PRACTICE EXAM 16: ISA CERTIFIED ARBORIST SIMULATION

QUESTIONS 1–200

Time limit: 3 hours 30 minutes. Each question has exactly one correct answer.

1. An arborist observes that a young maple tied tightly to a rigid stake for three years has developed a noticeably thin trunk with minimal taper. The most likely explanation is that:

A. Rigid staking prevented the wind flexing that stimulates reaction wood and taper

B. The tree has suffered root damage from the tie material used

C. The soil at the planting site lacks calcium for structural wood

D. The maple was undersized at delivery from the nursery

2. A homeowner reports that her tree was leafing out normally in April but wilted completely in May despite wet soil. The most likely explanation is:

A. Excess soil moisture from recent heavy rainfall

B. A normal seasonal pattern for the species

C. Root system failure preventing water absorption

D. Chlorophyll breakdown from early summer heat

3. An arborist finds a tree with a deep vertical wound from equipment damage two years old, now surrounded by a thickened ring of new wood. The new growth represents:

A. Wall 1 plugging the xylem vessels vertically

B. Wall 4 formed by the cambium at the wound margin

C. Wall 2 resisting inward decay across growth rings

D. Wall 3 resisting lateral spread through rays

4. A trainee asks why a hollow mature oak can remain standing for decades. The best explanation is:

A. The hollow eliminates wind resistance entirely

B. Hollow trees are lighter and therefore more stable

C. Living trees regenerate wood to fill cavities

D. A cylinder of sound wood can retain much of the original strength

5. An arborist explains why a spring-defoliated tree is especially vulnerable. The most accurate reason is:

A. Carbohydrate reserves are already depleted by refoliation demand

B. Spring temperatures are too cold for wound response

C. Spring rainfall drowns the remaining root system

D. Summer photosynthesis has not yet begun at all

6. A client asks how a tree can lift water more than 100 feet to its canopy. The correct explanation involves:

A. Active pumping in the root cortex cells

B. Atmospheric pressure pushing water upward from below

C. Transpiration tension pulling a continuous water column

D. Osmotic gradients within the central pith

7. An arborist observes that a tree severely defoliated by insects has produced a second flush of leaves. The source of energy for this refoliation is primarily:

A. Direct photosynthesis by the newly expanding leaves

B. Carbohydrate reserves stored in parenchyma

C. Water alone absorbed by the root hairs

D. Oxygen pulled in through the stomata

8. A trainee asks why mycorrhizal fungi are considered essential to most trees. The correct answer is that the fungi:

A. Fix atmospheric nitrogen directly in tree tissues

B. Decompose dead wood on the forest floor

C. Produce sugars through their own photosynthesis

D. Extend the absorbing surface of roots for water and nutrient uptake

9. An arborist explains why girdling roots can kill a mature tree. The correct mechanism is that girdling roots:

A. Compress vascular tissue and restrict transport

B. Compete with deep roots for subsoil water

C. Introduce pathogens directly into the sapwood

D. Attract wood-boring insects to the trunk base

10. A student asks where most of a mature tree's absorbing roots are located. The correct answer is:

A. Concentrated in a deep central taproot

B. In the upper 12 to 18 inches of soil

C. Exclusively beneath the trunk drip point

D. Only within the sheltered root crown area

11. An arborist notes that a tree closed its stomata during a hot afternoon. The correct consequence is that both:

A. Respiration and photosynthesis have accelerated

B. Root growth and respiration have paused

C. Mycorrhizal activity and respiration have increased

D. Transpiration and photosynthesis have decreased

12. A client asks why topping causes long-term decline even when a tree resprouts vigorously. The best explanation is:

A. Topping attracts bark beetles to the cut surfaces

B. Sprouts photosynthesize at lower rates than normal leaves

C. Large wounds deplete reserves and resprouts are weakly attached

D. The cut surfaces release growth inhibitors into the soil

13. An arborist explains apical dominance to a client. The correct description is that the shoot tip:

A. Produces auxin that suppresses lateral bud growth below

B. Produces chlorophyll that darkens the surrounding leaves

C. Releases ethylene that ripens all fruit at once

D. Generates cytokinin that stimulates root growth

14. A trainee asks which cells conduct water upward in a tree. The correct answer is:

A. Living phloem sieve tube cells of the inner bark

B. Dead xylem cells forming hollow conductive tubes

C. Actively dividing cambium cells between bark and wood

D. Storage parenchyma cells in the outer sapwood

15. An arborist notes that xylem vessels are blocked only in the outer sapwood during a drought. The immediate consequence is:

A. No effect because heartwood carries water

B. Increased photosynthesis as a compensation

C. Rapid formation of new heartwood tissue

D. Reduced water delivery to the canopy

16. A client asks what causes autumn leaf color in deciduous trees. The correct explanation involves:

A. Active production of new red pigments only

B. Damage from the first hard freeze of the season

C. Chlorophyll breakdown revealing underlying pigments

D. Nitrogen translocation downward from the roots

17. An arborist finds that a tree's bark has split vertically on the south side during a sunny winter day. The most likely explanation is:

A. Rapid temperature changes causing sunscald

B. Internal decay pushing the bark outward

C. Excess soil moisture saturating the trunk

D. A fungal infection beneath the surface

18. A student asks what defines the heartwood of a mature tree. The correct description is that heartwood is:

A. The most recently formed wood cells on the outside

B. Actively conducting water throughout the growing season

C. Composed of living storage parenchyma cells

D. Dead wood with deposited extractives for decay resistance

19. An arborist inspects a tree and finds a branch protection zone still intact at a wound site. This zone is best described as:

A. The branch bark ridge above the union itself

B. A chemically altered zone resisting decay spread into the trunk

C. The outer phloem of the wounded branch

D. The pith cylinder at the branch center

20. A client asks what determines the rate of photosynthesis in a tree's leaves. The best answer includes:

A. Only the nitrogen level in the surrounding soil

B. Only the temperature of the surrounding air

C. Light, CO_2, water availability, and temperature together

D. Only the age of the individual leaves

21. An arborist explains why buried root flares cause long-term decline. The correct mechanism is that:

A. Buried flares attract more nitrogen-fixing bacteria

B. Bark tissue below the flare decays when buried and girdling roots develop

C. The tree's photosynthesis increases but reserves drop

D. Water cannot reach the subsoil due to capillary action

22. A student asks how stored starch differs from simple sugars in a tree. The correct answer is that starch is:

A. Long-term storage held in living parenchyma cells

B. The primary immediately usable energy form in phloem

C. A structural component of xylem cell walls

D. Found only in the central pith of the trunk

23. A homeowner has a tree with opposite leaves, palmately compound foliage of five leaflets, and large showy white flower spikes in spring. The most likely identification is:

A. White ash in the olive family

B. Black walnut in the walnut family

C. Sugar maple in the soapberry family

D. Horse chestnut in the soapberry family

24. An arborist is asked to identify a tree with mottled tan and white peeling bark and broad palmate simple leaves. The most likely identification is:

A. Eastern white pine in the pine family

B. Red oak in the beech family

C. American sycamore in the plane family

D. White ash in the olive family

25. A client wants to plant a tree under a 25-foot distribution line. The arborist should recommend:

A. A red oak reaching 70 feet at maturity

B. A crabapple cultivar reaching 15 to 20 feet

C. A tulip poplar reaching 80 feet at maturity

D. A pin oak reaching 60 feet at maturity

26. A municipal forester is asked which rule limits species, genus, and family percentages in urban plantings. The correct answer is:

A. The 10-20-30 rule of urban forest diversity

B. The 5-15-25 nursery stock rule

C. The 25-50-75 canopy distribution rule

D. The 1-3-5 street tree spacing rule

27. An arborist is identifying a conifer that drops all its needles each autumn. The correct genus is:

A. *Pinus*, the pine genus

B. *Tsuga*, the hemlock genus

C. *Taxodium*, the bald cypress genus

D. *Juniperus*, the red cedar genus

28. A client asks how to correctly write the scientific name of sugar maple. The correct format is:

A. SUGAR MAPLE in all capital letters

B. acer saccharum in lowercase without italics

C. *Acer Saccharum* with both words capitalized

D. *Acer saccharum* with genus capitalized and italicized

29. A plant label reads *Acer rubrum* 'October Glory'. The single-quoted name identifies:

A. The botanical variety name in the wild

B. A cultivar selected and propagated clonally

C. The subspecies name recognized formally

D. The common name used at the nursery

30. An arborist is asked to identify a tree with rounded leaf lobes lacking bristles and acorns that mature in a single season. This places the tree in which group?

A. The white oak group of *Quercus*

B. The red oak group of *Quercus*

C. The hickory genus *Carya*

D. The beech genus *Fagus*

31. A client wants to plant a native tree species appropriate for eastern North America. The arborist should recommend:

A. Tree of heaven (*Ailanthus altissima*)

B. Norway maple (*Acer platanoides*)

C. Eastern redbud (*Cercis canadensis*)

D. Callery pear (*Pyrus calleryana*)

32. A trainee asks what MAD Horse stands for in leaf arrangement. The correct answer is:

A. Genera with distinctive peeling bark types

B. Conifers that shed all needles each autumn

C. Trees with palmately compound leaves only

D. Maples, ashes, dogwoods, and horse chestnut

33. An arborist examines a compound leaf with leaflets arranged along a central stalk. This leaf is:

A. Simple with a deeply lobed margin

B. Pinnately compound with leaflets on a rachis

C. Palmately compound from a single point

D. Whorled with multiple leaves per node

34. A client is deciding between a species reaching 80 feet and one reaching 15 feet for a site beneath a 30-foot distribution line. The arborist should recommend:

A. The smaller species to avoid future utility conflict

B. The larger species for greater shade value

C. Either choice because mature size is irrelevant

D. Planting both species together in the same hole

35. An arborist is asked which plant family contains *Fraxinus*. The correct answer is:

A. Pinaceae, the pine family

B. Rosaceae, the rose family

C. Sapindaceae, the soapberry family

D. Oleaceae, the olive family

36. A municipal forester evaluates a proposed planting of 40% *Acer*. This violates which provision of the 10-20-30 rule?

