: :

10% 1: After reviewing the logging bids that are A: $100, B: $108 and C: $ 130 per MBF all **excluding** road construction, the landowner reveals that a tractor operator he met at the local breakfast spot stated his LTO clearcuts over 50 million board feet annually for a major timber company at prices far less than your bids. **What do you tell the landowner**?

20% (Total) 2: The 12-foot-wide road reconstruction bids (including the two culverts) are as follows: A: $23,000, B: $17,000 and C: $ 25,000 respectively for the logging bids of A: $100, B: $108, and C: $130 per MBF.

Continued on the Next Page

Question # 2: 4% each part

A. Are these road bids reasonable? **Explain**.
B. How much rock will it take to place 4" of compacted rock on this reconstructed road?
C. What design specifications will you include for the Road reconstruction?
D. What design specifications will you include for the Class II crossings and culvert placement?
E. You recommend LTO B since he plans to use a heel boom loader and an excavator for road construction while LTO A uses a wheeled front end loader and dozer. How do you **explain the recommendation**?

20% (Total) 3: You open the sealed bids for <u>delivered logs</u> to reveal the following offers per MBF and <u>your **initial** estimates</u> of log truck costs:

Species	Mill 1	Mill 2	Mill 3	DF specialty Mill
DF	No bid	$ 450	$ 480	$ 500
True Fir	No bid	$ 350	$ 390	No bid
PP	No bid	$ 400	No bid	No bid
IC	$ 500	$ 450	No bid	No bid
~Ave Haul Cost	$ 50	$ 45	$ 80	$ 55

10% each part

A. Assuming you are willing to split the sale by species, which are the apparent winning bids?
B. You review this with your selected LTO who demands an additional $ 10/MBF and larger landings claiming to need multiple sorts for this log split. **Explain your response**.

30% (Total) 4: You review the dilemma with your more experienced partner. She states you have even more issues.

A. 10% Since there are multiple landings what will you do with the cleanup logs at each? **Explain your answer**.

B. 10% Both Mill 3 and the DF specialty Mill are interstate hauls. Does that affect hauling costs? **Explain your answer**.

C. 10% The DF specialty Mill bid is only for specific long log lengths from 27.5 to 44 feet long. In addition, their sweep, crook and defect limits are more stringent than other mills. How might this affect your bid selection?

10% 5: Considering the information in # 4 above, what are your final decisions on LTO and Mill(s) to award bids? **Explain and justify**.

10% 6: Explain about how many $$ will the landowner net out of this THP?

END OF QUESTION

QUESTION IV- SILVICULTURE

OBJECTIVE:

To demonstrate understanding of forest site quality and effectively determine them.

SETTING:

The timberland of California. Understanding site quality and the various site indexes available is critical to their use in field and planning applications.

QUESTIONS:

9% **1.** What is a forest Site Index?

12% **2.** What are four (4) uses of site indexes in forestry?

10% **3.** What are two (2) of the three site index systems used in the FPRs?

10% **4.** For one (1) of the three site index systems used in the FPRs, describe in what types of forests the FPRs intend their use.

10% **5.** Discuss the general use of tree age in California site index systems. Include in your discussion how tree age measurement (total age vs DBH age) may affect the ability of site index to predict future height growth.

14% **6.** Many field foresters have some subjective notion of what constitutes a generic site tree. Discuss how this generic notion compares to specific site tree selection required in California site indexes. Include a discussion of the general selection criteria for site trees: crown position, tree size, age, deformities and the specific requirements of the site index being used. Explain why these characteristics are important for predicting future growth of a stand.

10% **7.** Foresters often have difficulty in reconciling published site index systems requirements for what constitutes an appropriate site tree with data seen when combing through actual plot measurements. This occurs even when actual measurements include tree height data and age estimates of some trees from increment cores. Discuss some of the limitations and subjective nature of the site tree **field** measurements.

15% **8.** Discuss how an RPF might estimate site quality when there are no suitable site trees (or no trees) and no historical records for the stand and nearby areas. Give a practical California example.

Continued on the Next Page

10% **9.** Assume you have site classification suitable for use in a THP (FPR referenced index). Could one apply this FPR site information to model stand development using a computer and suitable digital stand simulator? What information about your model is needed before you can use the FPR site information in your growth model? Can site information be transferred from one index to another? If so, how?

