

Professional Foresters Registration Examination

April 11, 2008

Part I

Applicant Must Answer Question I - Short Answer

Question I - Short Answer

Applicant Must Also Answer Two of the Remaining Essay Questions in Part I

Question II - Forest Mensuration

Question III - Forest Ecology

Question IV - Forest Economics

Question V - Forest Protection

Professional Foresters Registration

1416 9th Street, Room 1506-16

Sacramento, CA 9581

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

QUESTION I - SHORT ANSWER

3% 1. Name three (3) “greenhouse gases” present in Earth’s atmosphere.

4% 2. List four purposes a THP document serves during its life.

3% 3. What is the difference between a stand’s arithmetic mean diameter and its quadratic mean diameter?

4% 4. Define what is meant by the term, Adaptive Management?

CONTINUED NEXT PAGE

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

3%___5. As per the California Code of Regulations (14 CCR 895.1), what is the stream condition where the stage of discharge fills the entire channel cross section without significant inundation of the adjacent floodplain, and has a recurrence interval of 1.5 to 2.0 years. _____.

3% 6. List three of the four terms used to define "taking" under the Federal Endangered Species Act?

3% 7. When the original cost of a natural resource, such as timber, is written off the books as the resources are used, the accounting procedure is called _____.

4% 8. Under the California Forest Practice Rules, a THP is reviewed by California Dept. Of Forestry And Fire Protection (CAL FIRE) first for acceptance for filing and reviewed again before approval. Under the Forest Practice Rules, what is the basic standard for a THP to be accepted for filing?

3% 9. What characteristic of true fir requires that special attention be paid during partial cutting?

CONTINUED NEXT PAGE

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

3% 10. Regional Water Quality Boards and the State Water Resources Control Board in California have the authority to require monitoring and reporting as a condition of any applicable waiver of waste discharge requirements on THPs. What is the legislative basis for this authority? _____.

3% 11. A THP map has a scale of 1" = 400' and 20 ft contour intervals. A proposed temporary road for a logging unit extends 2.3" from the permanent road to the dead-end landing serving the unit. The proposed road starts on a contour line, crosses four other contour lines and ends, at the landing, on a fifth contour line. What is the grade of this proposed temporary road (round to the nearest percent)? _____

3% 12. List three stand parameters used in growth and yield models?

4% 13. State two silvicultural reasons why reforestation surveys are done.

3% 14. For a THP, briefly describe the procedure to obtain a spotted owl database check.

4% 15. Which of the following tree species are susceptible to white pine blister rust: *Pinus monticola*, *Pinus lambertiana*, *Pinus ponderosae*, *Pinus sabiniana*, *Pinus attenuata*, *Pinus contorta*? _____

CONTINUED NEXT PAGE

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

4% 16. Using economics as the sole criteria to determine when a project or transaction is economically feasible, what condition must be met?

4% 17. In terms of water quality law, define the term TMDL and from what law (s) does it derive?

3% 18. Fire behavior is greatly affected by relative humidity. Define relative humidity. _____

3% 19. Explain how stream "ordering" works in a large watershed (it is a system that compares streams within and among watersheds, e.g.-Strahler System).

3% 20. Currently, what is the status of the California's Forest Practice Rules (FPRs) as BMPs under Section 208 of the Federal "Clean Water Act"?

3% 21. How many acres are in a standard sub-section designated as W1/2 of the SE1/4 of the NE1/4, Section 23, T23N R10E, MDB&M? _____

CONTINUED NEXT PAGE

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

3% 22. Identify one certified specialty under the California Professional Foresters Law. _____

4% 23. What was the most common cause for the lack of Large Woody Debris (LWD) in coastal streams in California?

3% 24. The difference between the greater volume actually sawn over the lesser estimated log scale volume is called _____ .