A. The 10 percent species limit only

B. The 30 percent family limit only

C. The 20 percent genus limit for any genus

D. No provision is violated at this level

37. An arborist finds a tree with alternate leaves, lobed leaf margins, and acorn fruits. The tree is most likely:

A. An oak in the genus *Quercus*

B. A maple in the genus *Acer*

C. An ash in the genus *Fraxinus*

D. A dogwood in the genus *Cornus*

38. A client in an urban area asks whether native or non-native trees are always better. The most accurate response is:

A. Native species are always pest-free everywhere

B. Natives are typically better adapted to local ecology but not immune to all pests

C. Non-natives are always invasive without exception

D. Native and non-native status has no practical meaning

39. A homeowner wants to know the MAD Horse mnemonic's practical use. The correct explanation is:

A. It identifies trees with distinctive peeling bark

B. It identifies species with deciduous needles

C. It identifies the main temperate genera with opposite leaf arrangement

D. It identifies trees suitable for urban planting only

40. A trainee asks which feature reliably distinguishes red oaks from white oaks. The correct answer is:

A. The color of the mature bark surface

B. The total mature height of the tree

C. Whether the tree is native or introduced

D. Bristle-tipped versus rounded leaf lobes

41. An arborist measures soil at pH 7.9 where a pin oak is showing interveinal chlorosis on new leaves. The most likely cause is:

A. Excess nitrogen from lawn fertilizer applications

B. High potassium suppressing magnesium uptake

C. Iron unavailability due to the alkaline soil pH

D. Sulfur deficiency from industrial pollution

42. A soil sample registers a bulk density of 1.8 g/cm³ in a declining landscape. The arborist should recommend:

A. Adding nitrogen fertilizer to restore vigor

B. Relieving severe compaction through air excavation

C. Applying lime to raise the soil pH

D. Reducing irrigation to dry out the root zone

43. A client asks what soil texture best supports most tree species. The correct answer is:

A. A loam with balanced sand, silt, and clay

B. A pure clay with fine particles only

C. A pure sand with coarse particles only

D. A soil composed entirely of organic matter

44. An arborist recommends a mulch installation for a newly planted tree. The correct specification is:

A. A thin dusting less than half an inch deep

B. A layer piled 8 inches high against the trunk

C. Plastic sheeting covered with decorative rocks

D. A 2- to 4-inch layer kept clear of the trunk

45. A perc test at a proposed planting site shows water taking 36 hours to drain. The arborist should recommend:

A. Planting any species without concern

B. Selecting drainage-tolerant species or modifying the site

C. Adding gravel to the bottom of each hole

D. Increasing irrigation frequency on the site

46. A client asks how to improve clay soil over time. The best long-term recommendation is:

A. Annual applications of coarse sand

B. Heavy lime applications in one treatment

C. Continuous additions of organic matter

D. Foliar sprays of liquid micronutrients

47. An arborist is asked why CEC matters in soil management. The correct answer is that CEC:

A. Indicates the soil's ability to hold and exchange cation nutrients

B. Measures the total depth of the topsoil horizon

C. Shows the number of earthworms per cubic foot

D. Reflects the annual rainfall received at the site

48. A trainee asks what percentage of an ideal mineral soil is pore space. The correct answer is:

A. About 10 percent of the total volume

B. About 25 percent of the total volume

C. About 75 percent of the total volume

D. About 50 percent of the total volume

49. An arborist is asked why composite soil sampling is preferred over a single grab sample. The correct answer is that composite samples:

A. Are much cheaper for the lab to process

B. Require no specialized sampling equipment

C. Average variation across the sampled area

D. Take less time to gather in the field

50. A client asks whether soil texture can be changed by amendments. The correct response is:

A. Yes, with enough sand additions to clay soil

B. No, texture is essentially permanent and cannot be meaningfully altered

C. Yes, but only with hydrogen peroxide treatments

D. Only during the dormant season of the year

51. An arborist finds that lawn sprinklers deliver water only to the upper inch of soil around a tree. The correct recommendation is:

A. Supplementing with slow deep watering for the tree

B. Increasing sprinkler frequency to compensate

C. Removing the lawn entirely around the tree

D. Applying foliar sprays to reach the canopy

52. A client has a soil pH of 4.5 and wants to raise it. The correct amendment is:

A. Elemental sulfur to lower the pH further

B. Hydrogen peroxide applied to the surface

C. Fresh organic mulch without any minerals

D. Agricultural lime to neutralize acidity

53. An arborist explains why continuous mulching builds soil organic matter. The correct mechanism is that mulch:

A. Contains inherent synthetic nitrogen additives

B. Decomposes gradually and incorporates into the soil

C. Prevents any microbial activity beneath it

D. Sterilizes the soil to preserve organic matter

54. A trainee asks where in the soil profile most absorbing roots of a mature tree are concentrated. The correct answer is:

A. Below 4 feet in the deeper subsoil

B. Only within a narrow central taproot

C. In the upper 12 to 18 inches of soil

D. Only within the outer drip line area

55. An arborist is setting a container-grown tree into a prepared hole. The root flare should be:

A. At or slightly above the surrounding grade

B. Six inches below the finished grade

C. Completely buried beneath mulch

D. Twelve inches below the lawn surface

56. A crew is backfilling a planting hole. The correct material is:

A. Sterilized purchased potting mix only

B. Coarse sand with added powdered lime

C. Equal parts peat and perlite mixed in

D. The unamended native soil from the hole

57. An arborist is planning establishment watering for a newly planted tree. The correct recommendation is:

A. Allowing the root ball to dry completely between waterings

B. Keeping the root ball consistently moist but not saturated

C. Flooding the hole daily for the first month

D. Watering only the south side of the trunk

58. A client asks whether to fertilize a newly planted tree in its first growing season. The arborist should recommend:

A. Skipping fertilization because it is generally unnecessary

B. Heavy nitrogen application to force new growth

C. Monthly foliar sprays of liquid fertilizer

D. A root drench with phosphoric acid solution

59. An arborist is scheduling the transplant of a mature deciduous tree. The preferred timing is:

A. Mid-summer during peak active growth

B. Early summer immediately after leaf-out

C. Dormancy in late fall or early spring

D. Any time with irrigation available

60. A crew is preparing to move a large specimen tree next spring. The arborist should recommend:

A. No special preparation beyond digging day

B. Heavy crown reduction before any digging

C. Soaking the soil for six months before the move

D. Advance root pruning to develop fibrous roots inside the future ball line

61. An arborist discovers a wire basket with burlap on a B&B tree placed in its hole. The correct action is:

A. Cutting and removing at least the upper portion

B. Leaving everything intact to support the ball

C. Removing the entire basket before lowering

D. Replacing the basket with plastic mesh

62. A crew member lifts a B&B tree by its trunk. The arborist should correct this by:

A. Endorsing the technique as acceptable

B. Training workers to pull on the burlap top

C. Suggesting lifting by the branches instead

D. Insisting that the ball be supported from underneath

63. A client asks how long staking should remain on a newly planted tree. The arborist should recommend:

A. Permanent staking for the life of the tree

B. Three to five years minimum regardless

C. Removal within one growing season in most cases

D. Staking only during the winter months

64. An arborist finds a circling root inside a container at planting. The correct action is:

A. Leaving it intact to avoid damaging the tips

B. Cutting or straightening it before placing in the hole

C. Applying rooting hormone to the root tip

D. Wrapping the root in burlap for protection

65. A newly planted tree fails to leaf out the following spring. The most likely explanation is:

A. Normal winter dormancy that has not yet ended

B. A foliar disease attacking expanding buds

C. Inadequate mulch depth at the trunk base

D. Root ball desiccation during handling or planting

66. A 3-inch caliper tree has just been planted. The arborist should tell the client to expect full establishment in approximately:

A. Three growing seasons at one per caliper inch

B. One month with proper watering

C. Ten years regardless of caliper size

D. Six months with regular fertilization

67. A planting hole for a container tree is being dug. The correct width specification is:

A. Exactly the diameter of the root ball

B. Half the diameter of the root ball

C. Two to three times the root ball diameter

D. Ten times the root ball diameter

68. A client asks how deep a planting hole should be dug. The correct answer is:

A. Twice the height of the root ball

B. Equal to the height from root flare to ball bottom

C. Three feet deep regardless of ball size

D. Including a layer of gravel at the bottom

69. An arborist is inspecting a newly delivered nursery tree. The correct focus is on:

A. The brand name printed on the container

B. Only the price tag attached to the trunk

C. The weight shown on the delivery manifest

D. Trunk, crown, root flare, and root ball condition

70. A homeowner asks why burlap and twine at the trunk base should be removed at planting. The correct answer is:

A. They can girdle the trunk if left in place

B. They prevent the root ball from settling

C. They interfere with the chemical smell of the bark

D. They must be returned to the nursery for credit

71. A client asks whether to amend backfill with peat moss. The current best practice recommendation is:

A. Amending heavily with peat and perlite mixed

B. Using the unamended native soil for backfill

C. Using sterilized purchased potting soil only

D. Mixing in at least 50 percent compost

72. An arborist is advising on a new tree to plant in a site with heavy clay soil. The best initial action is:

A. Planting at the exact same depth as the container

B. Adding sand throughout the planting area

C. Testing drainage and selecting a tolerant species

D. Applying lime to neutralize the soil

73. An arborist is pruning a hazard tree. The correct cut placement is:

A. Flush with the parent stem for smoothness

B. Six inches beyond the branch collar

C. Halfway between the trunk and branch tip

D. Just outside the branch collar and bark ridge

74. A client asks why topping should never be used on a shade tree. The arborist should explain that topping:

A. Creates large wounds, depletes reserves, and produces weak sprouts

B. Is too expensive compared to reduction cuts

C. Requires specialty equipment most crews lack

D. Is prohibited only in certain states

75. A crew is removing a large branch. The first cut of the three-cut method should be:

A. A straight cut through the top at the final location

B. An undercut on the underside beyond the final location

C. A diagonal cut parallel to the trunk

D. A scoring cut across the bark ridge

76. An arborist is performing the cleaning pruning objective. The scope includes:

A. Removing all interior live foliage from the crown

B. Cutting back every branch to a uniform length

C. Removing dead, dying, diseased, broken, and weak branches

D. Heading every lateral to force new sprouting

77. A client asks what distinguishes a reduction cut from a heading cut. The correct answer is that a reduction cut:

A. Cuts back to a lateral large enough to assume the terminal role

B. Is always made with a pole pruner only

C. Removes branches larger than six inches only

D. Leaves an arbitrary stub regardless of laterals

78. An arborist is recommending pruning for a young tree. The most beneficial objective at this life stage is:

A. Aggressive crown reduction to limit future size

B. Complete removal of the central leader

C. Heavy thinning to the outer crown only

D. Structural pruning to develop strong form early

79. A client asks the maximum percentage of live foliage to remove from a mature tree in one session. The correct answer is:

A. 25 to 30 percent in healthy conditions

B. 10 to 15 percent, less for stressed specimens

C. 50 percent during dormant season

D. There is no upper limit for healthy trees

80. An arborist observes that a branch union has a raised line of bark on the upper surface. This feature is the:

A. Internal decay barrier within heartwood

B. Dead bark separating sapwood layers

C. Branch bark ridge marking the stem-branch boundary

D. Outer corky layer of the trunk surface

81. A client has a tree that has been topped and shows clusters of weakly attached sprouts. The arborist should recommend:

A. Another round of topping to balance the tree

B. Complete removal of all sprouts at once

C. Leaving the sprouts completely alone forever

D. Restoration pruning over several visits to develop structure

82. An arborist finds a tree with stripped interior foliage and weight concentrated at branch ends. This harmful practice is:

A. Lion-tailing, which produces weaker branches

B. A proper application of the thinning objective

C. Standard cleaning under ANSI A300

D. Subordination of competing stems

83. A client wants to start pollarding a large mature tree that has never been pollarded. The arborist should explain that pollarding:

A. Can be started successfully on any mature tree

B. Requires only a single heading cut and nothing more

C. Is a long-term system that should begin on young trees at specific points

D. Eliminates all future pruning costs

84. An arborist is pruning an oak in a region affected by oak wilt. The correct timing recommendation is:

A. Warm summer months to speed wound closure

B. Dormancy to reduce beetle transmission risk

C. Wet spring days when beetles are less active

D. Any time of year with sterilized tools

85. A client has a young tree with codominant stems and included bark. The correct pruning recommendation is:

A. Subordinating one stem to favor a dominant leader

B. Removing both stems at the base entirely

C. Cabling the union permanently instead

D. Leaving the union untreated indefinitely

86. An arborist is asked whether wound dressing improves pruning cut closure. The correct answer is:

A. Wound dressings are required by ANSI A300 now

B. Dressings accelerate Wall 4 formation significantly

C. Dressings eliminate any decay organism entry

D. Research shows minimal benefit and sometimes slowed healing

87. A crew member asks why flush cuts damage trees. The correct answer is that flush cuts:

A. Leave dead wood projecting beyond the collar

B. Remove the branch collar and eliminate Wall 4 tissue

C. Use too much force from the cutting tool

D. Create cuts that heal faster than normal

88. An arborist is asked why stub cuts should be avoided. The correct answer is that stubs:

A. Always fall off cleanly within one year

B. Produce the strongest wound response

C. Leave dead wood that cannot be compartmentalized

D. Are required by ANSI A300 for dead branches

89. A client needs a tool for pruning live branches under one inch. The arborist should recommend:

A. Bypass hand pruners with sharp clean blades

B. Anvil loppers that crush the wood fibers

C. A top-handle chainsaw for efficiency

D. A pole pruner with a hook attachment

90. An arborist is asked when a pole pruner is most appropriate. The correct answer is:

A. For branches over six inches in diameter

B. For felling small trees on flat ground

C. For cutting all lower scaffold branches

D. For small branches out of reach without climbing

91. A client requests removal of 50 percent of a mature tree's live foliage. The arborist should:

A. Comply using only bypass hand pruners

B. Agree but charge double for the work

C. Explain that the request violates accepted standards

D. Remove only interior branches first

92. An arborist is evaluating when to correct codominant stems. The correct recommendation is:

A. Waiting until the tree reaches structural maturity

B. Correcting early while cuts are small and manageable

C. Applying systemic fungicide to the union instead

D. Removing the entire tree as a precaution

93. A client wants lower branches removed for vehicle clearance. This pruning objective is:

A. Cleaning to remove weak branches

B. Reducing to lower the canopy height

C. Restoring after previous storm damage

D. Raising to provide vertical clearance

94. An arborist is working on a fire-blight-infected pear. The correct practice is:

A. Disinfecting pruning tools between cuts

B. Using only anvil blades on all cuts

C. Leaving the infected branches in place

D. Applying wound dressing to every cut

95. A pruning specification is being written. It should include all of the following EXCEPT:

A. The identified pruning objective for the work

B. The percentage of live foliage to be removed

C. The climber's personal stylistic preferences

D. The diameter range of cuts to be made

96. An arborist is selecting a tool for a 1.5-inch live branch. The correct choice is:

A. Bypass hand pruners without extension

B. Bypass loppers with long handles

C. A top-handle chainsaw for speed

D. An anvil pruner for crushing cuts

97. A client asks which objective covers removing dead branches from a mature tree. The correct answer is:

A. Cleaning to remove dead and weak branches

B. Reducing to lower the crown height

C. Raising to provide pedestrian clearance

D. Restoring after previous damage

98. An arborist explains the single most important factor in wound closure. The correct answer is:

A. The brand of cutting tool used on the job

B. The weather conditions during the operation

C. The time of day when the cut is made

D. The placement of the cut relative to the branch collar

99. A client asks why the three-cut method is used for heavy branches. The correct explanation is:

A. It reduces total cutting time per branch

B. It allows use of a much smaller saw bar

C. It prevents bark tearing down the trunk

D. It eliminates the need for tool sharpening

100. An arborist is recommending a pruning schedule for a young tree. The best approach is:

A. One heavy pruning session every ten years

B. Light structural corrections every few years while young

C. No pruning until the tree reaches full maturity

D. Annual topping to control future size

101. An arborist is called to diagnose an unhealthy tree. The correct first step is:

A. Recommending immediate removal as a precaution

B. Applying broad-spectrum fungicide to the canopy

C. Identifying the species and understanding normal characteristics

D. Collecting a wood core sample for the lab

102. A client describes a fungal fruiting body on her tree's trunk. This observation is best classified as:

A. A sign — direct evidence of the causal agent

B. A symptom — the tree's general response

C. A description unique to the inspection report

D. A homeowner complaint without diagnostic value

103. An arborist observes yellowing and wilting leaves. These are best classified as:

A. Signs revealing the exact pathogen present

B. Symptoms representing the tree's response

C. Laboratory confirmations of specific agents

D. Fruiting bodies of fungal organisms

104. A primary pest is best distinguished from a secondary pest by its ability to:

A. Reproduce only in laboratory colonies

B. Feed only on dead or decaying tissue

C. Be found only in remote forested areas

D. Attack and kill healthy vigorous trees on its own

105. An arborist explains why emerald ash borer is classified as a primary pest. The correct answer is that EAB:

A. Was introduced earlier than native borers

B. Requires bark wounds to enter the tree

C. Attacks healthy ash trees of all sizes

D. Reproduces only under drought conditions

106. A client asks what Integrated Pest Management (IPM) is. The correct description is:

A. A decision framework using monitoring, thresholds, and tactics

B. A complete prohibition on all chemical control

C. A specific brand of organic pesticide product

D. A method limited only to biological control agents

107. An arborist is asked which plant family is affected by fire blight. The correct answer is:

A. Pinaceae, the pine family

B. Fagaceae, the beech family

C. Sapindaceae, the soapberry family

D. Rosaceae, the rose family

108. A client asks how oak wilt spreads from tree to tree. The correct answer is:

A. Wind dispersing spores across forests

B. Root grafts and sap-feeding beetles at wounds

C. Soil nematodes feeding on fine roots

D. Rain splash from infected foliage

109. An arborist examines a pin oak in alkaline soil showing yellow new leaves with green veins. The most likely cause is:

A. Nitrogen deficiency from lawn competition

B. Excess potassium from fertilizer buildup

C. Iron deficiency due to high soil pH

D. Calcium toxicity from previous liming

110. A client reports yellowing beginning on older inner leaves of a tree. The most likely nutrient deficiency is:

A. Nitrogen, a mobile macronutrient

B. Iron, an immobile micronutrient

C. Calcium, a structural secondary nutrient

D. Boron, a trace element

111. An arborist observes cupping and twisting on new growth of a mature tree. The most likely cause is:

A. An active spider mite outbreak in the canopy

B. Phenoxy herbicide drift exposure

C. Normal seasonal fall color changes

D. Drought stress in the root zone

112. A tree begins declining three years after nearby construction. The most likely explanation is:

A. A new invasive insect pest in the region

B. Normal aging unrelated to the construction

C. Reduced rainfall during the dormant period

D. Construction-damaged roots with exhausted reserves

113. An arborist identifies a disease producing leaf spots and blotches on a sycamore. This is most likely:

A. Anthracnose, a fungal leaf disease

B. A viral infection transmitted by aphids

C. A systemic bacterial wilt

D. A nutrient deficiency limited to foliage

114. An arborist peels back bark and finds white mycelial sheets beneath. This confirms:

A. Fire blight caused by bacteria

B. Dutch elm disease in the xylem

C. Armillaria root rot beneath the bark

D. Oak wilt from sap-feeding beetles

115. A municipal forester is managing an elm program threatened by Dutch elm disease. The correct primary spread mechanisms are:

A. Wind carrying spores across long distances

B. Soil nematodes feeding on the fine roots

C. Rain splash from infected leaves only

D. Elm bark beetles and root grafts between trees

116. A high-value mature ash is threatened by emerald ash borer. The most appropriate treatment is:

A. Weekly foliar sprays throughout summer

B. Trunk injection of systemic insecticide

C. Soil drench with herbicide product

D. No treatment because ash cannot be saved

117. An arborist is reading a pesticide label before application. The phrase "the label is the law" means labels are:

A. Legally enforceable federal documents

B. Advisory only and optional to follow

C. Expired one year after opening

D. Binding only for the first use

118. A diagnosed disease has no effective treatment. The arborist should:

A. Apply experimental treatments without consent

B. Recommend removing all nearby trees

C. Communicate honestly and recommend appropriate management

D. Refuse to discuss the findings at all

119. A contractor is planning work near a 24-inch DBH oak. The arborist should calculate the CRZ radius as approximately:

A. 12 feet from the trunk outward

B. 24 feet from the trunk outward

C. 48 feet from the trunk outward

D. 6 feet from the trunk outward

120. A contractor is placing tree protection fencing. The correct boundary is:

A. The trunk itself encircling the bark

B. Half the distance to the dripline

C. The dripline regardless of species

D. The CRZ boundary or further out

121. Concrete washout is about to occur near a mature tree. The arborist should require that washout:

A. Be conducted inside the Tree Protection Zone

B. Be excluded from the Tree Protection Zone entirely

C. Be diluted with additional water before release

D. Be applied as a beneficial root zone amendment

122. A project proposes raising the grade 12 inches over a mature tree's root zone. The arborist should predict:

A. Improved drainage across the root zone

B. Immediate tree death within days

C. Stronger anchorage during major storms

D. Gradual decline as buried roots lose oxygen

123. A utility is installing a new line across a mature tree's root zone. The least damaging installation method is:

A. Directional boring beneath the root zone

B. Open-cut trenching at full depth

C. Mechanical auger boring from above

D. Surface installation directly on the soil

124. A contractor asks whether construction materials may be stored inside a Tree Protection Zone. The correct answer is:

A. Permitted if the materials are lightweight

B. Required to free up other staging space

C. Prohibited due to compaction and root damage

D. Allowed only during dry weather conditions

125. A project team is scheduling a tree assessment. The arborist should recommend conducting it:

A. Only after foundation pouring is complete

B. Before final design so findings influence decisions

C. Only after demolition has begun

D. Only if trees later show visible symptoms

126. An arborist is supervising unavoidable root cuts during excavation. The correct field practice is:

A. Allowing the excavator to tear roots randomly

B. Applying wound sealant after all cuts

C. Waiting until excavation is complete before assessment

D. Making clean cuts with sharp tools at the damage line

127. A contractor completes construction near a mature tree. The arborist should recommend post-construction care emphasizing:

A. Deep watering, mulching, and multi-year monitoring

B. Aggressive crown reduction to balance roots

C. Heavy nitrogen fertilization to force growth

D. Immediate trunk injection with fungicide

128. A project team proposes using only the dripline as a tree protection boundary. The arborist should object because:

A. Dripline changes shape seasonally on all trees

B. Dripline cannot be enforced in any jurisdiction

C. Actual root systems extend well beyond the dripline

D. Dripline is too difficult to measure accurately

129. A homeowner reports tree decline one year after a neighbor's construction project. The correct explanation is that delayed decline typically appears:

A. Within hours of the damaging activity

B. Months to several years after the event

C. Only on the anniversary of the event

D. Only during drought conditions

130. An arborist is specifying construction tree protection fencing. The correct specification is:

A. Lightweight flagging tape that crews can move freely

B. Short stakes spaced widely for appearance

C. Painted stakes to match nearby buildings

D. Sturdy, visible, clearly marked, and maintained

131. A project manager asks what single action best protects a mature tree during construction. The correct answer is:

A. Pre-construction heavy fertilization of roots

B. Reducing the crown to balance future losses

C. Excluding all activity from the root zone

D. Wrapping the trunk in protective foam padding

132. A contractor proposes lowering the grade 6 inches around a tree. The arborist should predict:

A. Direct loss of functional roots with the removed soil

B. Improved nutrient access in exposed layers

C. Better wind anchorage from the remaining roots

D. Improved drainage benefits to deeper roots

133. A pre-construction tree report is being prepared. Its primary purpose is to:

A. Satisfy all regulatory requirements automatically

B. Document pre-existing conditions for later comparison

C. Serve only as a billing record for the client

D. Eliminate any need for later monitoring work

134. A tree shows no visible symptoms one year after construction. The arborist should recommend:

A. Assuming full recovery and ignoring further

B. Immediate fertilization to force new growth

C. Removing the tree as a precaution anyway

D. Continuing monitoring for delayed decline

135. An arborist is recommending an excavation method within a Tree Protection Zone. The best method to preserve roots is:

A. Hand or air excavation to identify and preserve roots

B. Standard trenching with a backhoe bucket

C. Rotary tilling across the entire area

D. Directional boring from outside the zone

136. A tree has contacted an energized overhead line during construction. The correct response is:

A. Approaching immediately with pole pruners

B. Spraying water to dissipate the charge

C. Treating as energized until the utility confirms otherwise

D. Removing the tree before anyone sees it

137. An arborist is performing a TRAQ Level 2 assessment. The formal definition of "risk" in this context is:

A. The presence of any visible defect on the tree

B. The combination of likelihood of failure and consequences

C. The age of the tree multiplied by its height

D. The total monetary value of the tree itself

138. A Level 1 assessment differs from a Level 2 assessment in that Level 1 is:

A. A detailed single-tree inspection with probe

B. A laboratory analysis of wood cores

C. An advanced tomographic imaging process

D. A rapid limited visual screening of many trees

139. A codominant stem with included bark is identified during inspection. The correct interpretation is:

A. The trapped bark prevents a strong structural union

B. Included bark strengthens the branch attachment

C. Included bark attracts beneficial mycorrhizal fungi

D. Included bark helps the tree compartmentalize decay

140. An arborist finds a shelf fungus growing from a mature trunk. The correct interpretation is:

A. The fungus is a beneficial mycorrhizal partner

B. The bark is undergoing normal seasonal shedding

C. Active decay is already established within the tree

D. Excess nitrogen has accumulated in the trunk

141. A target in tree risk assessment is formally defined as:

A. A specific branch identified for pruning removal

B. A zone where the tree is expected to fall

C. An area of decay visible from outside the trunk

D. Any person, property, or activity that could be affected by failure

142. A TRAQ assessor is documenting target occupancy rate. This parameter describes:

A. The number of trees per acre at the site

B. The frequency and duration of target presence in the strike zone

C. The age of structures beneath the canopy

D. The total value of nearby real estate

143. An arborist finds a tree with a new lean and fresh soil cracking on the opposite side. The correct interpretation is:

A. A cosmetic change with no structural meaning

B. Normal phototropic growth toward sunlight

C. Root plate movement and elevated uprooting risk

D. Seasonal soil movement unrelated to the tree

144. An arborist sounds a trunk and notes a dull hollow sound over part of the stem. This technique is useful for:

A. Detecting hollow areas through changes in sound

B. Measuring nitrogen content of the trunk wood

C. Identifying the species from the sound alone

D. Locating overwintering insects beneath bark

145. A TRAQ assessor combines two dimensions to produce a risk rating. These are:

A. Tree species and trunk diameter at breast height

B. Site drainage and measured soil pH

C. Property value and the tree's age in years

D. Likelihood of failure and impact with consequences

146. A probable likelihood of failure in TRAQ means failure is:

A. Already occurring or clearly imminent now

B. Likely to occur during the assessment period

C. Unlikely but theoretically still possible

D. Impossible under any foreseeable conditions

147. The severe consequence level in TRAQ applies to failures producing:

A. Catastrophic damage, serious injury, or death

B. Minor property damage easily repaired

C. Moderate damage with no significant injury

D. No measurable effect on nearby targets

148. A tree with an internal cavity may still be structurally sound if:

A. The cavity drains rainwater quickly after storms

B. The cavity is smaller than four inches wide

C. Sufficient intact wood remains around the perimeter

D. The cavity is located above six feet from grade

149. Consequences of failure depend on:

A. Only the total weight of the falling tree part

B. Only the distance between tree and nearest structure

C. Only the calendar age of the tree at failure

D. The size of the part, fall height, and target nature

150. Residual risk after mitigation is best described as:

A. The cost of insurance premiums on the property

B. Risk that remains after mitigation is implemented

C. Risk present during the mitigation work itself

D. Risk visible only after the tree is removed

151. A professional risk assessment report should include all of the following EXCEPT:

A. A removal recommendation for every tree examined

B. The scope of the assessment performed

C. Identified defects and nearby targets

D. Recommended mitigation and residual risk

152. A Level 3 assessment uses advanced instrumentation including:

A. Standard measuring tape and ground observation

B. Basic hand pruners and a small rubber mallet

C. Resistograph drilling and sonic tomography

D. Color photographs from a moving vehicle

153. A client asks whether cabling a codominant union eliminates all risk. The correct answer is:

A. Cabling eliminates all structural risk completely

B. Cabling is required by ANSI A300 on all mature trees

C. Cabling needs no inspection after installation

D. Cabling reduces but does not eliminate structural risk

154. When communicating risk findings to a property owner, the arborist should use:

A. Highly technical jargon to establish credibility

B. Plain language with respect for the owner's decisions

C. A recommendation for only the most expensive option

D. Withholding of uncertain information from the client

155. Root defects are difficult to evaluate during risk assessment because roots:

A. Always heal spontaneously without intervention

B. Are found only in young trees recently planted

C. Are below ground and not directly observable

D. Never produce any above-ground symptoms

156. Which of the following is NOT classified as a structural defect?

A. A healthy rounded callus around an old small wound

B. A codominant stem with significant included bark

C. An active vertical crack exposing internal wood

D. A large dead scaffold limb above an occupied area

157. A moderate-risk branch overhangs a driveway. The most appropriate mitigation is:

A. Removing the entire tree as a preventive measure

B. Ignoring the situation until the branch fails

C. Cabling every branch in the entire crown

D. Reduction pruning to decrease end weight

158. A risk assessor is documenting findings for a property owner. The report should communicate:

A. Only the most expensive recommended option

B. Clear findings, options, and residual risks in plain language

C. Only the highest-risk trees on the property

D. Only internal staff opinions about species

159. A crew is starting arboricultural work. The principal safety standard they must follow is:

A. ANSI Z133, the arboricultural safety standard

B. ANSI A300, the pruning practices standard

C. ANSI Z60.1, the nursery stock standard

D. OSHA 29 CFR 1926 for general construction

160. An unqualified worker approaches an energized distribution line below 50 kV. The minimum approach distance is approximately:

A. 3 feet in any direction

B. 5 feet in any direction

C. 10 feet in any direction

D. 25 feet in any direction

161. A qualified line-clearance arborist differs from an unqualified worker in having:

A. Specialized training in electrical hazards and line work

B. General landscape design experience only

C. A current bucket truck operating license

D. Personal insulated rubber gloves

162. A climbing helmet used in tree work must include which feature beyond a hard hat?

A. A wide brim for sun protection

B. Reflective tape on all exterior surfaces

C. An open face design for peripheral vision

D. A chin strap to retain the helmet during climbing

163. Chainsaw-resistant leg protection works by:

A. Activating an electromagnetic brake on the saw

B. Containing fibers that clog the chain on contact

C. Reflecting the moving chain away from skin

D. Producing an audible warning to the operator

164. OSHA requires hearing protection when noise levels exceed:

A. 30 decibels of normal conversation

B. 50 decibels of quiet outdoor activity

C. 85 decibels, the OSHA threshold

D. 120 decibels of extreme machinery

165. A pre-work briefing is being held. The correct elements are:

A. Work scope, hazards, PPE, and emergency procedures

B. Only the names of crew members present

C. Only the day's lunch break schedule

D. Only the pricing of the day's work

166. ANSI Z133 requires aerial rescue capability on a climbing crew:

A. Only when working trees over 100 feet tall

B. Only when electrical hazards are present

C. Only on weekends when EMS is delayed

D. For essentially all climbing operations with a crew

167. A climber has been motionless in a harness for over 20 minutes. The correct concern is:

A. Equipment corrosion in the harness buckles

B. Hypothermia from wind chill only

C. Suspension trauma from pooled blood in the legs

D. Climbing rope deterioration from body heat

168. A chainsaw operator must avoid the kickback zone, which is located at:

A. The rear handle near the throttle control

B. The upper portion of the bar tip

C. The bottom edge of the bar near the powerhead

D. The middle of the bar during normal cutting

169. A chainsaw's chain brake is designed to:

A. Stop the chain when activated by kickback or hand

B. Slow the chain to idle when not cutting

C. Reduce vibration transmitted to the operator

D. Prevent engine flooding during cold starts

170. A trainer demonstrates the proper left-hand chainsaw grip. The correct technique is:

A. Loose contact to absorb engine vibration

B. Only fingertip contact for quick release

C. Palm contact with thumb alongside the handle

D. Thumb wrapped fully around the front handle

171. A crew member asks whether one-handed chainsaw operation is acceptable from the ground. The correct answer is that two-handed operation is:

A. Required only for large tree felling cuts

B. Optional based on operator skill level

C. The standard practice for nearly all saw use

D. Reserved only for overhead cutting positions

172. A climbing arborist uses a compact chainsaw designed for the canopy. This top-handle saw is designed specifically for:

A. Bucking large logs on the ground

B. Climbing arborist use up in the canopy

C. Felling full-size mature forest trees

D. Cutting residential firewood at ground level

173. A chainsaw's chain catcher is designed to:

A. Catch the chain if it breaks during cutting

B. Sharpen the chain automatically during use

C. Lubricate the chain during long cuts

D. Secure the chain only during transport

174. A rigging crew is calculating working load limit. WLL is commonly approximately:

A. Half of the rated tensile strength

B. Nine-tenths of the rated tensile strength

C. Equal to the rated tensile strength itself

D. One-tenth of the rated tensile strength

175. Shock loading in rigging refers to:

A. Electrical charge building in a dry rope

B. Dynamic forces from a falling piece suddenly caught

C. The static weight of the largest piece handled

D. Initial lifting force on a cut piece

176. A rigging crew wants to reduce peak forces during catches. The best method is:

A. Tying the rigging line to a hard anchor

B. Using the smallest diameter rope that fits

C. Using a friction device for controlled slip

D. Positioning a ground worker beneath the piece

177. A rigging block redirecting a load experiences anchor force of approximately:

A. Twice the force of the load itself

B. Half the force of the load itself

C. Exactly the force of the load itself

D. No additional force when properly installed

178. A feller is making a standard notch and back cut. The hinge between cuts is essential because it:

A. Must be cut through before the tree falls

B. Is formed only by the first notch cut alone

C. Is needed only for hollow or decayed trees

D. Controls fall direction as the tree commits

179. A feller is planning an escape route before felling. The correct practice is:

A. Walking directly beneath the falling tree

B. Running exactly straight behind the feller

C. Planning and clearing before cutting begins

D. Improvising at the moment of fall

180. A feller experiences "barber chair" during a back cut. This term refers to:

A. A resting position between difficult cuts

B. Vertical splitting of the trunk during the back cut

C. A specialty chain for resinous softwoods

D. A decorative form left in the stump

181. A chipper operator is being trained on safe feeding. The correct technique is:

A. Tip first from directly behind the infeed

B. Wearing loose clothing for rapid release

C. Only during evening hours to avoid overheating

D. Butt end first while standing to the side

182. An aerial lift operator approaches an energized line. Approach distance must be maintained with:

A. Only the bucket at the outermost reach

B. Only the lift's rubber tires on the ground

C. Both the bucket and the boom of the lift

D. Only the boom cylinder hydraulic lines

183. A crew is inspecting PPE before work. The correct frequency is:

A. Before every use, with damaged items retired

B. Only during annual company safety reviews

C. Only after a known impact or failure event

D. Only by the original equipment manufacturer

184. A climbing rope is being purchased for arboricultural work. The ANSI Z133 minimum tensile strength is approximately:

A. 1,800 pounds for residential climbing

B. 5,400 pounds per the current standard

C. 3,000 pounds for routine maintenance work

D. 10,000 pounds for any climbing operation

185. A climber is tying a friction hitch for ascent. A properly tied friction hitch should:

A. Lock rigidly and never move under any load

B. Be replaced after every single climb

C. Slip continuously to allow rapid descent

D. Grip reliably while permitting controlled adjustment

186. A chipper's feed control bar is being inspected. Its function is to:

A. Stop the feed rollers in an emergency

B. Indicate the speed of the chipping drum

C. Meter lubricant to the feed roller bearings

D. Switch the chipper between forward and reverse

187. A crew member is preparing to refuel a chainsaw. The correct safety practice is:

A. Refueling quickly without removing the cap

B. Keeping the saw at low idle during refueling

C. Stopping the saw and allowing it to cool briefly

D. Refueling with cut-resistant gloves on

188. A worksite first aid kit is required. The correct standard is that the kit should be:

A. Stored in a vehicle parked off the worksite

B. Available on site and stocked appropriately

C. Carried only by the designated safety officer

D. Limited only to basic over-the-counter medications

189. A city council asks how urban trees reduce the heat island effect. The correct explanation is that trees:

A. Release methane gas into the atmosphere

B. Absorb heat directly through their root systems

C. Reflect sunlight from waxy leaf surfaces

D. Shade surfaces and provide evapotranspiration cooling

190. A municipal forester describes a complete tree inventory. The correct description is that it records:

A. Every tree within the defined inventory area

B. Only trees scheduled for immediate removal

C. Only a statistical sample of the population

D. Only trees with obvious structural defects

191. A community wants to quantify ecosystem service dollar values. The correct tool is:

A. A traditional plant taxonomy textbook

B. The i-Tree suite of analytical tools

C. A nursery stock pricing catalog

D. Real estate market valuations of parcels

192. An appraiser values a mature oak too large to replace with nursery stock. The correct method is:

A. The replacement cost method using nursery prices

B. The ecological benefit method based on i-Tree only

C. The trunk formula method adjusted by species, condition, and location

D. The historical cost method based on original purchase

193. A typical tree protection ordinance in a municipality:

A. Bans all pruning by private property owners

B. Requires mandatory removal of all mature trees

C. Applies only to city-planted trees on rights-of-way

D. Requires permits for removal of protected trees

194. A municipality sets a canopy cover goal for 20 years. Canopy cover goals are typically expressed as:

A. The percentage of land area covered by canopy

B. The number of trees per square mile

C. The total leaf biomass produced annually

D. The average height of street trees in feet

195. A community applies for Tree City USA status. The minimum community forestry budget required is approximately:

A. Ten dollars per capita annually

B. Two dollars per capita annually

C. Fifty dollars per capita annually

D. One hundred dollars per capita annually

196. An appraiser assigns a species rating in a trunk formula calculation. Species rating reflects:

A. The lumber market value of the species

B. The exact calendar age of the tree

C. The desirability and suitability in the local area

D. The current height of the tree in feet

197. When communicating with property owners about recommended tree work, the arborist should use:

A. Pressure tactics to close the sale quickly

B. Highly technical jargon to display expertise

C. A refusal to provide any pricing estimate

D. Plain language with respect for the owner's decisions

198. Multiple studies have documented which social benefit of urban tree canopy?

A. Improved mental health and reduced stress

B. Increased crime rates in wooded neighborhoods

C. Higher rates of asthma across all age groups

D. Reduced physical activity among residents

199. An urban forester presents to a budget-focused council. The most persuasive argument is:

A. The aesthetic preferences of the forestry staff

B. The documented dollar value of ecosystem services

C. The simplicity of installing artificial turf instead

D. The mayor's personal favorite tree species

200. A neighborhood plants trees following the 10-20-30 rule. The primary benefit of this diversity strategy is:

A. Reducing nursery costs for the community

B. Ensuring every tree grows at the same rate

C. Protecting against catastrophic pest loss

D. Limiting the total number of trees required

PRACTICE EXAM 16 — ANSWER KEY AND EXPLANATIONS

1. A — Rigid staking prevents the wind flexing that stimulates reaction wood production and basal thickening. Wind stress signals the cambium to develop greater trunk taper and structural strength. Trees allowed to flex naturally develop stronger trunks than rigidly staked specimens.

2. C — Root system failure prevents water absorption even when soil moisture is abundant. Wilting despite wet soil is a classic indicator of damaged or dysfunctional roots. The pattern is common after construction damage, root rot, or severe compaction.

3. B — Wall 4 is formed by the cambium at the wound margin and is the strongest of the four CODIT walls. It appears as new wood and callus tissue surrounding the original injury. Preserving the branch collar during pruning is essential because it contains this critical cambium.

4. D — A cylinder of sound wood can retain much of the original structural strength even when the center is hollow. A common guideline holds that at least one-third of the diameter should remain as sound wood around the perimeter. Hollow does not automatically mean unsafe.

5. A — Carbohydrate reserves reach their lowest point in late spring after new leaves have emerged but have not yet returned more sugar than the refoliation cost. Spring defoliation during this window is particularly devastating because reserves cannot be replenished by the missing leaves.

6. C — Transpiration generates evaporative tension that pulls a continuous water column upward through xylem under the cohesion-tension mechanism. Hydrogen bonding holds the water column together under tension. No active metabolic pumping is required for this process.

7. B — Carbohydrate reserves stored in parenchyma cells fuel refoliation because new leaves cannot photosynthesize until they are fully expanded. This is why repeated defoliation is so damaging to trees. Reserves must be rebuilt through subsequent summer photosynthesis.

8. D — Mycorrhizal fungi extend the absorbing surface of roots through hyphae that reach far into the soil for water and nutrient uptake. The tree supplies sugars; the fungus supplies access to water and nutrients from a much larger soil volume. The partnership is essential for most tree species.

9. A — Girdling roots compress vascular tissue — phloem and cambium — restricting downward sugar transport and eventually water movement. As the trunk thickens, the compression worsens over years. This explains why girdling root decline can take a decade or more to become visible.

10. B — Most absorbing roots are concentrated in the upper 12 to 18 inches of soil where oxygen, water, and nutrients are most available. They often extend two to three times the crown radius beyond the dripline. The deep taproot image is largely inaccurate for mature trees.

11. D — Closing stomata simultaneously reduces transpiration (water loss) and photosynthesis (because CO_2 can no longer enter the leaf). This trade-off between water conservation and carbon gain is the central constraint on tree function under heat or drought stress.

12. C — Topping creates large wounds that deplete reserves, and the resulting epicormic sprouts are weakly attached and structurally unstable. Even when sprouts appear vigorous, they grow from shallow attachments and often fail. The damage is both physiological and structural.

13. A — Auxin is produced at the shoot tip and moves downward, suppressing lateral bud growth and maintaining apical dominance. Removing the leader interrupts auxin flow and releases lateral buds to grow. This hormonal mechanism is the biological basis for many pruning responses.

14. B — Xylem cells are dead at functional maturity and form hollow conductive tubes that move water from roots to leaves. This design requires no metabolic energy. Phloem, in contrast, must remain living because sugar transport requires active cellular processes.

15. D — Xylem vessels in the outer sapwood carry the majority of water upward, and blockage reduces delivery to the canopy. Heartwood does not function in water transport. Drought-induced cavitation can damage these vessels and reduce hydraulic capacity.

16. C — Autumn leaf color results from chlorophyll breakdown that reveals underlying carotenoid pigments and from new anthocyanin production. The process is a normal seasonal response to shortening days and cooler temperatures. It is not caused by damage or nitrogen movement.

17. A — Sunscald on the south or southwest side of a trunk results from rapid temperature changes on sunny winter days, when bark warms and then suddenly cools. Tissues under the warm bark become active and are damaged when temperatures drop. Young or thin-barked trees are most susceptible.

18. D — Heartwood is composed of dead wood with extractives (tannins, resins) deposited in the cell walls, providing decay resistance and structural support. It does not conduct water. Sapwood, by contrast, is the outer functional xylem with living parenchyma.

19. B — The branch protection zone is a chemically altered zone at the base of branches that resists decay spread from the branch into the trunk. It is part of the tree's natural defense system. Flush cuts destroy this zone along with the branch collar.

20. C — Photosynthesis rate depends on light, CO_2, water availability, and temperature together — not any single factor alone. Each of these is a potential limiting factor. Understanding all four helps diagnose why a tree may be underperforming.

21. B — Burying the root flare causes the bark tissue to decay because it is not adapted to underground conditions, and it also encourages girdling root formation. Both outcomes gradually reduce vascular function and can take years to appear. This is the most common serious planting error.

22. A — Starch is the primary long-term carbohydrate storage form held in living parenchyma cells throughout the sapwood, inner bark, and roots. Simple sugars are the short-term usable form. Starch reserves fluctuate seasonally and fuel recovery from stress.

23. D — Horse chestnut (*Aesculus hippocastanum*) has palmately compound leaves with five leaflets, opposite arrangement, and showy white or pink upright flower spikes in spring. It belongs to the soapberry family along with maples. It is the "Horse" in the MAD Horse mnemonic.

24. C — American sycamore (*Platanus occidentalis*) is distinguished by mottled tan and white peeling bark and broad palmate leaves. The bark alone often allows identification from a distance. Maples and ashes have very different bark patterns.

25. B — A crabapple cultivar reaching 15 to 20 feet is appropriate beneath a 25-foot distribution line, leaving safe clearance. This is a direct application of Right Tree, Right Place. The larger species would inevitably conflict with the conductors as they grow.

26. A — The 10-20-30 rule limits urban forests to no more than 10% of any single species, 20% of any single genus, and 30% of any single family. The hierarchy protects against threats at each taxonomic level. Dutch elm disease and emerald ash borer illustrate why diversity matters.

27. C — *Taxodium* (bald cypress) is a deciduous conifer that sheds its needles each autumn. It is one of a small group of deciduous conifers including larch and dawn redwood. Pine, hemlock, and red cedar are all evergreen.

