Professional Foresters Registration Examination, October 2023

PART I

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

Applicant #:_____

Question # I

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.**

Acronym or Abbreviation	Full Text
BLM	Bureau of Land Management, USDI
BOF	California State Board of Forestry and Fire Protection
CA	California
CARB	California Air Resources Board
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 # __I_____

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

October 2023 RPF EXAMINATION

5% **1.** According to the FPRs list five (5) areas that may be excluded from a standard stocking survey?

_____

_____

_____

4% **2.** According to the FPRs list two (2) conditions that are unacceptable results of a standard stocking survey?

_____

_____

4% **3.** What four (4) conditions must be met to allow a waiver of standard stocking procedures?

_____

_____

_____

_____

3% **4.** List three (3) of the primary elements of how a "Stand" is defined In the Z'BERG-NEJEDLY FOREST PRACTICE ACT?

_____

_____

_____

3% **5.** What is the California State Safe Harbor Agreement (SHA) Program?

_____

Continued on the Next Page

Applicant #:_____

Question # __I_____

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% **6.** What are three (3) benefits the landowner receives under the California State Safe Harbor Agreement (SHA) Program?

_____

_____

4% **7.** List four (4) legislative intentions of the Timber Regulation and Forest Restoration Fund.

_____

_____

_____

_____

3% **8.** In forest economics, what is sensitivity analysis?

_____

_____

4% **9.** In forest ecology what does edaphic mean? State two examples of edaphic controlled forest conditions.

_____

_____

_____

_____

3% **10.** According to the FPRs, what is the Channel Migration Zone?

_____

_____

Continued on the Next Page

Applicant #:_____

Question # __I_____

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% **11.** List four (4) angiosperm group B commercial species for any one forest district you specify. Common names are acceptable.

_____

_____

_____

4% **12.** Pursuant to the FPRs, list four (4) criteria required to qualify a tree as "countable" in stocking.

_____

_____

_____

_____

3% **13.** According to the FPRs, what are Decadent and Deformed Trees of Value to Wildlife?

_____

_____

3% **14.** According to the FPRs, describe "economic feasibility" of a THP.

_____

_____

_____

3% **15.** Define "fluvial" processes.

_____

_____

Continued on the Next Page

Applicant #:_____

Question # I

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% **16.** What is stand density index?

_____

_____

3% **17.** How do the FPRs describe functional wildlife habitat*?*

_____

_____

4% **18.** Define “flood Flow”, (FPR definition acceptable). How is flood flow estimated?

_____

_____

_____

3% **19.** What is a hydric soil?

_____

_____

3% **20.** What do the FPRs require during timber operations about treatment of road running surfaces?

_____

_____

_____

_____

Continued on the Next Page

Applicant #:_____

Question # I

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% **21.** Define the forest decision making process for achieving desired future conditions.

_____

_____

3% **22.** What logging area access system features are included in the FPR required maintenance period?

_____

_____

3% **23.** According to the FPRs, what are the standards to which drainage facilities and drainage structures shall be maintained?

_____

_____

3% **24.** In forest economics, what is an opportunity cost?

_____

_____

3% **25.** What are Native American Archaeological Sites? What must be identified to confirm their existence?

_____

_____

_____

Continued on the Next Page

Applicant #:_____

Question # I

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% **26.** Per the FPRs, what is a planning watershed?

_____

_____

3% **27.** What is a Program Timberland Environmental Impact Report (PTEIR)?

_____

_____

3% **28.** Per the FPRs, what are Reasonably Foreseeable Probable Future Projects?

_____

_____

3% **29.** What are the Resource Conservation Standards for Minimum Stocking in a district of your choice?

_____

_____

_____

_____

4% **30.** How does a forester determine if a tree near the edge of a ¼ acre circular plot on a 30 % slope is "in" or "out"? The slope correction factor for 30% is 1.04. Give an example and show your calculations.

_____

_____

End of Short Answer Question

QUESTION II-FOREST ECOLOGY

OBJECTIVE

To demonstrate your knowledge regarding the relationship between water and energy, and successful tree regeneration.