3% 25. What are three primary factors required to adjust gross timber volumes to net timber volumes? _____

3% 26. List three important social issues that are impediments to increased use of prescribed burning. _____

3% 27. List 3 environmental or nonparasitic agents that may predispose trees to insect, mite and disease damage.

4% 28. Briefly describe the relationship of the Z'Berg-Nejedly Forest Practice Act, the Public Resources Code, and California Code Of Regulations (CCR), Chapters 4 and 4.5 to each other.

Applicant #: _____

Question # I

You MUST answer this Question to pass the examination.

Answer on these pages, tear from the booklet and submit with the answer packet

CONTINUED NEXT PAGE

4% 29. You are standing on point A and looking upslope to point B. Point B is 220 ft, slope distance from you, and your abney shows the slope is +22%. How much higher is point B than A? _____

3% 30. The diagram log rule most commonly used for the measurement of sawtimber in California is the _____ rule.

END OF QUESTION

QUESTION II- FOREST MENSURATION

OBJECTIVE

To demonstrate your ability to analyze various forest conditions and situations to design and conduct an appropriate cruise.

SITUATION

A client retains you to cruise three separate tracts of timber she owns. She is interested in the volume of net merchantable timber on each tract. The tracts are described below. The client's purpose and her general instructions are also shown for each tract. For all tracts, assume that 1) there is no effect of recovery of value based on forest practice or other environmental regulations and 2) all tracts have nearly the same degree of reasonable access.

Tract 1

SIZE: 40 acres

LOCATION: Humboldt County, California

TYPE OF TIMBER: Heavy stand of virgin old-growth redwood over entire area.

BOUNDARIES: Blazed, flagged, and K-tagged lines marked by a recent recorded survey by a licensed land surveyor retained by client.

CRUISE PURPOSE: For use in court to support client's claim of substantially higher values than offered by a condemning public agency.

RESTRICTIONS ON INTENSITY, TIME CONSTRAINTS, OR COST OF CRUISE:
None

Tract 2

SIZE: 640 acres

LOCATION: Shasta County, California

TYPE OF TIMBER: Larger second-growth and old-growth ponderosa and sugar pine, white fir, and associated conifers over entire area.

BOUNDARIES: No information available from client.

CRUISE PURPOSE: For client's use in estimation of minimum acceptable value. Timber to be offered for sale on a pay as cut basis at public auction and sold for highest bid from a responsible bidder (provided minimum is met or exceeded).

RESTRICTIONS ON INTENSITY, TIME, CONSTRAINTS, OR COST OF CRUISE: Client requests that cruise intensity be adequate to protect her from setting a minimum acceptable bid which would be either too low or too high, but cannot afford an intensive cruise. Cruise is to be completed within two months.

(Continued Next Page)

Tract 3

SIZE: 6,400 acres

LOCATION: Eldorado County, California

TYPE OF TIMBER: Scattered, older residual stand of mixed conifers with patches of young growth timber left after logging in the 1960-1970s. Approximately one-third of the property is in non-timbered areas including brushfields, rocky land, and meadows.

BOUNDARIES: No information available from client. Intermingled and adjoining large diameter timber, including some not previously logged stands, of other private and public ownership is known to exist.

CRUISE PURPOSE: For client's use in planning for future management. No timber sales contemplated soon.

RESTRICTIONS ON INTENSITY, TIME, CONSTRAINTS, OR COST OF CRUISE: Client stipulates cruise costs should be kept to the minimum needed for management planning on a general basis. Time for completion is one year. Cruise intensity to be adequate to give reasonable estimates by species for the entire property. No breakdown of cruise data by smaller subdivisions is necessary.

QUESTIONS:

Answer the following questions for **EACH** tract:

60% 1. Briefly describe the type of cruise you would recommend. Justify the cruise intensity, layout, and what measurements are needed. Also state what additional resources or sources of information that should be provided to you or you would procure to accomplish the cruise. Include your reasons for selecting that type of cruise over the alternatives.