28. D — Binomial nomenclature requires the genus capitalized and italicized in print, with the specific epithet lowercase and also italicized. *Acer saccharum* follows the convention correctly. All-caps and all-lowercase forms violate the rules.

29. B — A name in single quotation marks following a species name indicates a cultivar — a cultivated variety selected for specific characteristics and propagated clonally. Cultivar names are not italicized. They differ from botanical varieties found in wild populations.

30. A — White oaks have rounded leaf lobes without bristles and acorns that mature in a single growing season. Red oaks have pointed bristle-tipped lobes and acorns maturing over two seasons. These differences are the primary field distinction between the two groups.

31. C — Eastern redbud (*Cercis canadensis*) is native to many eastern states and is an excellent choice for native plantings. The other three options are all non-native species, some of which have become invasive in eastern North America.

32. D — MAD Horse stands for Maples, Ashes, Dogwoods, and Horse chestnut — the common temperate genera with opposite leaf arrangement. Most other broadleaf trees are alternate. This mnemonic eliminates most identification possibilities at a glance.

33. B — A pinnately compound leaf has leaflets arranged along two sides of a central rachis, like the feathers of a bird. Palmately compound leaves have leaflets clustered at a single point. Ash, hickory, and walnut are pinnate.

34. A — The smaller species at 15 feet stays safely below the 30-foot distribution line, while the 80-foot species will inevitably conflict with the conductors. Right Tree, Right Place governs this selection. Mature size is the most important species selection factor.

35. D — *Fraxinus* (the ash genus) belongs to the olive family Oleaceae, which also includes lilacs and forsythias. Family-level recognition matters for understanding pest susceptibilities. It is not in the pine, rose, or soapberry families.

36. C — Planting 40% of any single genus violates the 20% genus limit under the 10-20-30 rule. The limit protects against pests that can attack multiple species within a genus. Emerald ash borer devastating all *Fraxinus* species illustrates why this matters.

37. A — Alternate leaves, lobed margins, and acorn fruits are diagnostic features of oaks (*Quercus*). Maples have opposite leaves, ash is compound, and dogwood has smooth margins. Acorns alone are the defining fruit of the oak genus.

38. B — Natives are typically better adapted to local climate, soils, and ecology — but they are not automatically immune to all pests. The claim of pest immunity is an overstatement. Natives do, however, support local wildlife and co-evolved relationships.

39. C — The MAD Horse mnemonic identifies the main temperate genera with opposite leaf arrangement — Maples, Ashes, Dogwoods, and Horse chestnut. Most other broadleaf trees are alternate. Applying the mnemonic is usually the first narrowing step in identification.

40. D — Bristle-tipped leaf lobes characterize red oaks, while rounded lobes without bristles characterize white oaks. White oak acorns mature in one season; red oak acorns take two. These differences are the primary field distinction.

41. C — Iron chlorosis in pin oak growing in alkaline soil is almost always caused by high pH rendering iron chemically unavailable. The iron is present but not in forms roots can absorb. Treatment must address pH or use chelated iron forms.

42. B — A bulk density of 1.8 g/cm³ indicates severe compaction that halts most root growth. Air excavation or similar techniques restore pore space without damaging existing roots. Fertilization, lime, and reduced irrigation do not address the underlying loss of pore space.

43. A — Loam is a soil texture with roughly balanced proportions of sand, silt, and clay. It drains adequately, holds enough water, and supports good structure when organic matter is present. Loam is the ideal texture for most tree species.

44. D — A proper mulch ring is 2 to 4 inches deep with the trunk base kept clear of mulch. Deeper layers can suffocate roots, and piling mulch against the trunk causes bark decay. The correct shape is a flat ring, not a volcano.

45. B — A 36-hour drain time indicates inadequate drainage for most tree species. Drainage-tolerant species selection or site modification is required before planting. Adding gravel to the hole bottom does not solve drainage problems and can create a perched water table.

46. C — Continuous addition of organic matter is the most effective way to improve clay soil structure over time. Lime addresses pH but not structure; sand often makes clay soils worse. Organic matter improves aggregation and creates stable pore space.

47. A — Cation exchange capacity indicates a soil's ability to hold and exchange cation nutrients such as calcium, magnesium, and potassium. Higher CEC means better nutrient retention and reduced leaching. CEC is primarily determined by clay content and organic matter.

48. D — An ideal soil contains approximately 50% pore space by volume, split roughly between water and air, with the remaining 50% as mineral solids and small organic fraction. Pore space is where roots, water, and air reside.

49. C — A composite sample averages variation across the area being tested, producing a representative result. A single grab sample may not reflect overall conditions. Proper sampling is the most important step in soil testing — more important than the analysis itself.

50. B — Soil texture is essentially permanent because the proportions of sand, silt, and clay cannot be meaningfully altered by any realistic amount of amendment. These proportions are determined by parent material and weathering. Working with existing texture is the only realistic strategy.

51. A — Slow deep watering reaches the main tree root zone, while lawn sprinklers typically wet only the upper inch or two of soil. Trees benefit from infrequent, deep watering that encourages deeper root development. Shallow frequent watering trains roots to stay at the surface.

52. D — Agricultural lime raises soil pH by neutralizing acidity through the addition of calcium carbonate. Sulfur lowers pH further; organic mulch and hydrogen peroxide do not address the underlying pH imbalance directly. Lime is the standard amendment for raising pH.

53. B — Organic mulch decomposes gradually and incorporates into the soil, contributing organic matter that improves structure, CEC, and microbial activity. The process is slow but continuous. This is why continuous mulching is the most effective long-term soil-building strategy.

54. C — Most absorbing roots are concentrated in the upper 12 to 18 inches of soil where oxygen, water, and nutrients are most available. They often extend far beyond the dripline. The deep taproot image is largely inaccurate for mature trees.

55. A — The root flare should sit at or slightly above the surrounding grade at planting. Burying the flare is one of the most common serious planting errors. The correct depth preserves the flare and allows for some settling without burial.

56. D — Current best practice is to backfill with the unamended native soil excavated from the planting hole. Research has shown that heavily amended backfill can produce pot-bound conditions in the ground. Soil improvement is better delivered through surface mulching.

57. B — Establishment watering should keep the root ball and surrounding backfill consistently moist but not saturated. Both extremes are damaging — dry kills through desiccation and saturation kills through suffocation. Checking soil moisture directly is more reliable than fixed schedules.

58. A — Fertilization of a newly planted tree during its first growing season is generally unnecessary and can be counterproductive. A reduced root system cannot effectively use additional nitrogen, and forced top growth exceeds what the roots can support.

59. C — Dormancy — late fall after leaf drop or early spring before bud break — is the preferred transplanting window for most deciduous trees. The tree is not actively transpiring and the stress of root loss is minimized. Summer transplanting carries much higher risk.

60. D — Advance root pruning severs roots at the future root ball line one or more growing seasons before the move. The tree responds by producing new fibrous roots inside the line, which are harvested with the ball and dramatically improve transplant survival.

61. A — Current best practice is to cut and remove at least the upper portion of the wire basket after the tree is set in the hole, along with burlap and twine contacting the trunk. Full removal risks damaging the ball; the lower portion can be left in place.

62. D — A balled-and-burlapped tree must be lifted by supporting the root ball from underneath, never by the trunk or branches. Lifting by the trunk can separate the trunk from the ball and destroy the root connection. This is one of the most basic handling rules.

63. C — Staking should be used only when necessary and removed within one growing season in most cases. Unnecessary or prolonged staking produces weaker trunks. The natural flex of the trunk builds strength and taper.

64. B — Circling roots found at planting should be cut or straightened before the tree is placed in the hole. Leaving them in place guarantees they will remain as permanent defects that eventually girdle the trunk. Correction becomes impossible once the tree is backfilled.

65. D — A tree that fails to leaf out the spring after planting most likely suffered root ball desiccation during handling. Damaged or dried-out roots cannot support bud break. Inspection at delivery and proper handling prevent most of these failures.

66. A — A widely used rule of thumb is one year of establishment per inch of trunk caliper at planting. A 3-inch caliper tree needs about three growing seasons. During this period the tree is rebuilding its root system.

67. C — Planting holes should be at least two to three times the diameter of the root ball to provide a zone of loosened soil for new roots to expand into. Width matters more than depth. A hole dug just to ball width offers no expansion zone.

68. B — Planting hole depth should equal the distance from the root flare to the bottom of the root ball — no deeper. A deeper hole allows the tree to settle and bury the root flare, producing long-term decline. Width can be generous, but depth must be exact.

69. D — Nursery stock should be inspected at delivery for trunk condition, crown structure, visible root flare, and root ball condition. Defects identified at delivery can be avoided by rejecting the tree. Inspection is more than checking the manifest.

70. A — Burlap and twine at the trunk base can girdle the trunk if left in place because they do not reliably decompose, especially synthetic versions. A single cut at planting prevents years of later damage. This is a basic best practice at every B&B planting.

71. B — Current best practice is to backfill with the unamended native soil excavated from the planting hole. Research has shown that heavily amended backfill can produce pot-bound conditions in the ground. Soil improvement is better delivered through surface mulching.

72. C — Testing drainage and selecting a tolerant species is the correct initial approach for heavy clay soil. Drainage-sensitive species will fail regardless of planting technique. Site assessment must inform species selection, not the other way around.

73. D — A proper pruning cut is placed just outside the branch collar and bark ridge so the cambium at the wound edge can form Wall 4. Flush cuts and stubs both damage this mechanism. Correct placement is the biological foundation of good pruning.

74. A — Topping creates large wounds that cannot close, removes excessive foliage, depletes carbohydrate reserves, and produces weakly attached epicormic sprouts. It violates every principle of proper pruning simultaneously. ANSI A300 explicitly prohibits it.

75. B — The first cut is made on the underside of the branch (an undercut), partway through, several inches beyond the final cut location. This prevents bark tearing when the second cut releases the branch. The sequence is non-negotiable for heavy branches.

76. C — Cleaning is the selective removal of dead, dying, diseased, broken, and weakly attached branches from the crown. It is one of the five primary pruning objectives recognized by ANSI A300 and the most common routine objective.

77. A — A reduction cut removes a branch back to a lateral large enough (typically at least one-third the diameter of the removed portion) to assume the terminal role. Heading cuts, by contrast, leave arbitrary stubs without regard to laterals.

78. D — Structural pruning during the juvenile phase produces the greatest benefit because small cuts now correct defects that would otherwise require much larger, more damaging cuts decades later. The architectural framework is still being established. Waiting until maturity is far less effective.

79. B — Removing no more than 10 to 15% of live foliage in a single session is the general limit for mature trees, with even less for older or stressed specimens. Heavy pruning depletes reserves and produces weakly attached epicormic sprouts.

80. C — The branch bark ridge is a raised line of bark on the upper surface of a branch union, running outward along the stem from the crotch. It marks the dividing line between stem and branch tissue and is the reference for correct cut placement.

81. D — Restoration pruning develops an acceptable crown structure from sprouts that have emerged after topping, vandalism, or severe storm damage. It is a long-term process requiring multiple visits over years. It cannot undo the original damage but gradually improves the tree.