END of QUESTION

QUESTION V - FOREST PROTECTION

OBJECTIVE:

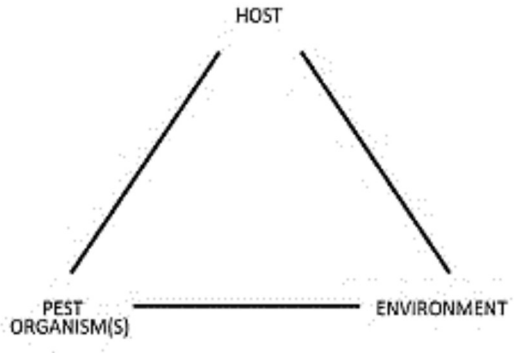
To demonstrate understanding of environmental issues related to early seedling growth in plantations.

SETTING:

The timberland of California. Understanding how to diagnose, avoid and treat biotic and abiotic pests (other than competing vegetation) in commercial plantations. Even when the forester has access to pest professionals, the initial field recognition of problems by the forester is essential.

QUESTIONS:

A simple but useful model to keep in mind when evaluating damage is the Pest Triangle (below). Pests are strongly influenced by host and environmental conditions. All three points of the triangle interact to produce the resultant damage and all three points must be considered when formulating a diagnosis, and, ultimately, a prognosis of what is to come.



5% **1.** What are some of the common mistakes made during diagnosis of damage?

10% **2.** Trees are only able to respond to damage in a limited number of ways. Symptoms are the generic expression or consequence of damage. As such, they may allow an educated guess as to what is occurring, but they typically do not provide a definitive answer. Discuss why this is true and how to validate a diagnosis.

5% **3.** Briefly discuss the diagnosis of abiotic damage.

10% **4.** A certain amount of pest damage is preventable to the extent that it is related to management choices. Prevention practices should be thought of as best management practices since the intent is to produce the best possible outcome**. Discuss three (3) generic prevention considerations that are widely useful.**

10% **5.** Discuss the role of integrated pest management (IPM) in mitigation or management options for response to pest damage.

Continued on the Next Page

40% **6.** Discuss any four (4) of the following commonly observed insect pest damages in young plantations: Insects that Attack Roots and the Lower Stem, Insects that Attack the Main Stem, Bark Beetles Attacking Young Pines, Insects that Attack Shoots, Ponderosa Pine Tip Moth, Gouty Pitch Midge, Insects that Attack Foliage, Pine needle-sheath Miner, White fir Sawfly and Douglas-fir Tussock Moth, Be sure to include likely agents, signs, symptoms, mitigation and direct treatments if appropriate.

20% **7.** Vertebrates (wildlife) are a natural, vital and desirable component of a healthy forest. They provide vital functions in dispersing mycorrhizal fungal spores throughout the forest floor (some voles and squirrels); disperse conifer seeds (birds and many rodent species); aerate soil and recycle soil nutrients (pocket gophers); and recycle plant nutrients (ungulates).

However, there are times when, for a variety of reasons, vertebrate populations may inhibit reforestation efforts requiring some level of human intervention to minimize negative impacts. As with any pest management scenario, one size usually does not fit all situations thus requiring a thoughtful analysis of the impact, a review of management options, and diligence in application and monitoring. The science of Integrated Pest Management (IPM) has emerged since the early 1970s when most vertebrate pest management strategies focused solely on lethal options calling for the removal of the animal(s). The strategy back then was simply "*no animals….no problem."* Since then, political and social realities have changed, causing forest managers to address pest management scenarios very differently, resulting in more thoughtful…and challenging…ways to address vertebrate pests.

Discuss any two (2) of the following commonly observed vertebrate pest damage in young plantations: *Pocket Gophers, Voles , Rabbits and Hares, Porcupine, Ground Squirrels, Woodrats, Mountain Beavers, Ungulates (deer, elk, livestock), or Bears.*

Be sure to include identification, legal status, habitat, Reproduction and Life Traits, Symptoms, Signs and Significance of Damage, mitigation, Management Options, lethal and non-lethal direct treatments if appropriate.

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End of Question

Professional Foresters Registration Examination, April 2025

PART II

INSTRUCTIONS: APPLICANTS, PLEASE READ THESE INSTRUCTIONS CAREFULLY.

You MAY complete PART II by:

ANSWERING any Three (3) of Questions VI through X.

