

WRCLA Architect Cedar School

Exam Question Booklet

(Please use answer sheet to record your answer)

Module 1: Forestry 101

1. In B.C., the maximum size of a clearcut on the coast is 40 hectares (about 99 acres) and in the Interior it is 60 hectares (about 148 acres). What was the average size in 2002?
 - a. 45 hectares (111 acres)
 - b. 23 hectares (57 acres)
 - c. 38 hectares (94 acres)
 - d. 52 hectares (128 acres)
2. Why would a resource manager choose a clearcut silvicultural system?
 - a. It requires fewer roads.
 - b. It is safer for workers, especially in older forests.
 - c. It is easier to regenerate species that require more sunlight.
 - d. All of the above.
3. Which building material offers the greatest environmental benefits?
 - a. Wood
 - b. Concrete
 - c. Vinyl
 - d. Steel
4. Who is responsible for regenerating harvested sites in B.C.?
 - a. B.C.'s ministry of forests
 - b. Local communities
 - c. Forest companies
 - d. No one. They are left to regenerate naturally.
5. What part of the cedar tree did early inhabitants of the Pacific Northwest use?
 - a. wood
 - b. bark
 - c. roots
 - d. all of the above
6. B.C. is 95 million hectares (235 million acres) in size. How much of B.C. is forestland?
 - a. 60 million hectares (149 million acres)
 - b. 50 million hectares (150 million acres)
 - c. 45 million hectares (111 million acres)
 - d. 40 million hectares (99 million acres)

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7. What percentage of B.C.'s land base is protected?
 - a. 6 percent
 - b. 8 percent
 - c. 10 percent
 - d. 12 percent
8. What percentage of B.C.'s forests are harvested annually?
 - a. 1/3 of 1 percent
 - b. 1% per cent
 - c. 5% per cent
 - d. 10% per cent
9. Who sets harvest levels on public land in B.C.?
 - a. Forest companies
 - b. B.C. government
 - c. The chief forester
 - d. Canadian government
10. Which is the best certification system for old-growth cedar forests?
 - a. Forest Stewardship Council
 - b. Sustainable Forestry Initiatives
 - c. Canadian Standards Association
 - d. Any of the above.
11. What's the most important factor resource managers use to decide how many trees to leave under a variable retention silvicultural system include which of the following?
 - a. Economic value – they only cut the largest, highest-quality trees.
 - b. Ecosystem considerations – they want to protect values such as biodiversity or wildlife habitat.
 - c. Social stability – they cut enough trees to keep local mills running.
 - d. All of the above
12. Which of the following statements is true?
 - a. Western red cedar seedlings cannot be planted; they must grow naturally.
 - b. Western red cedar does not regenerate well naturally.
 - c. Western red cedar regenerates well in mineral soil or on a burnt forest floor.
 - d. Western red cedar regenerates best in shaded areas.

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13. Which of the following statements is true?
- a. Western red cedar trees grow in mixed stands.
 - b. Western red cedar trees grow in homogeneous stands.
 - c. Western red cedar trees are hearty and grow everywhere.
 - d. Western red cedar trees grow only in cultivated plantation settings.
14. Of the following harvesting systems, which is most commonly used in BC?
- a. Patch Cut
 - b. Variable Retention
 - c. Shelterwood Cut
 - d. Selection Cutting
15. Which of the following is not a reason for using helicopter logging?
- a. Access timber that cannot be reached by roads.
 - b. Access timber in areas too sensitive for road building.
 - c. Access high value timber
 - d. Access timber more cost effectively.

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Module 2: Wood Properties

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|--|---|---|
| 1. Research shows the unique properties of Western Red Cedar diminish significantly in second growth trees. | T | F |
| 2. Extractive content in second growth Cedar trees is low | T | F |
| 3. Faster grown, second growth trees are less dense than old growth | T | F |
| 4. Salvage operations use Cedar trees cut more than 100 years ago | T | F |
| 5. Spiral grain can be fixed in the manufacturing process by cutting the log at an angle. | T | F |
| 6. Tree growth refers to the production of wood and bark fibers | T | F |
| 7. Western Red Cedar has a very thin band of sapwood | T | F |
| 8. Sapwood of all species is permeable and therefore durable | T | F |
| 9. The microfibril angle has significant implications of the performance properties of the wood | T | F |
| 10. The amount of shrinkage that occurs is generally proportional to the amount of water that is added to the wood, and the orientation of the microfibrils in the fiber wall. | T | F |
| 11. Moisture content of wood is measured as the ratio of the weight of water in a given piece of wood to the weight of the wood when it is air dry. | T | F |
| 12. Cedar's density is the highest of the popular softwoods species | T | F |
| 13. The greatest degree of decay resistance is found in straw colored Western Red Cedar | T | F |
| 14. Which of the following is not a living part of a tree?
a. Outer bark
b. Living bark
c. Cambium
d. Sapwood
e. Heartwood | | |
| 15. Which is the most important tissue from a wood worker's perspective?
a. Outer bark
b. Living bark
c. Cambium
d. Sapwood
e. Heartwood | | |