82. A — Lion-tailing strips interior foliage and concentrates weight at the branch ends, creating weaker branches than properly distributed thinning. The pattern removes interior foliage that cushions wind loads. It is explicitly discouraged under current standards.

83. C — Pollarding is a long-term system that should begin on young trees at specific framework points and be maintained with repeated cuts on a schedule. It cannot be started on a mature tree that has never been pollarded without creating large wounds and weak sprouts.

84. B — In oak wilt regions, pruning of oaks should be postponed until dormancy to reduce the risk of attracting sap-feeding beetle vectors to fresh wounds. Timing is the primary defense. Dormant-season pruning minimizes transmission risk.

85. A — Subordination reduces the growth of a competing stem in favor of a dominant leader, gradually shifting dominance without the wound of outright removal. It is the standard technique for correcting codominant stems in young trees.

86. D — Research has shown that wound dressings provide minimal benefit and in some cases actually slow compartmentalization by trapping moisture and creating favorable conditions for decay organisms. Current best practice is to leave pruning cuts unsealed.

87. B — A flush cut removes the branch collar along with the branch, eliminating the cambium that would have formed Wall 4. The result is a wound that cannot be effectively compartmentalized and provides a direct pathway for decay.

88. C — A stub cut leaves dead wood projecting beyond the branch collar that the tree cannot compartmentalize. The dead stub becomes an entry point for fungal colonization that eventually reaches the collar and then the trunk.

89. A — Bypass hand pruners cut cleanly without crushing living wood and are the correct choice for branches up to about one inch in diameter. Anvil blades tend to crush living tissue. Matching tool to branch size is basic professional practice.

90. D — A pole pruner is most appropriate for small-diameter branches out of reach from the ground that do not warrant climbing. Larger branches require more controlled methods. Whole-tree felling and full-canopy work require different tools.

91. C — Removing 50% of live foliage from a mature tree far exceeds the 10 to 15% guideline and would initiate decline. The professional response is to explain that thinning of that magnitude violates accepted standards and propose an appropriate alternative.

92. B — Codominant stems with included bark should be corrected early, while the tree is young and the cuts are small. Subordination or removal shifts dominance to a single leader. Waiting until maturity requires much larger and more damaging cuts.

93. D — The raise objective refers to selective removal of lower branches to provide vertical clearance beneath the crown for pedestrians, vehicles, or sight lines. Raising should be done gradually on young trees to avoid producing a disproportionate crown.

94. A — Tool disinfection is most important when pruning trees with known contagious diseases such as fire blight. Disease organisms can be transferred between cuts on contaminated blades. For routine work on healthy trees, disinfection is not generally required.

95. C — A professional pruning specification should include the identified objective, the percentage of foliage to be removed, and the diameter range of cuts. The climber's personal preferences are not part of a professional specification — clear specifications protect tree, client, and arborist.

96. B — Bypass loppers extend the principle of hand pruners to branches up to approximately one and a half to two inches in diameter, using long handles for mechanical advantage. Smaller branches are better handled by hand pruners.

97. A — Removing a dead branch is part of the cleaning pruning objective, which is defined as selective removal of dead, dying, diseased, broken, and weakly attached branches. Cleaning is the most common routine pruning objective.

98. D — The placement of the cut relative to the branch collar is the single most important factor in whether a pruning wound closes successfully. Correct placement preserves the cambium that forms Wall 4; incorrect placement eliminates it.

99. C — The three-cut method prevents bark from tearing down the trunk below the cut when a heavy branch falls. A single cut from above causes the falling weight to rip bark downward. The undercut severs this bark pathway in advance.

100. B — Light structural corrections every few years while a tree is young produce the best long-term form with minimal wounding. Small cuts now prevent the need for much larger, more damaging cuts decades later. Waiting until maturity is far less effective.

101. C — Diagnosis begins with identifying the species and understanding its normal characteristics, because a symptom cannot be evaluated without knowing what a healthy specimen looks like. Jumping to treatment leads to routine misdiagnosis.

102. A — A sign is direct evidence of the causal agent itself — fungal fruiting bodies, visible insects, or confirmed pathogens. Signs are more reliable than symptoms because they point directly to a cause rather than to the tree's response.

103. B — Symptoms are the tree's response to a problem — wilting, yellowing, dieback, thinning. Symptoms indicate that something is wrong but usually do not identify the specific cause. Multiple problems can produce overlapping symptoms.

104. D — A primary pest can attack and kill healthy, vigorous trees on its own without requiring the host to be stressed first. Secondary pests, by contrast, attack only weakened trees. The distinction is critical for management decisions.

105. C — Emerald ash borer is classified as a primary pest because it can successfully attack and kill healthy ash trees of all sizes. This distinguishes it from most native wood borers and is why it has devastated ash populations across North America.

106. A — IPM is a decision-making framework that integrates monitoring, action thresholds, multiple control tactics, and outcome evaluation. It is not a specific product or a prohibition on pesticides. The least toxic effective option is preferred when chemical control is warranted.

107. D — Fire blight is caused by the bacterium *Erwinia amylovora* and affects members of the rose family (Rosaceae), including apple, pear, hawthorn, and serviceberry. Family-level recognition matters because susceptibility extends across the family.

108. B — Oak wilt spreads through root grafts between adjacent oaks and through sap-feeding beetles attracted to fresh wounds. The beetle-vector pathway makes warm-season pruning of oaks particularly risky in affected regions.

109. C — Iron chlorosis in a pin oak growing in alkaline soil is almost always caused by high pH rendering iron chemically unavailable. The iron is present but not in forms roots can absorb. Treatment must address pH or use chelated iron.

110. A — Nitrogen is a mobile macronutrient that the tree translocates from older leaves to support new growth when supply is inadequate. Deficiencies therefore appear first on older inner leaves as uniform yellowing. All mobile-nutrient deficiencies follow this pattern.

111. B — Cupping and twisting of new growth on a mature tree most likely indicates phenoxy herbicide exposure such as 2,4-D, which mimics plant growth hormones. The pattern is often most severe on the side nearest the application source.

112. D — Delayed decline several years after construction almost always reflects root damage that occurred during the work. Trees mobilize reserves to mask initial injury, and visible symptoms typically appear one to three years later when reserves are exhausted.

113. A — Anthracnose is a general term for several fungal leaf diseases that produce spots, blotches, and leaf distortion, often followed by premature leaf drop. Most anthracnose infections are cosmetic rather than life-threatening. Sycamore anthracnose is a particularly visible example.

114. C — Armillaria root rot produces characteristic white mycelial sheets (fungal tissue) beneath the bark of infected roots, visible when the bark is peeled back. Honey-colored mushrooms may also appear at the base in fall.

115. D — Dutch elm disease is a vascular wilt spread primarily by elm bark beetles carrying fungal spores and by root grafts between adjacent elms. This dual pathway is why the disease caused the near-total loss of American elm as a street tree.

116. B — Trunk injection of systemic insecticides is most appropriate for high-value trees threatened by borers, where foliar sprays would be impractical or ineffective for reaching internal tissues. Injection provides rapid systemic translocation with low environmental exposure.

117. A — "The label is the law" means pesticide product labels are legally enforceable federal documents. Applications must match the uses, rates, sites, and methods authorized on the label, and deviations carry legal and liability consequences.

118. C — When no effective treatment exists, the professional response is to communicate the diagnosis honestly and recommend appropriate management, which may include monitoring, removal, or supportive care. Honesty is part of professional standing.

119. B — The CRZ is commonly calculated as a radius of one foot per inch of trunk diameter at breast height. A 24-inch DBH tree has a 24-foot radius CRZ. This formula is the standard reference in ISA Best Management Practices.

120. D — Tree protection fencing should be placed at the calculated CRZ boundary or further from the trunk. Placing fencing at the dripline or closer leaves significant root area exposed. The CRZ formula produces a more defensible boundary.

121. B — Concrete washout must be excluded from the Tree Protection Zone because the high pH of the washwater can sterilize soil and kill roots in the affected area. This is among the most damaging activities on construction sites and must be explicitly prohibited.

122. D — Raising the grade buries existing roots and root flares under added soil, producing gradual decline as buried tissues lose access to oxygen and gradually fail. Symptoms develop over months or years as reserves are exhausted.

123. A — Directional boring passes a utility beneath the root zone without disturbing the soil at root depth. Conventional open-cut trenching through the CRZ is the most damaging option. Higher equipment cost typically favors boring when tree value is significant.

124. C — Storage of construction materials within a TPZ is prohibited because stockpiles compact the underlying soil under their weight and smother roots. This is one of the standard prohibitions enforced by TPZ fencing.

125. B — Pre-construction tree assessment should occur before final design so findings can influence project decisions. Assessment after drawings are complete is reduced to documentation of what has already been decided.

126. D — An arborist supervising unavoidable root impacts should make clean cuts with sharp tools at the damage line before excavation begins. Clean cuts produce better wound responses than the tearing and crushing from unprepared excavation.

127. A — Post-construction care includes deep periodic watering, generous mulching, conservative pruning focused on deadwood and safety, and annual monitoring for at least three to five growing seasons. Patience drives recovery.

128. C — The actual root system of a mature tree typically extends two to three times the crown radius, well beyond the dripline. Using the dripline as the protection boundary leaves most absorbing roots exposed to damage.

129. B — Delayed decline following construction damage typically becomes visible months to several years after the triggering event. Trees mobilize reserves to mask initial injury, and when reserves are exhausted, decline begins. Monitoring should continue for at least three to five growing seasons.

130. D — Tree protection fencing should be sturdy, visible (brightly colored, at least four feet tall), clearly marked with signage, and maintained throughout construction. Flimsy flagging is routinely moved or ignored.

131. C — Excluding all activity — traffic, equipment, and materials — from the root zone is the single most effective action during construction. Compaction and root damage are prevented most reliably by keeping activity out entirely.

132. A — Lowering the grade removes soil along with any roots growing in it, producing immediate direct loss of functional root tissue. Even a few inches of grade cut can remove a large share of absorbing roots concentrated near the surface.

133. B — A baseline condition report documents pre-existing tree conditions for later comparison. It protects all parties when damage is alleged after construction, allowing actual damage to be distinguished from pre-existing conditions.

134. D — A tree showing no visible symptoms one year after construction is not yet out of danger, because delayed decline can appear one to three years later as reserves are exhausted. Monitoring should continue for at least three to five growing seasons.

135. A — Hand or air excavation allows workers to identify and preserve roots individually rather than severing them blindly. These techniques trade labor cost for root preservation and are appropriate when roots must be crossed.

136. C — A tree that has contacted an energized line should be treated as potentially energized until the utility confirms de-energization. A branch in contact with a line can energize the entire tree, including trunk and lower branches.

137. B — Risk is formally defined as the combination of likelihood of failure and severity of consequences. Neither tree condition nor target presence alone constitutes risk. Both factors must be considered together.

138. D — Level 1 assessment is a rapid limited visual screening used for large tree populations along streets, through parks, or across properties. Its purpose is to identify obvious hazards requiring further evaluation among many trees.

139. A — Included bark between codominant stems prevents the formation of a strong structural union. The attachment becomes progressively weaker as the stems grow, and catastrophic splitting can occur without warning.