VI - Forest Mensuration

VII - Forest Administration

VIII - Engineering

IX - Forest Policy

X - Forest Management

QUESTION VI - FOREST MENSURATION

OBJECTIVE: Demonstrate your ability to manage inventory measurement crews and provide quality control of data collected**.**

SITUATION: As a new California RPF you are employed by a consulting firm that manages 50,000 acres of timberland for a diverse group of landowners. The lands are managed pursuant to a certification program. The certification requires regular inventory of pre-harvest timber volumes and property timber volume and growth.

Current firm inventory management is focused on a set of permanent plots to understand stand type level growth and yield. Your firm manages a wide range of timber Site II terrain conditions in mixed-conifer young growth even aged forests to meet landowner goals and retain certification. The current set of permanent plots provides statistically significant data at the **stand type** level. Company data confirms their managed stands are consistently tracking Site II index graphs and averaging 5 rings per inch growth on codominant trees. The company has a GIS system that includes a stand type layer for all managed lands. The company markets delivered logs utilizing a sealed bid system for their clients. Accurate estimates of logs for sale in a bid prospectus tend to increase the bid values for the firm's clients.

QUESTIONS:

1. **50% (**Total**)** Your senior forester assigns you to review current inventory procedures and present recommendations for improvement. Company procedures for acquiring pre-harvest stand timber volumes include reliance on existing permanent plots for both regeneration and intermediate harvests.

   20% **1.a.** Describe how you would use the existing company inventory to estimate timber harvest volume including developing log sale prospectus stand and stock tables for a **clearcut**.

   20% **1.b.** Describe how you would use the existing company inventory to estimate timber harvest volume, including developing log stand and stock tables for a **commercial thin**.

   10% **1.c.** The current policy relies on two-person field crews for all field inventory projects. Compare and contrast the benefits and disadvantages of various sized (1 to 3 person) crews for establishment and remeasurement of 0.1-acre circular fixed permanent plots.

Continued on the Next Page

25% (Total**) 2.** You are assigned to manage quality control for the company permanent plot remeasurements.

5% **2.a.** Compare and contrast field instrument precision and crew measurement accuracy.

10% **2.b.** Field crews often utilize laser devices to measure tree heights and live crown length. Describe how measurement results are affected by the way the devices are used by crew members. Use a 100-foot-tall tree as an example to describe how the device is used.

10% **2.c.** You review field measurement plot data for tree heights that were measured twice, once by your inventory crew and thereafter by fell, buck and scale as part of a research study immediately after the inventory crew work. Trees which all very carefully measured during research as 100 feet length on the ground were previously measured by inventory crew when standing from 94 to 106 feet tall. Discuss the likely sources of this variation.

25% (Total**) 3.** You decide to improve quality control of permanent plot re-measurements. You decide to upload the previous measurement into field data recorders for each plot to be remeasured.

5% **3.a.** Should you direct your field crews to review the last measurements while in the field before remeasuring each tree? Explain your answer.

15% **3.b.** You decide to program the field data recorders to automatically check 10-year DBH remeasurement data in the field for obvious crew errors. Using Company growth data, describe a simple algorithm you might use to program the recorders to check for potential field DBH measurement errors in codominant trees. Give a numeric example.

5% **3.c.** What should you tell remeasurement crews about the new field data checking procedure?

End of Question

QUESTION VII - FOREST ADMINISTRATION

OBJECTIVE:

To demonstrate your understanding of forest administration requirements under California's Z'Berg-Nejedly Forest Practices Act.

SITUATION:

The property is a 5,000-acre tract in the Sierra Nevada Mountains at 5000-6000 feet elevation. It is a privately owned forested property, with some of the ownership zoned as Timberland Production Zone (TPZ) and some not zoned as TPZ. The non TPZ property has an established destination ski resort. The owner intends to expand the ski resort with two new long ski runs and an additional ski lift. An environmental study pursuant to the California Environmental Quality Act (CEQA) has been completed and the owner has been granted an approved county permit to expand his ski area, the Board of Supervisors having tentatively approved an immediate rezoning for use as a ski area.

The area is forested, but the timber in the project area is relatively small and volumes are low. Some trees are of commercial size 20-24 inches in diameter. These are widely scattered. The project area is 32.5 acres and the volume of timber to be cut is approximately 30 MBF with additional unknown quantities of smaller than sawlog sized trees. The expansion project area is on the portion of the ownership **not** zoned as TPZ, but it is definitely timberland.