15% 2. Explain what field tools/instruments and procedures you would use during the cruise to obtain the measurements you recommended in part 1, above.

10% 3. What steps would you take to identify the property boundary lines?

15% 4. What sources should you use to estimate yield, defect and breakage, and log grade information for this cruise.

END OF QUESTION

QUESTION III-FOREST ECOLOGY

OBJECTIVE

Throughout the history of American Forestry, assertions have been made that mixed species stands of trees are “better” than pure or one species stands. This question is designed to ascertain your understanding of the advantages and disadvantages of mixed species stands

QUESTIONS

10% 1. Discuss where a forester is most likely to find a naturally occurring mixed stand of trees and to find a pure stand of naturally occurring trees in the U.S.? Explain an ecologic reason for the two stands development in the locations you describe.

15% 2. Mixed stands are often meant to be “more stable” than pure stands? What do you think is meant by more stable and do you think this is true or false? Explain your reasoning.

15% 3. Discuss relative advantages for nutrient cycling, productivity, and utilization in a mixed species stand compared to a pure-species stand. Use examples to aid your discussion.

15% 4. Discuss the effect of insect or disease epidemics on mixed stands compared to pure stands. Do not limit your discussion to total stand decimation effects.

15% 5. Discuss economic advantages a mixed stand would have over a pure stand of trees? Use examples to aid your discussion.

15% 6. In terms of multiple-uses, which type of stand would be more advantageous? Give at least three examples and explain your reasoning.

15% 7. Discuss three possible disadvantages of growing a mixed stand of trees. Use examples to aid your discussion.

END OF QUESTION

QUESTION IV- FOREST ECONOMICS

OBJECTIVE

To determine your understanding of the economics governing the U.S. forest products industry on a national and international basis.

SITUATION

The forest products industry in the Western United States has long been characterized by cyclical (short-term) instability. **(Note that the question is related to forest products and your answers should be directed towards forest products such as sawn lumber and construction panels, not logs.)**

QUESTION

25% 1. Explain the main cause of the traditional cyclical instability in the Western forest products industry and if it applies to the current market situation (circa 2005 to the current date) in the forest products industry. Explain the effects of interest rates and money supply on this instability.

10% 2. What is meant by the statement "it is generally agreed that demand for lumber, building panels and plywood by the construction industry is 'inelastic'."

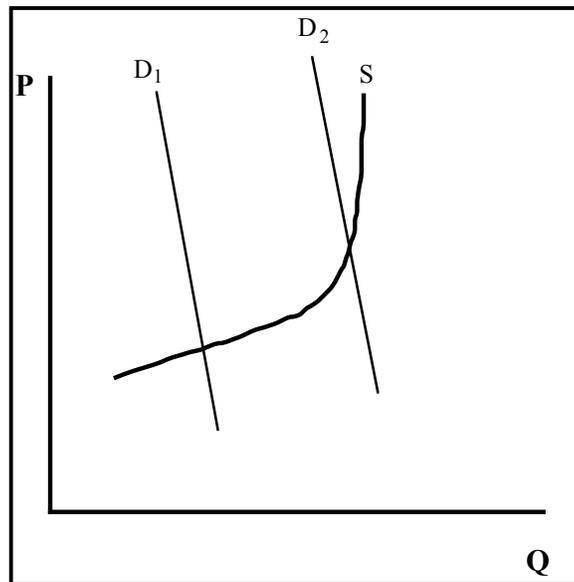
3. Assume that the graph provided below relates to supply and demand for forest products, answer the following:

10% a) For each of the axes and graph lines labeled P, Q, D1, D2, and S, clearly define what each item represents.

10% b) Explain why the S-graph line changes slope upward so quickly near its intersection with D2.

10% c) Explain why the slopes of graph lines D1 and D2 are nearly vertical.

15% d) Explain, with the use of the graph, what happens in the forest products market if the economic circumstances are at D1 and then move to D2.