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16. In a Cedar tree, which of the following tissues contains the extractives that make it resistant to insect and decay?
- a. Outer bark
 - b. Living bark
 - c. Cambium
 - d. Sapwood
 - e. Heartwood
17. Which term refers to abnormal wood that is formed in tree stems and branches that have grown in a leaning position:
- a. Honey comb
 - b. Compression wood
 - c. Late wood
 - d. Early wood
 - e. None of these
18. Compression wood is suitable for which application:
- a. siding
 - b. decking
 - c. shakes & shingles
 - d. pulp & paper
 - e. None of these
19. What is responsible for the destruction of lignin bond in wood:
- a. Moisture
 - b. Ultra violet rays
 - c. Insufficient nutrients
 - d. Faulty manufacturing
 - e. None of these
20. According to scientists which naturally occurring extractives is responsible for Western Red Cedar's insect resistance:
- a. Thujic acid
 - b. Methyl thujate
 - c. Methynol
 - d. Thujiplicans
 - e. None of these

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Module 3: Wood Manufacturing

1. "D" #1 Lumber logs must produce a minimum of 75% clear lumber T F
2. Mills use "D" #1 Lumber logs to produce primarily tight knot product T F
3. "H" #2 Lumber logs must produce a minimum of 65% merchantable lumber T F
4. The length of longlogs is determined by the market and type of lumber to be produced. T F
5. The best method of stock rotation to prevent log degradation is LIFO (last in, first out). T F
6. Log bucking is very important. If done improperly, can be very costly. T F
7. Logs are bucked from the most valuable end. For Cedar mills consuming large logs, the most valuable end is the top end of the log which yields heavy clears from the outer portion. T F
8. Logs with flared butts are cut as short as possible. T F
9. The construction zone of a Western Red Cedar log produces primarily tight knotted products. T F
10. Resaws are used to improve grade, influence marketability and increase production. T F
11. In the woods, log bucking decisions are based on all of these factors, except:
 - a. Overall tree length
 - b. Tree growth angle
 - c. Log grade
 - d. Log damage and defects
 - e. Preferred longlog lengths
12. Peak season for log damaging molluscs called Teredos is:
 - a. January through April
 - b. April through June
 - c. July through September
 - d. August through November
 - e. There is no such thing as Teredos.

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13. At the mill, what is the typical overlength allowance:
- 1-3"
 - 2-4"
 - 3-5"
 - 4-6"
 - 1 foot
14. Which area of a Western Red Cedar logs produces high end clear products such as clear siding, finish and decking:
- Outer zone
 - Middle zone
 - Factory zone
 - Center zone
 - Construction zone
15. The headrig consists of all the following components except:
- Headsaw
 - Edger
 - Carriage
 - Cant turner
 - All of these components are part of the headrig
16. What is the primary benefit of splitting the heart:
- Flat grain lumber
 - Vertical grain lumber
 - Clear lumber
 - Knotty lumber
 - There is no benefit to splitting the heart
17. Which is not a reason to edge lumber:
- Remove wane
 - Remove defective edges
 - Trim uneven ends
 - Isolate defects
 - Produce narrower widths

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18. Which is not a common type of edger:
- a. Selective
 - b. Gang
 - c. Combination
 - d. Mixed Gang
 - e. All are types of edgers
19. What is one of the basic rules of resawing:
- a. Isolate defect in one piece of low grade lumber
 - b. Rip the defect
 - c. Always resaw lumber with defects
 - d. Trim lengths based on order file
 - e. All of these are rules for resawing.
20. Which of the following is not the result of poor drying of Western Red Cedar:
- a. Checks or cracks
 - b. End checks
 - c. Honeycombing
 - d. White Speck
 - e. All of these result from poor drying

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Module 4: Products & Grading

1. Products manufactured by WRCLA members are graded according to WRCLA grade rules. T F
2. Clear Vertical Grain Heart bevel siding is graded for the rough face. T F
3. The highest grade of Knotty bevel siding is Quality Knotty. T F
4. Bevel siding is a very versatile product and can be installed vertically, horizontally and diagonally. T F
5. Pattern sidings refer to two groups of sidings: T&G and lap sidings T F
6. Western Red Cedar boards have two primary end uses: board & batten siding and exterior trim. T F
7. Boards graded as A & Better are often used for cabinetry, doors and windows. T F
8. Cedar Siding is an excellent complement to other materials such as stucco T F
9. Board and batten siding should only be used for vertical applications T F
10. Cedar decking is the natural choice for environmentally conscious buyers T F
11. Western Red Cedar timbers are only available for appearance applications T F
12. Cedar yardscape products do not require any special treatment unless the product is in direct contact with the ground. T F
13. Bevel siding is one of the most common siding profiles. In different regions around the US it is also known as:
 - a. Thin board
 - b. Clapboard
 - c. Panel
 - d. Weather board
 - e. None of these
14. The appropriate NLGA grade rule for "A Clear bevel siding" is:
 - a. 201a
 - b. 200b
 - c. 201b
 - d. 202d
 - e. None of these