To avoid further project review by the California Department of Forestry & Fire Protection (Cal Fire), and incurring the expense and delay of obtaining a Timber Harvesting Plan (THP) or other state harvesting permits, the owner intends to cut the trees in the ski run, pile them and burn most of them. Some will be chipped and spread over the graded ski run.

QUESTIONS:

1: 40% (Total**)**

5% **1. a.** Define Timberland as per the FPR.

5% **1. b.** Define timber operations as per the PRC.

5% **1. c.** Define Commercial purposes as per the PRC.

25%**1. d.** Is the landowner correct in his presumption that avoidance of any commercial sale of the timber removes the necessity for submission of a THP and Cal Fire review of this proposed operation? Explain your answer and cite substantiation for your reasoning, including but not limited to the California Forest Practice Rules, Z'Berg-Nejedly Forest Practice Act, and/or Public Resources Code.

It is not required that answers cite specific rule numbers or sections, only that concepts are correctly stated and applied appropriately.

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30% **2.** Would your answer change if the proposed clearing area **was** on some of the ownership zoned as TPZ? Explain your answer and cite substantiation for your reasoning, including but not limited to the California Forest Practice Rules, Z'Berg-Nejedly Forest Practice Act, and/or Public Resources Code and the Timber Tax Reform Act. **It is not required that answers cite specific rule numbers or sections, only that concepts are correctly stated and applied appropriately.**

30% **3**. When a permit is required to convert timberland to non-timber uses, what permit(s) or authorization(s) will be required from Cal Fire. Be explicit as to your reasoning for your answer and precise in the type of permit or authorization (if any) that will be required.

END OF QUESTION

QUESTION VIII – FOREST ENGINEERING

OBJECTIVE: Demonstrate your ability to design and implement site preparation for reforestation.

SITUATION:

Site preparation is the single most important step in the reforestation process. As a California RPF you will likely be called upon to reforest following harvest, wildfire, brushfield development or other situations.

QUESTIONS:

60% **1.** There are many different methods for controlling unwanted fuel and vegetation, and the selection of the desired method is a keystone in the success of the reforestation project. Briefly discuss six (6) of the following mechanical (sub-soiling, piling, mulching, V-blading, terracing, mastication, chipping, logging, biomass and in-woods) processing methods that can be used in site preparation. Describe the equipment, processing, results, and sites where suitable.

20% **2.** There are many different methods for controlling unwanted fuel and vegetation, and the selection of the desired method is a keystone in the success of the reforestation project. Briefly discuss two (2) of the following non-mechanical (manual, hand piling, grubbing, and mulching) processing methods that can be used in site preparation. Describe the equipment, processing, results, and sites where suitable.

20% **3.** There are many different methods for controlling unwanted fuel and vegetation, and the selection of the desired method is a keystone in the success of the reforestation project. Briefly discuss two (2) of the following use of firing methods that can be used in site preparation, or fire use issues that occur in site preparation (Burning Liability and Permitting, Fire Behavior and Prescriptions, Broadcast Burning, Pile Burning, Pile Casting). Worker Safety during Fires. Describe the equipment, processing, results, and sites where suitable.

END of QUESTION

QUESTION IX - FOREST POLICY

OBJECTIVE:

To demonstrate understanding of RPF ethical standards and effectively apply them. One can only practice what they understand.

SETTING:

The timberland of California. Understanding ethical standards for Registered Professional Foresters is critical to retaining public trust.

QUESTIONS:

35% (Total**) 1.** One of the RPF licensing qualifications is: "Be of good moral character and have a good reputation for honesty and integrity".

10% **1. a.** What are morals?

10% **1. b**. What is considered "good moral character" in our society? List ten (10) characteristics that describe your good moral character. Do not include honesty and integrity. Do include at least five (5) secular characteristics.

5% **1. c.** Honesty means more than just not lying. Describe honesty in action.

10% **1. d.** How is a "reputation for honesty" maintained? List ten (10) generic examples.

5% **2.** You are confronted with an opportunity to receive advance information about the exact upcoming RPF exam questions and answers. Compare and contrast your response given the core value of Honesty versus valuing Achievement and Success the most.

10% **3.** The reputation of a thousand years may be determined by the conduct of one hour. – *Japanese Proverb* Discuss: What is Integrity?

10% **4.** What are Ethics?

24% (Total**)** **5.** Your RPF Exam application required five references "who can attest to the (your) character and business integrity ". Aristotle stated: "an individual cannot regard his own well-being apart from others". Consider how the following excerpts from Professional Forestry Associations express foresters' views of character, ethics and integrity.