140. C — The presence of a fungal fruiting body on a trunk indicates that active decay is already established within the tree's tissues. Fruiting bodies are the reproductive stage of fungi whose vegetative bodies extend into the tree.

141. D — A target is any person, property, or activity that could be affected by a failing tree or tree part. Targets include pedestrians, vehicles, buildings, utility lines, and outdoor activities. Without targets, even high failure likelihood does not produce high risk.

142. B — Target occupancy rate formalizes the frequency and duration of target presence within the potential strike zone. Higher occupancy contributes to higher overall risk because failures are more likely to coincide with target presence.

143. C — A new lean combined with fresh soil cracking on the opposite side indicates root plate movement and elevated risk of uprooting failure. Trees showing these signs should be considered at imminent risk. Immediate action may be warranted.

144. A — Sounding the trunk with a mallet produces a solid ringing sound over intact wood and a dull hollow sound over decayed or hollow areas. It is a simple but useful technique for detecting large decay columns that might otherwise be missed visually.

145. D — The TRAQ risk matrix combines likelihood of failure and impact (probability that failure will occur and strike a target) with consequences of failure (severity if impact occurs). The combination produces the overall risk rating.

146. B — A probable likelihood of failure in TRAQ means failure is likely to occur during the assessment time frame under normal conditions. The four levels are improbable, possible, probable, and imminent.

147. A — The severe consequence level in TRAQ applies to catastrophic property damage, serious injury, or death. Minor consequences involve minor damage or injury; significant consequences fall between.

148. C — A tree with an internal cavity may still be structurally sound if sufficient intact wood remains around the cavity perimeter to resist bending forces. A common guideline holds that at least one-third of the diameter should remain as sound wood.

149. D — Consequences of failure depend on the size of the falling part, the height from which it would fall, and the nature of the target it would strike — all three factors together. A single factor in isolation cannot predict severity.

150. B — Residual risk is the risk that remains after mitigation measures have been implemented. No mitigation eliminates risk entirely — pruned trees can still fail, cabled unions can still split. Clients must understand they are choosing acceptable risk levels.

151. A — A professional report should document scope, defects, targets, mitigation, and residual risk — but not a removal recommendation for every tree. Recommendations must be proportional to actual risk. Blanket removal recommendations damage professional credibility.

152. C — Level 3 assessment techniques include resistograph drilling, sonic tomography, static load testing, and other advanced instrumentation. These tools are reserved for high-value trees or situations where Level 2 has left significant uncertainty.

153. D — Cabling and bracing provide supplemental support that reduces but does not eliminate structural risk. The installations require ongoing inspection and maintenance. They are appropriate when defects cannot be addressed by pruning alone.

154. B — Effective client communication uses plain language, presents options rather than ultimatums, and respects the owner's decision-making authority. Technical jargon, pressure tactics, and withholding information all damage credibility.

155. C — Root defects are difficult to evaluate because roots are below ground and cannot be directly observed. Arborists rely on indirect indicators such as root plate movement, fungal fruiting bodies at the flare, and construction history.

156. A — Healthy rounded callus tissue around a small old wound indicates successful compartmentalization and closure. This is evidence of normal healing, not a structural defect. The other options are all genuine defects.

157. D — Reduction pruning to decrease end weight on an overextended branch is a standard mitigation for moderate risk from specific branch defects over targets. It addresses the identified defect without removing the entire tree.

158. B — An effective risk report communicates clear findings, options, and residual risks in plain language the owner can understand. This supports informed decision-making. Overly technical or narrow reports fail to serve the client's needs.

159. A — ANSI Z133 is the American National Standard for Arboricultural Operations — Safety Requirements and is the principal safety standard for tree care work in the United States. ANSI A300 addresses pruning; Z133 addresses safety.

160. C — The minimum approach distance for unqualified workers to energized distribution lines below 50 kV is 10 feet under ANSI Z133. This is the most commonly cited MAD figure and applies to most lines in residential and commercial tree work.

161. A — A qualified line-clearance arborist has completed specialized training in electrical hazards, safe work procedures near energized lines, use of insulated tools, and emergency response to electrical contact. This training cannot be acquired informally.

162. D — A climbing helmet must have a chin strap to retain the helmet during active climbing, rigging, and inverted positions. Traditional construction hard hats without chin straps can fall off during dynamic movement.

163. B — Chainsaw-resistant leg protection contains cut-resistant fibers (ballistic nylon or aramid) that clog the chain of a running saw on contact, stopping the chain before it reaches the leg. The protection dramatically reduces injury severity.

164. C — OSHA requires hearing protection when noise levels exceed 85 decibels, and chainsaw operation routinely produces noise well above this threshold. Repeated exposure without protection causes progressive and irreversible hearing loss.

165. A — A proper job briefing covers work scope, hazards, procedures and precautions, required PPE, and emergency response procedures. It is required under ANSI Z133 and is not optional. Briefings prevent predictable mistakes.

166. D — ANSI Z133 requires aerial rescue capability on essentially every climbing operation with a crew — at least one worker other than the climber must be trained and equipped to perform a rescue. Outside emergency services alone are inadequate.

167. C — Suspension trauma develops when a climber remains motionless in a harness for an extended period, as reduced venous return causes blood to pool in the legs. It can become life-threatening within 30 minutes.

168. B — The kickback zone is the upper portion of the bar tip. Contact between this area and any object can trigger a violent upward and backward reaction. Awareness of tip position throughout every cut is a foundational safety skill.

169. A — The chain brake is designed to stop the chain when activated manually by the front handguard or automatically by kickback motion. It is an essential safety feature that must be functional on every saw in service.

170. D — The left hand should grip the front handle with the thumb wrapped fully around the handle. This grip is stronger and provides better control if the saw moves unexpectedly. It is the standard grip for all chainsaw operation.

171. C — Two-handed operation is the standard practice for nearly all chainsaw use and is required except in specific climbing situations using top-handle saws. The standard grip provides maximum control and reduces injury risk.

172. B — Top-handle chainsaws are designed specifically for climbing arborist use up in the canopy, where compact size and potential one-handed operation are required. They should not be used by untrained workers or for ground-based work.

173. A — The chain catcher is a projection beneath the bar designed to catch the chain if it breaks or derails during operation, preventing it from whipping toward the operator. It is one of several safety features on modern chainsaws.

174. D — Working load limit is commonly calculated as approximately one-tenth of the tensile strength of rigging equipment. A rope with 14,000 pounds tensile strength has a WLL of about 1,400 pounds. This margin protects against shock loading and wear.

175. B — Shock loading is the dynamic force generated when a falling piece is suddenly caught by the rigging rope. Peak forces can be many times the static weight of the piece depending on fall distance and system elasticity.

176. C — Allowing controlled slip through a friction device such as a Port-a-Wrap distributes the energy of the catch over time rather than stopping the load instantly. The result is a dramatically lower peak force compared to a hard tie-off.

177. A — A block redirecting a rigging load over an anchor experiences approximately twice the force of the load itself, because the block holds both the lifting side and holding side of the rope simultaneously. This doubling is a routine source of anchor failure.

178. D — The hinge is the strip of wood between the notch and the back cut that controls fall direction as the tree begins to fall. It must remain intact to guide the tree along the intended fall line. Hinge width should be approximately 10% of trunk diameter.

179. C — An escape route must be planned and cleared before cutting begins and followed immediately as the tree starts to fall. The route should lead away from the tree at about 45 degrees from the fall line on the opposite side.

180. B — Barber chair is a vertical splitting of the trunk upward along the grain during the back cut, caused by cutting the hinge too thin or making the back cut too slowly. It can propel trunk sections backward at high speed.

181. D — Chipper operators should feed branches butt end first while standing to the side of the infeed. Standing to the side avoids struck-by hazards from branches that flex or kick back. Standing directly behind is a recurring cause of serious injury.

182. C — Aerial lift operators must maintain the minimum approach distance with both the bucket and the boom, because the metal boom is an excellent conductor and can carry electricity from a contacted line throughout the machine.

183. A — PPE must be inspected before every use, and items showing damage, wear, or contamination must be retired immediately and replaced. Continuing to use compromised PPE provides reduced or no protection. Annual inspection alone is inadequate.

184. B — ANSI Z133 requires climbing ropes to have a tensile strength of at least 5,400 pounds for arboricultural climbing applications. This value provides the margin needed for the dynamic loads generated during climbing and rigging.

185. D — A properly tied friction hitch must grip the rope reliably under load while permitting controlled adjustment when the climber changes position. A hitch that slips under load is unsafe; one that locks rigidly prevents smooth climbing.

186. A — The feed control bar on a wood chipper is a safety device that stops the feed rollers when pressed, allowing the operator to halt material feed in an emergency. It must be functional and within reach.

187. C — Chainsaws should be stopped and allowed to cool briefly before refueling. Refueling a running or hot saw risks fire from spilled fuel contacting hot components. This is one of the basic safety rules of power equipment handling.

188. B — A first aid kit should be available on every tree care worksite and stocked appropriately for the hazards of the work. This includes supplies for treating chainsaw lacerations, bleeding, and minor injuries that occur routinely.

189. D — Urban trees reduce the urban heat island effect through shading of surfaces and evapotranspiration cooling. Paved cities can be 5 to 10 degrees warmer than surrounding areas, and tree canopy substantially reduces this difference.

190. A — A complete tree inventory records every tree within the defined inventory area, with information on species, size, condition, location, and management needs. Sample inventories cover a statistically representative subset.

191. B — The i-Tree suite developed by the USDA Forest Service allows communities to estimate the dollar value of ecosystem services — stormwater interception, air quality improvement, carbon sequestration, and energy savings — provided by their tree populations.

192. C — The trunk formula method is used when a tree is too large to be practically replaced by nursery stock. It calculates value from trunk cross-sectional area adjusted by species, condition, and location ratings.

193. D — Tree protection ordinances typically require permits for removal of protected trees above a specified size threshold, with penalties for unauthorized removal. Specific provisions vary between jurisdictions.

194. A — Canopy cover goals are typically expressed as the percentage of land area covered by tree canopy, measured through aerial imagery analysis. They provide a high-level metric for tracking urban forest size and communicating progress to the public.

195. B — Tree City USA requires a community forestry budget of at least two dollars per capita annually, along with a tree board, tree care ordinance, and Arbor Day observance. The program recognizes baseline commitment to urban forestry.

196. C — Species rating in plant appraisal reflects the desirability and suitability of the species in the local area. High-quality species well adapted to the location receive higher ratings; invasive or poorly suited species receive lower ones.

197. D — Effective communication with property owners uses plain language and respects the owner's decision-making authority. Technical jargon, pressure tactics, and refusal to share information all damage credibility. The client makes the final decision.

198. A — Multiple studies have found improved mental health outcomes and reduced stress for residents of neighborhoods with more trees, along with faster recovery from illness and increased physical activity. The human-health case is increasingly central.

199. B — A budget-focused council responds to the documented dollar value of ecosystem services and infrastructure savings, not to aesthetic arguments or staff preferences. Matching the message to the audience is basic professional communication.

200. C — Diverse plantings following the 10-20-30 rule protect communities against catastrophic pest loss when species-, genus-, or family-specific pests arrive. Dutch elm disease and emerald ash borer illustrate why diversity matters.