QUESTION

The water relations and energy environment of trees are always important and are especially critical during the regeneration stage of a stand.

10% **1.** In terms of plant water and energy relationships, explain why duff is usually a poorer seedbed than mineral soil for establishment of conifer seedlings from natural seed fall or broadcast seeding.

16% **2.** In terms of plant water and energy, discuss four (4) reasons for the generally beneficial effect of shade on seedling survival (assume that shade is not excessive to be detrimental to seedling health).

25% **3.** Describe five (5) common errors in tree planting techniques and explain, in terms of plant water and energy, the adverse effect of each. (Assume satisfactory planting stock and proper handling is used; do not use lack of utilization of dead shade as an answer).

30% **4.** Consider a tree seedling recently planted in an unshaded site. Assume "typical" late spring, mid-afternoon, mostly sunny conditions. Indicate the direction of change in rate of transpiration (increase or decrease) you would expect as a result of each of the following changes in environmental conditions. Regard these as five separate, unrelated situations. Explain each response in terms of the applicable physical/biological processes (If you need to make further assumptions to qualify any of your answers, state them briefly):

a. A cloud shadow passes over the seedling.

b. Wind speed increases from a slight to moderate breeze.

c. Air temperature increases with no change in solar radiation.

19% **5.** Describe two (2) types of commonly used tools for hand planting tree stock. Discuss the variations of shape for each tool, what site conditions and stock types each is best suited to successfully plant trees.

END OF QUESTION

QUESTION III-FOREST ECONOMICS

OBJECTIVE:

To demonstrate understanding of Forest Management Decision-Making.

SETTING:

The timberland of California. Understanding the various Forest Management Decision Making tools available is critical to their use in planning applications.

QUESTIONS:

10% **1.** Briefly outline the basic steps in the general decision-making process used in forest management planning.

30% **2.** Define any three (3) of the following Financial decision methods concerning proposed Forest Management Decisions: Net Present Value (NPV), Benefit Cost ratio (B/C), Internal Rate of Return (IRR), or Equal Annual Equivalent (EAE) or Land Expectation Value (LEV).

20% **3.** Many forest management decision models (usually computer software aided) are commonly utilized to support forest management decisions. Discuss the most common method: Linear programming. Be sure to characterize the process, uses, limitations and assumptions.

10% **4.** How is the interest rate "i" determined for a Net Present Value calculation?

Setting: By necessity, all decision-making about the future is done with some uncertainty and risk. "You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete." — ***Buckminster Fuller***

15% **5.** Define and discuss risk in forest management planning. Give a real-world example of risk in forest management planning. How can forest management decisions cope with risk?

15% **6.** Define and discuss uncertainty in forest management planning. Give a real-world example of uncertainty in forest management planning. How can forest management decisions cope with uncertainty?

END OF QUESTION

QUESTION IV - SILVICULTURE

OBJECTIVE: Demonstrate your ability to develop, explain and justify a silvicultural system to client landowners.

SITUATION: Your company manages several small to medium-sized family forests. You have been tasked with presenting an outline of proposed harvest actions on a 1000-acre forest to a new generation of family owners. The new owners are grandchildren of a multi-generation ranching family. They inherited the forested watershed that was formerly part of the ranch summer grazing system. The grandchildren are all tech media consultants with no interest in ranching. They enjoy hiking into the adjoining USDA Forest Service wilderness area, camping, riding horses and XC skiing.

They have no interest in long term sustained yield and no desire for regular forest income. They have a vague concept of restoring “natural old growth” forest that is “open and park like”. They do want their forest to cover whatever costs are associated with restoration of desired future conditions.