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5. a. **Society of American Foresters**

"The mission of the Society of American Foresters is to advance sustainable management of forest resources through science, education, and technology; to enhance the competency of its members; to establish professional excellence; and to use our knowledge, skills, and conservation ethic to ensure the continued health, integrity, and use of forests to benefit society in perpetuity.

Service to society is the cornerstone of any profession. The profession of forestry serves society by fostering stewardship of the world's forests.

Members of SAF have a deep and enduring love for the land, … foresters seek to sustain and protect a variety of forest uses and attributes, such as aesthetic values, air and water quality, biodiversity, recreation, timber production, and wildlife habitat.

Foresters have a responsibility to manage land for both current and future generations. We pledge to practice and advocate management that will maintain the long-term capacity of the land to provide the variety of materials, uses, and values desired by landowners and society.

Society must respect forest landowners' rights and correspondingly, landowners have a land stewardship responsibility to society. We pledge to practice and advocate forest management in accordance with landowner objectives and professional standards, and to advise landowners of the consequences of deviating from such standards."

10% **5. a.** What are ten (10) of the values of the Society of American Foresters?

5.b. **Association of Consulting Foresters of America**

"Mission Statement

The mission of the Association of Consulting Foresters of America is to advance the practice of professional consulting forestry.

Professional and ethical excellence

Belief in a strong free enterprise system

Commitment to science-based stewardship of natural resources

1. Endorses the free enterprise system, including all rights and privileges inherent to the ownership and management of private property.

2. Believes forest management, timber growing, and natural resource activities are essential private property enterprises that yield public benefits.

8. Believes that management of public forestlands for multiple use, yielding both commodity and non-commodity benefits for all segments of society, best serves the public interest.

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9. Joins with all others who recognize that healthy and economically viable forestlands, as well as economically healthy forest products industries, provide the greatest good for the nation."

5% **5. b.** What are five (5) of the values of the Association of Consulting Foresters?

5. c. Forest Stewards Guild

"Our Mission: The Forest Stewards Guild practices and promotes responsible forestry as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them."

Principles

The well-being of human society is dependent on responsible forest management that places the highest priority on the maintenance and enhancement of the entire forest ecosystem.

The natural forest provides a model for sustainable resource management; therefore, responsible forest management imitates nature's dynamic processes and minimizes impacts when harvesting trees and other products.

The forest has value in its own right, independent of human intentions and needs.

Our first duty is to forests and their future. When confronted with circumstances that threaten the integrity of the forest and conflict with the Mission and Principles of the Forest Stewards Guild, members must respond through education, advocacy, or where necessary, disassociation. Guild membership signifies a commitment to the highest forest stewardship ethic."

5% **5. c.** What are five (5) of the values of the Forest Stewards Guild?

5. d. California Licensed Foresters Association

CLFA is committed to enhancing the role of professional forestry in California.

CLFA MISSION

Formed in 1980 by Registered Professional Foresters following the passage of the California Professional Foresters Law, CLFA represents all sectors of forestry including industrial, consulting, academic, state, and federal. It is the goal of the association to provide opportunities for continuing education and public outreach to its membership to further the forestry profession and responsible stewardship of California's forest lands.

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4% **5. d.** What are four (4) of the values of the California Licensed Foresters Association?

16% **6.** When you become a RPF, which two (2) of the value sets (or portions thereof) will you practice? Explain and justify your answer.

End of Question

QUESTION X - FOREST MANAGEMENT

OBJECTIVE: Demonstrate your ability to apply basic silviculture knowledge in order to implement an even-age regeneration regime at the stand level.

SITUATION: As a California RPF you have been assigned to develop a Shelterwood regeneration plan for a company owned Site Index 80 (base age=50) stand. Company policy seeks to maximize stand growth as measured by sawlog volume production with a target final crop tree size of ~27" DBH (24" to 30"). The company prefers to utilize natural seed fall but will supplement with planting for regeneration gaps when needed. The company is capable of marketing 12" dbh and larger trees as sawlogs. As a hedge against future unknown market fluctuations, exotic diseases, and to maintain wildlife habitat, the company prefers to keep all the native commercial tree species on its lands where feasible.

Company biometricians have analyzed copious inventory data from sites similar to your assigned stand to project lifetime average crop tree radial growth rates of four rings per inch by maintaining stand densities within a range of 50% to 75% of normal stocking. This density range also optimizes sawlog volume stand growth.