20% 4. List and briefly describe the effects that a forest products industry depression would likely have on the intensity of forest management on industrial forestlands in the West in the short-run.

END OF QUESTION

QUESTION V- FOREST PROTECTION

OBJECTIVE: To assess your knowledge about insects which can be damaging to wildland tree species in the western United States and Canada.

QUESTIONS:

Listed below are three (3) insects that are common in forests of the region specified above:

- A. Mountain Pine Beetle (*Dendroctonus ponderosae*)
- B. Balsam Woolly Aphid (*Adelges piceae*)
- C. Western Spruce Budworm (*Choristoneura occidentalis*)

45% 1. For each insect, describe and discuss the insect (e.g. the mode by which it affects or damages the host trees, evidence of infestation, factors affecting an outbreak, how a forester in the field could identify the insect without actually seeing the culprit. Include what tree species the insect attacks, the portion of the tree attacked, and any other primary indicators of the presence of that species.

30% 2. . Insect epidemics in forest stands can possibly be controlled or lessened through silvicultural-management practices, use of chemicals, or a combination of practices called Integrated Pest Management (IPM). For each of the insects, briefly discuss the most commonly prescribed methods to control outbreaks of each insect.

25% 3. Assume as an RPF, you determine that insect damage in trees on a tract of commercial timberland warrants immediate harvesting to prevent a loss of tree resources, or there is otherwise a need to control or prevent the build-up of a destructive insect population. Briefly describe the two actions that can be taken under the CA Forest Practice Act and rules that will allow for the harvesting of trees to begin almost immediately (quicker than the time required to get an approved THP). Include what RPF responsibilities exist, if any, in implementing these actions. Assume that commercially merchantable sawlogs are present.

END OF QUESTION

Professional Foresters Registration Examination

April 11, 2008

Part II

**Applicant Must Also Answer Three Of The Remaining
Five Essay Questions In Part II**

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

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

QUESTION VI - FOREST ENGINEERING

OBJECTIVE:

To test your knowledge of modern logging technology and its use.

QUESTIONS:

- 30% 1. List four basic components which make a Cut-to-Length (CTL) harvester unique and describe the functioning of these components.
- 24% 2. Discuss four factors that have led to the increasing use of the Cut-to-Length (CTL) harvester over the human system-timber faller and buckler with a chain saw in the U.S.
- 24% 3. Discuss four items that would be considered disadvantages for the Cut-to-Length (CTL) harvester over the human system-timber faller and buckler with a chain saw.
- 22% 4. In California, the favored automated ground-based harvesting system has NOT been the Cut-to-Length (CTL) harvester system. What type of automated ground-based harvesting system is more favored in California and explain why.

END OF QUESTION

QUESTION VII-SILVICULTURE

OBJECTIVE

This question is designed to allow you to demonstrate your ability to describe and understand forest stand conditions, then select and justify a site specific silvicultural system that will meet the intent of the California Forest Practice Act.

SITUATION

Given the objective described above, be specific in stating your assumptions and answers. The answers should demonstrate technical competence and be clear enough to be understood by agency professionals and the public. This is exactly what is required of an RPF when submitting a THP.

QUESTION

- 5% 1. Define the term "stand structure".
- 25% 2. Describe the "structure" of FOUR (4) of the following general stand types. (Graphs or diagrams are acceptable.)
- Even-aged
 - Uneven-aged
 - Storied
 - Irregular
 - Even-aged Group
 - Reserve
- 50% 3. a. For four (4) of the stand structures you described above, list all of the regeneration method(s) and intermediate treatments as found in the California Forest Practice Rules which are usually most appropriate for maintaining or achieving maximum sustained production of wood. (Note: When more than one regeneration method or intermediate treatment is appropriate for a particular stand structure list them all. DO NOT USE ALTERNATIVE PRESCRIPTION)
- b. Also, for each stand structure you described use one of your listed regeneration methods to briefly describe and explain how the regeneration method relates to achieving or maintaining that structure.
- 10% 4. Define the term "stand composition" and how it is quantitatively expressed.
- 10% 5. What do the California Forest Practice Rules require or suggest about stand composition after harvest in order to meet post harvest stocking standards?