SCENARIO: The ~ 1,000-acre interior California property comprises an entire sub watershed ranging from 5,000 feet to 6,000 ft elevation. It is adjacent to a designated wilderness upslope and otherwise surrounded by industrial forest holdings. The terrain is gentle south facing ranging up to 35% slope except near the wilderness where 40 to 50 % slopes prevail. Soils are well developed sandy loam on granite parent material, generally site II. There is an adequate but poorly maintained access system dating from the last harvest 25 years ago. The current young growth mixed conifer -hardwood stands are well stocked with 18” to 30” dbh overstory covering 75% of the watershed. A second canopy of sapling and pole WF and IC are ubiquitous. Shrubs dominate the few scattered non meadow openings. The remainder is in WLPZ and stringer meadows. There are no significant adverse impacts from past activities. Listed species are present in the adjacent wilderness area but have not been detected on ranch property.

QUESTIONS:

20% 1. Describe, explain, and justify your interpretation of the grand children’s desired future forest condition. Give examples.

30% 2. Describe, explain and justify the type and timing of the silvicultural system and harvest method(s) if any, you recommend to attain desired future conditions. Give reasons to “rule out” potential but not chosen methods.

30% 3. Describe, explain, and justify the type and timing of access, watershed and cultural treatment(s) if any you recommend to attain desired future conditions.

20% 4. Outline the efforts you will need to make with adjacent landowners, local, state and federal agencies to accomplish your proposal.

END OF QUESTION

QUESTION V- FOREST PROTECTION

OBJECTIVE: Demonstrate your understanding of how changing environmental events affect management plans.

SITUATION: Your consulting company has recently contracted to manage a 10,000-acre interior California mixed conifer forest property. The property has recently changed ownership. Although the forest has been largely spared from catastrophic fire loss, the new owners want a review of how resilient current management practices are to potential catastrophic events. The owners' goal is to insure the largest safe average annual cash flow.

SCENARIO: The property is generally site II young growth. Slopes range up to 50% at elevations from 3,500 to 6,000 feet. Active management for the past 3 decades has resulted in scattered 20-acre plantations on North slopes ranging from 0 to 30 years of age. South slopes have been managed by selection and group selection and are well stocked with a variety of age classes. The access system is well established and maintained. You develop and present two alternative management plans. One designed to avoid value loss when catastrophic fire eventually occurs. The second to mitigate the potential of catastrophic fire loss to ever occur.

QUESTIONS:

20% 1. Describe a general plan (not specific FPR permitting actions) for management of this commercial forest (before the fire occurs) to avoid value loss when catastrophic fire eventually occurs.

20% 2. Describe a general plan for management of this commercial forest to mitigate the potential of catastrophic fire to ever occur.

20% 3. Describe a management strategy designed to mitigate the effects of extended drought in this ownership.

30% 4. Multiple Atmospheric rivers have recently dropped unprecedented amounts of precipitation on this ownership. Describe how this might affect the property management.

10% 5. What management practices do you recommend that integrate resilience to all the above listed risks?

END OF QUESTION

Professional Foresters Registration Examination
October 2023

Part II

Applicant Must <u>Answer Three</u> (3) of the Remaining Five Essay Questions in Part II

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

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

QUESTION VI - FOREST MENSURATION

OBJECTIVE

To demonstrate your ability to understand and utilize basic mensurational data.

SITUATION

A consulting forester is developing a management plan for a 10-acre ownership in California. To generate information about the vegetation on the property, the forester established random sampling plots, the information from two of which is attached. At each location, the forester set the following types of plots and measured the associated variables:

- A variable radius plot (or prism) sample using a basal area factor of 30 (English units, square feet per acre). For each "in" tree on the prism plot over 10-inches DBH, the forester measured:
  Dbh in inches to the nearest 1/10th inch, and Height to the nearest foot
- A 1/250-acre circular plot. For each tree between 2-inches and 10-inches dbh, measure and record in 2-inch dbh classes
- A 0.001-acre square quadrat in which the total number of seedlings was counted.

All trees measured in the inventory were ponderosa pine. For each tree measured, the forester predicted volume (cubic feet to a 4" top) using the formula:

$$v = -1.0454 + 0.002706 (d^2 \times ht)$$

in which:

d = Dbh in inches to the nearest 1/10th inch,

ht = Total height in feet.