You have reviewed aerial photography for the 40 acre stand and found it to be situated on a 30% east facing slope. It has good road access and thus is operationally suited to ground skidding. The stand is traversed by a Class II watercourse. There are no listed species issues.

The aerial photographs reveal an even-age well stocked stand due to past management activities (natural seed fall regeneration, weeding, PCT). The stand consists of mixed species (conifer PP, DF, WF, IC, SP (each >= 10% of TPA)) and 10% hardwoods (BO) trees with an average DBH of 15" dbh ranging from 12 to 18-inch dbh size. Density ranges from 150 to 200 averaging 188 sq. ft. / acre basal area. Codominant tree heights are ~ 65 feet.

QUESTIONS:

5% **1.** Define Shelterwood, FPR definition acceptable but not required.

10% **2.** In the future, about how long will codominant trees now in your stand grow before they reach final crop tree size? Please show your work.

10% **3.** In the future, about how tall will codominant trees now in your stand be when they reach final crop tree size? Please show your work.

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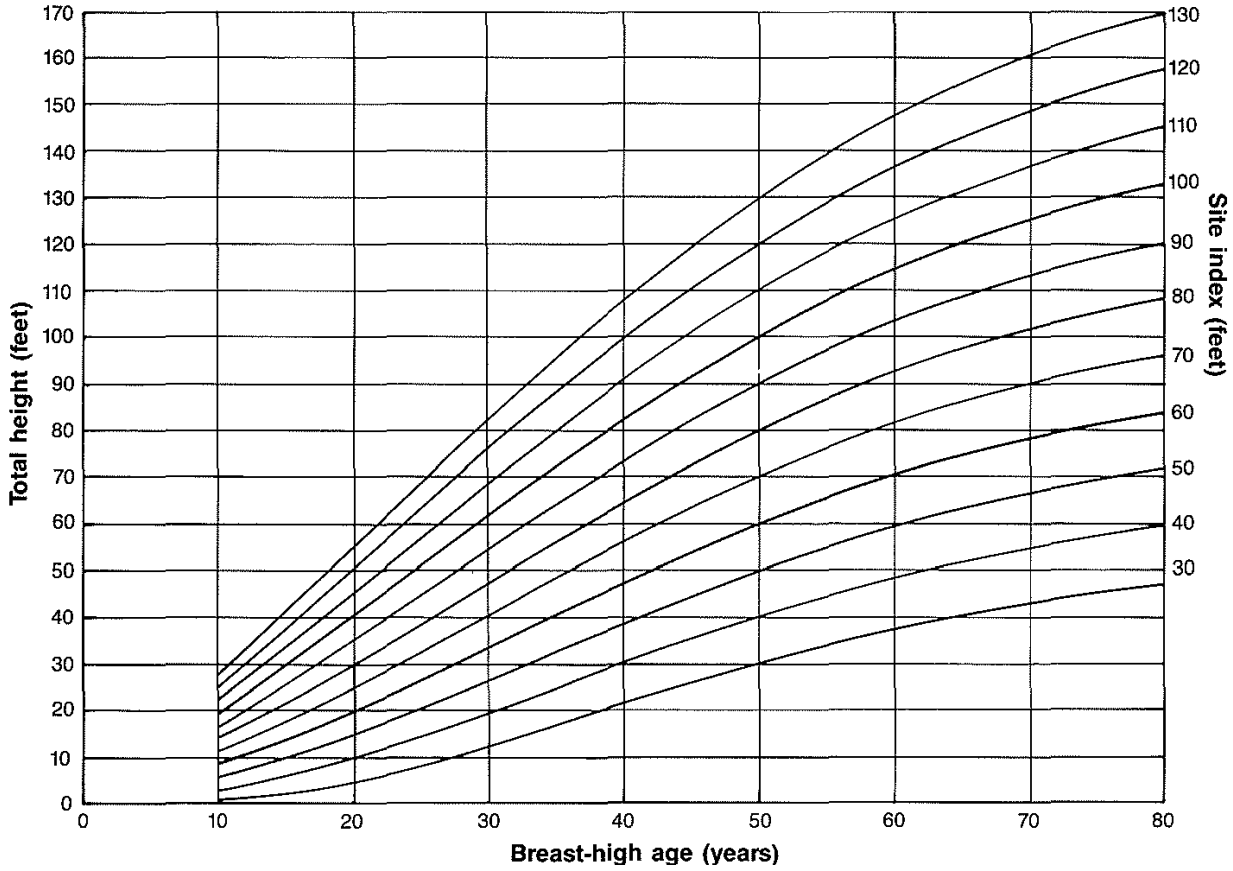

25% **4.** When will you execute your first entry for this stand? Describe and justify the essential elements for this stand treatment including residual tree spacing. You may use the D+X SPACING chart below.