(END OF QUESTION)

QUESTION VIII- FOREST ADMINISTRATION

OBJECTIVE

To determine your understanding of the application of principles and practices of forest administration to conserve plant and animal resources on California's wildlands.

SITUATION

You are directed to ensure that wildlife and plant resources are protected during timber harvest or other wildland management activities (e.g. burning, stand improvement or re-establishment).

QUESTION

- 10% 1a. List two common data bases that a California RPF would consult for this work and briefly describe what data can be found in that data base. .
- 5% 1b. List two other sources of information (non-database) that you would consult.
- 10% 1c. Briefly describe one technique you could use to determine the occurrence, or potential for occurrence, of listed species or species of special concern, both plant and animal, on California wildlands.
- 30% 2. Identify 5 distinct on-site activities related to harvesting that may result in immediate mortality, injury, or habitat alteration to listed species or species of special concern, both plant and animal, and discuss two generally accepted methods to avoid these effects.
- 45% 3. Identify 5 key habitat components (e.g. special habitat elements) used by wildlife in timber stands that may be affected by timber harvest and discuss two generally accepted measures to maintain each of those five components in managed stands over time.

END OF QUESTION

QUESTION IX- FOREST POLICY

OBJECTIVE

To demonstrate an understanding of the role of the Registered Professional Forester, California Board of Forestry and Fire Protection and environmental legislation in California.

QUESTION

- 20% 1. Describe the role of the Registered Professional Forester in managing California's forests and the basic minimum qualification requirements for registration.
- 20% 2. What is the Board of Forestry and Fire Protection, how are its members appointed, and what are three of its responsibilities?
- 60% 3. Briefly discuss ANY 6 of the 9 following environmental laws and how they affect forest practices in California.

Federal

Clean Water Act
Federal Endangered Species Act
National Environmental Policy Act
National Forest Management Act
Clean Air Act

State

California Endangered Species Act.
California Environmental Quality Act of 1973
Z'Berg-Nejedly Forest Practice Act of 1973
Forest Taxation Reform Act

END OF QUESTION

QUESTION X- FOREST MANAGEMENT

OBJECTIVE

To determine your ability to develop a reasonable course of action relating to a forest assessment project.

SITUATION

You are a self-employed consulting forester having just earned an RPF's license. The telephone rings and a potential client seeks your services. His uncle has passed away and left him about 640 acres of California timberland. The potential client does not know where the area is located, but does have a legal description. He knows that the land has been logged in the past by his uncle; well over 30 years ago. The potential client now thinks he may want to log the area and needs an assessment of the condition of the property and timber, estimated costs of harvesting and potential revenues. He is willing to spend up to \$8,000 to find out this information and needs to know the answer to these questions within three weeks in order to tell the IRS if he can pay the estate tax by harvesting the timber, or if he must sell the land outright to pay the taxes. He says that he will rely heavily on your professional expertise. You decide to take the job and he agrees to become your client.

QUESTIONS

- 60% 1. What course of action do you follow from this point **prior** to making a field inspection of the property? (Include the consequences of working within the given limitations, possible resources upon which you can draw for information for the project, your overall approach to the project, and how you would handle unresolved items?)
- 20% 2. Upon visiting the property, what information will you get in order to answer the client's questions regarding the condition of the property and timber?
- 10% 3. In order to estimate the potential income for your client:
a. What information will you gather in the field to help you decide what harvesting system to use on this area and to determine estimated harvesting costs?
10% b. What other information will you need before you can determine the potential income from immediate harvesting of the property?

END OF QUESTION

END OF EXAMINATION