COMPUTATIONAL QUESTIONS - Based on the data presented in the attached summary at the end of this question, estimate the following (**SHOW YOUR WORK**):

5% **1.** The mean basal area per acre for the property using trees over 10" dbh.

5% **2.** The mean volume/acre for the property using trees over 10" dbh.

5% **3.** The mean number of trees per acre for the property using trees over 10" dbh.

5% **4.** The estimated standard deviation of the basal area per acre among the sample plots. (Equation provided with data summary at end of question)

5% **5.** The sampling error around the estimated mean basal area per acre for the property. (Equation provided with data summary at end of question)

5% **6.** The total number of 8-inch dbh trees on the property.

5% **7.** Cubic foot volume to a 4-inch top of tree #2 at sample location #1.

5% **8.** The mean number of seedlings per acre on the property.

NON-COMPUTATIONAL QUESTIONS-Based on the data presented in the attached summary, Answer the following:

10% **9.** Write a formula (do not do calculations) for calculating quadratic mean diameter.

15% **10.** Cite three (3) reasons for using strip cruising instead of prism points or fixed-size plots to improve efficiency in the field.

CONTINUED NEXT PAGE

15% **11.** It has been suggested that it is permissible (even desirable) to change prism factors from point to point to help equalize the number of trees selected over all the points.

Is this a statistically valid procedure? Why?

20% **12.** It has been recommended that when cruising on steep ground with a prism, sample trees should be selected only from a 180-degree arc downhill from the center point.

If this procedure were followed:

a) what change should be made to the basal area factor? And

b) what would be the effect of this procedure on the sampling error assuming a homogeneous stand.

CONTINUED NEXT PAGE

DATA SUMMARY

The data obtained from the field measurements are:

PRISM POINTS

Location	Tree #	Dbh	Ht	ba	v/ba	1/ba
#1	1	22.1	111	2.66	54.76	0.38
	2	14.6	64	1.16	30.92	0.86
	3	32.1	135	5.62	66.79	0.18
	4	18.6	102	1.89	49.97	0.53
	5	20.3	112	2.25	55.04	0.44
	Subtotal			13.58	257.48	2.39
#2	1	12.3	43	0.83	19.95	1.20
	2	28.2	122	4.34	60.25	0.23
	3	14.6	54	1.16	25.95	0.86
	4	31.2	142	5.31	70.24	0.19
	Sub-total			11.64	176.39	2.48

1/250-ACRE PLOT

Location	Dbh Class	Number of Trees
#1	6	4
	10	3
#2	2	2
	4	1
	8	1

DATA SUMMARY (CONTINUED)

1/1000-ACRE QUADRAT

Location

#1	2 seedlings
#2	0 seedlings

STATISTICAL EQUATIONS PROVIDED

Standard Deviation: $$SD = \sqrt{\frac{\square(X - \overline{X})^2}{n - 1}}$$

Sampling Error: $$SE = \frac{SD}{\sqrt{N}}$$

END OF QUESTION

QUESTION VII - FOREST ADMINISTRATION

OBJECTIVE: Demonstrate your understanding of Road Management Plans.

SITUATION: Your timberland owner client is considering development of a Road Management Plan (RMP). Your goal is to ensure your client understands the Plan contents. At their initial meeting you answer their questions.

QUESTIONS:

10% **1.** "What is the intent of a Road Management Plan?"

10% **2.** What resource professional(s) prepare a RMP?

5% **3.** How much detail is required in a RMP??

10% **4.** To what extent is the RMP just a duplication of the cumulative effects analysis?

10% **5.** When may the RMP deviate from standard FPR rules?

15% **6.** "The Guidelines for Orderly Evaluation of Activities Proposed by a RMP require Identification of five Specific objectives and requirements. One of these is the "Identification, prioritization and implementation of road-related activities" in order to accomplish what three (3) objectives?"