25% **5.** When will you execute another (your second) stand entry? Describe and justify the essential elements for this second stand treatment including residual tree spacing. You may use the D+X SPACING chart below.

25% (Total**)** **6.** Research for your mixed conifer-hardwood stand has demonstrated that shelterwood seed step densities in the 50 Sq. Ft./Acre range are optimal, so long as good seed producing overstory trees are present. Please explain and justify your answers.

(5%**)** **6.a.** What are the physical characteristics of the trees you will select for the shelterwood seed step?

(5%**)** **6.b.** How many trees per acre of which species will you retain for the shelterwood seed step?

(5%**)** **6.c.** What will be the approximate ideal spacing for seed trees of the conifer species for the shelterwood seed step?

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(5%**)** **6.d.** What will be the approximate ideal distribution for Black Oak trees for the shelterwood seed step? Explain and justify your answer.

(5%**)** **6.e.** If you execute the seed step when the stand average DBH reaches the company's target final crop tree size, what issues can you expect for seed production? How will you mitigate any issues you identify?

Species	Ave. Minimum seed producing age	Ave. Optimal seed producing age	Ave. optimal seed producing dbh size
PP	30	60+	25+
DF	20	Old growth	25+
WF	40	60+	30+
IC	20	40+	24+
BO	50	80-100	20+
SP	50	80+	30+

BASAL AREA/ACRE BY SPACING & AVERAGE TREE DIAMETER

D+ equals tree diameter in inches converted into feet plus number.

Example: DBH =12" then D+0 equals 12 feet + 0 feet spacing results in 238 square feet basal area per acre.

DBH	D+0	D+1	D+2	D+3	D+4	D+5	D+6	D+7	D+8	D+9	D+10	D+11	D+12
12"	*238*	203	174	152	133	118	106	95	85	77	70	65	60
13"	238	205	179	157	139	124	112	100	91	83	76	70	65
14"	238	207	182	161	144	129	117	106	96	88	81	75	69
15"	238	209	185	166	148	134	121	110	102	93	86	79	74
16"	238	211	188	169	152	138	126	115	106	97	90	83	77
17"	238	213	191	172	156	142	131	120	110	102	94	88	82
18"	238	214	193	175	159	145	134	124	115	106	98	92	85
19"	238	215	195	177	161	150	138	128	118	109	102	95	89
20"	238	217	196	179	166	152	140	131	120	113	106	99	92
21"	238	218	198	183	168	156	144	132	125	116	109	102	96
22"	238	219	201	185	169	158	148	137	127	120	112	106	100
23"	238	220	202	186	173	162	150	138	130	123	115	109	103
24"	238	221	204	189	176	163	151	141	135	126	118	112	107

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This table is used to determine D+X spacing when basal area is used for density control. Once the average basal area is determined and the average stand dbh is also determined, then the D+X spacing can be established.

To find the proper spacing go down the left-hand column and find the average tree stand diameter. Then follow the line to the right until you come to the appropriate basal area number. If you don't find the exact number locate the closest. From there follow the column upward until you reach the D+X. This is the spacing of the stand.

Basal Area per Tree formula, you can input DBH in inches, and the result will have a unit of square feet.

$=0.005454 \times DBH^2$

You may use this chart to help organize and present your answer. Turn it in with your written answer if you wish it to be considered part of your answer.

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Question X Management **Examinee _____**

You may use this chart to help organize and present your answer. Turn it in with your written answer if you wish it to be considered part of your answer.

Time	Current Stand	Pre-Your 1st Entry	Post Your 1st Entry	Pre Your 2nd Entry	Post Your 2nd Entry	Pre Seed Step	Post Seed Step
Stand Age							
Treatment Description	**N/A**						
Sq.ft./Ac. Basal Area	**188**						**~50+**
% Normal Stand Density							
TPA							
QMD Inches	**15**					**~27**	
QMD Tree Basal Area							
Tree Spacing							
Notes							

END of QUESTION

END OF EXAM