20% **7**. "The contents of the Road Management Plan must contain a goals and objectives element, an evaluation element, an operational element, a verification element, and an adaptive management element." List and briefly explain the contents of two (2) of these elements."

20% **8.** "The inventory and assessment of the existing road system shall include what items?"

END OF QUESTION

QUESTION VIII - FOREST ENGINEERING

OBJECTIVE:

To demonstrate your understanding of GIS and GPS technology and ability to utilize it in forestry work.

QUESTIONS:

5% **1.** What does the acronym GPS stand for, who owns and manages the US NAVSTAR GPS system?

15 % **2.** To determine a terrestrial three-dimensional position (3-D), from how many satellites, at a minimum, must your GPS receiver reliably receive a signal? Explain how the GPS receiver accomplishes this task and why the number of satellites you have specified above is necessary.

15% **3.** You wish to use a GPS unit to map a stand of timber. Describe the "type" of GPS unit you would need in terms of its capabilities, cost, and features. Be specific in your discussion.

15% **4.** Discuss three (3**)** common problems that you may encounter in using GPS to map a timber stand under forest conditions found in California. For each problem you give, also include at least one technique (procedure, equipment uses, or additional equipment) that has a good chance of defeating or overcoming the problem.

15% **5.** What does the acronym GIS stand for? Describe a typical GIS system as used in forestry work.

20% **6.** You are tasked with collecting spatial information to prepare a California Cooperative Forest Management Plan. The owner wishes that you use GIS and GPS to map a stand of timber so they may have a copy of the digital special files.

a. In preparing for your field visit, what types and sources of publicly available data might you review?

b. What general types of spatial data can typically be collected? State three (3) examples of each type.

c. What types of base maps are likely available?

Continued on the Next Page

15% **7.** Describe the potential formats of digital GIS information you could provide to the landowner. What additional information about the data collected should you provide to the landowner?

END OF QUESTION

QUESTION IX- FOREST POLICY

OBJECTIVE
To demonstrate your knowledge of the policies, privileges and responsibilities granted under the California Professional Foresters Law, Forest Practice Rules and Forest Practice Act.

SITUATION
Assume that you are a California Registered Professional Forester (RPF).

QUESTIONS

6% **1. A.** Briefly describe the three (3) qualifications an applicant must meet to qualify for application and licensing as a Registered Professional Forester in California.

4% **1. B.** Under the Professional Foresters Law, name two (2) actions that are declared unlawful for any person who is NOT a RPF?

10% **1. C.** As a RPF what is your legal responsibility relating to the contents and implementation of a Timber Harvesting Plan written and signed by you?

10% **2. A**. A Licensed Timber Operator (LTO) logs a 50-acre parcel of timberland with a valid Timber Harvest Plan (THP). The LTO is also the plan submitter and timberland owner. The LTO completes the work satisfactorily but fails to restock adequately in the prescribed time. Briefly list and explain the corrective steps that CALFIRE may take, assuming that the LTO refuses to do any planting?

20% **2. B.** As a Cal Fire RPF you are inspecting operations conducted under an approved THP. During an inspection you find skidding across a Class II watercourse in several locations in violation of the THP specifications. Briefly discuss three enforcement actions that the CALFIRE may take, from less serious to most serious, to stop any additional such actions and correct any damage.

Continued on the Next Page

15% **3.** An RPF signs a THP prepared by his apprentice, who has a forestry degree, without the RPF ever visiting the site. The RPF believes the area is not erosion-prone with no class I, II, or IV streams in the THP area and a selection harvest is proposed. The RPF believes his apprentice has adequate experience to do the fieldwork and prepare the THP. Discuss the RPF's level of responsibility and whether he would perform an illegal act by signing the plan under these circumstances.

15% **4.** An RPF retains a wildlife biologist's service in preparing a THP, with his client's permission. The RPF pays the biologist for his work. The RPF then adds a 20% charge to the biologist's fee on to his bill for the client. Discuss whether the RPF might be guilty of any violations of the Professional Foresters Law or ethics.

20% **5.** For this question, assume an RPF is also a Licensed Timber Operator. He buys timber from small non-industrial timberland owners. One of his marketing points in "closing the deal" to buy their timber is that he can do the THP as well as the logging, saving the landowner on the expense of preparing a THP, and hence give them a better price for their timber. In addition, he tells the timberland owners that since he will also be the LTO, he will be supervising the logging and that improves quality and compliance with the Forest Practice Act and this arrangement lets him give the timberland owners a better price.

A. Discuss whether this is a criminal act and the validity of this approach as it relates to the best interest of the landowner.

B. Describe the steps that you would take to head-off any problems if you were faced with a similar situation.

END OF QUESTION

QUESTION X- FOREST MANAGEMENT

OBJECTIVE: Demonstrate your ability to explain and justify forestry concepts to client landowners.

SITUATION: Your company manages several small to medium-sized family forests. You have been tasked with presenting an outline of proposed harvest actions on a 1000-acre forest to a new extended family group of owners.

You explain the main goal is to increase sustained volume and value yield over time. Their forest is mid elevation young growth mixed conifer on good site with established access. Slopes are moderate and no listed species are present. Forest stocking is highly irregular with many patches of poor stocking due to past pest, spot fire and harvest actions.

To increase future growth your company proposes clearing 20% of the forest comprised of these understocked forest patches creating scattered 2 to 5-acre openings. An additional 10% of the forest comprised of well stocked larger sawtimber will be cleared in similar size patches to generate income. Most of the remaining forest will be commercially or pre-commercially thinned to increase fire resilience. The income will support regeneration, practices to increase forest fire resilience and other family wishes. About every 20 years additional patches will be cleared to create a sustainable forest structure.

Scenario: One of the family granddaughters (a college student) objects to creating “300 acres” of clearcuts. She produces a critique of clearcutting generated by an AI Bot to substantiate her assertion.

CLEARCUTTING:

a. Destroys forest ecosystems, depriving wildlife of natural habitats and decreasing biodiversity.

b. Increases the risks of soil erosion. Trees slow down water currents, preventing rill formation, this is why clear-cutting increases erosion.

c. Leads to sedimentation and nutrient leakage to water bodies.

d. Interferes with the water cycle as trees consume and release moisture in the process of evapotranspiration.

e. Raises water temperature in the riparian zones due to a due to a lack of shade, which adversely affects the aquatic animals.

f. Worsens the air quality. Trees enrich the atmosphere with oxygen and take carbon dioxide. Clear-cutting reduces this forest property.

g. Removes carbon sinks. Trees and forest soils accumulate carbon.

h. When forests are cut, carbon is released, adding to global warming and climate change.

I. Spoils the scenery. Bare patches in forest landscapes look empty and are in no way appealing to the eye.

Continued Next Page

j. Provokes slides. Tree roots hold the soil in place. After clear-cutting, the earth becomes loose, which often leads to sliding.

k. May cause deforestation. Permanent forest cuts without regeneration may result in forest losses, land devastation, and desertification.

l. Harvest slash increases fire hazard.

(70%) 1. 10% Discuss how you respond in general to these criticisms. State your assumptions about which forest region you are discussing.

5% Each: Then address each specific issue (a…l). Your goal is to enlist the family's support, not simply challenge the granddaughter's concerns if they are legitimate.

Scenario: You describe how the 30% clearings with site preparation are like scattered fuel treatment areas. Such Strategically Placed Landscape Treatments (SPLATS developed by Mark Finney) have successfully demonstrated their capacity to slow fire spread by forcing encroaching crown fires to the surface.

10% **2.** The granddaughter then asks what happens in 20 years when all these clearcuts are covered with little tree ladder fuel which actually promotes crown fires?

10% **3.** Explain and justify the timing and type of plantation treatment(s) you prescribe to sustain yield and promote fire resilience over time.

10% **4.** The granddaughter asks why not use smaller clearings to mitigate many of the potential adverse effects of larger clearcuts?

End of Question

END OF EXAM