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15. Which of the following is a factor when calculating the amount of siding required:
- a. Total wall area
 - b. Square footage of areas that will not be sided
 - c. 10% Trim allowance
 - d. All of these should be considered
 - e. None of these should be considered
16. Which of the following is not a recognized knotty siding or board grade:
- a. Select Knotty
 - b. Select Tight Knot
 - c. Quality Knotty
 - d. Custom Knotty
 - e. All of these are appropriate grades for knotty siding or boards.
17. Typical specifications of A Clear pattern stock include a percentage of:
- a. B Clear
 - b. C Clear
 - c. D Clear
 - d. Knotty boards
 - e. None of these should be considered
18. Which of the following are not appropriate uses for Custom Knotty decking:
- a. Deck builders
 - b. Residential builders
 - c. High end custom home builders
 - d. Commercial building projects
 - e. All of these are suitable for Custom Knotty decking
19. Which of the following statements is not true:
- a. Western Red Cedar decking provides an excellent base for stains
 - b. Western Red Cedar decks have exceptional stability
 - c. Western Red Cedar does not require preservative treatment
 - d. Western Red Cedar decks get hot in the summer heat just like composites
 - e. All of these
20. Which of the following grade categories is not exclusive to WRCLA members:
- a. Architect Knotty
 - b. Architect Clear
 - c. Custom Knotty
 - d. Custom Clear

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- e. All of these are exclusive to WRCLA members
21. T&G Siding is available in all the following thickness except:
- a. 7/16"
 - b. 5/8"
 - c. 11/16"
 - d. 3/4"
 - e. All of these are suitable for siding
22. When calculating the amount of decking required to cover 100 square feet with 4" wide decking, you will need:
- a. 100 lineal feet
 - b. 211 lineal feet
 - c. 325 lineal feet
 - d. 525 lineal feet
 - e. None of these factors are correct
23. When calculating the amount of decking required to cover 100 square feet with 6" wide decking, you will need:
- a. 100 lineal feet
 - b. 211 lineal feet
 - c. 325 lineal feet
 - d. 525 lineal feet
 - e. None of these factors are correct
24. Appearance grade Western Red Cedar Timbers are based on which grade rule:
- a. NLGA 131C
 - b. NLGA 200B
 - c. NLGA 130C
 - d. NLGA 130C
 - e. Proprietary
25. Which of the following products are not available through WRCLA members:
- a. Lattice
 - b. Sidewall Shingles
 - c. Grilling planks
 - d. Saunas
 - e. Post caps

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Module 5: Cedar Marketing & Promotion

1. Western Red Cedar is a lumber product and should be sold as a commodity T F
2. Western Red Cedar should only be used for exterior applications T F
3. In positioning and selling Cedar, demographics play an important role. T F
4. The building materials industry is dominated by men, so when promoting Cedar the sales pitch should focus on the male consumer. T F
5. Composite decking is the leading decking material used T F
6. Treated Wood contains potentially toxic chemical preservatives T F
7. Western Red Cedar has centuries of proven performance T F
8. Composite lumber is a thermal insulator, making it cool in summer T F
9. Non-wood substitutes are maintenance free T F
10. For every tree harvested in British Columbia, one is planted T F
11. High quality Cedar products are available, but are limited in supply T F
12. Real Cedar is available from any producer of Cedar products T F
13. The WRCLA offers exclusive benefits to its members T F
14. The Real Cedar brand is designed to complement member company brands T F
15. Real Cedar is exclusive to the WRCLA members and Certified Distributors T F
16. What is the primary factor influencing the buying decision for the typical Cedar customer?
 - a. Price
 - b. Maintenance
 - c. Value
 - d. Warranty
 - e. None of these
17. Which of the following is not a suitable end use for Cedar:
 - a. Decks
 - b. Siding
 - c. Windows
 - d. Furniture
 - e. All of these are suitable

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18. Which of the following trends is not a factor in promoting Western Red Cedar
- a. Time vs. Money
 - b. Family vs. Individual
 - c. Cocooning
 - d. Entertaining
 - e. All of these
19. Which of the following products has experienced dramatic growth since 1993:
- a. Stucco
 - b. Durable Wood
 - c. Cement siding
 - d. Aluminum
 - e. Vinyl
20. What improvements have Cedar siding producers made:
- a. Finger Jointing
 - b. Factory Finishing
 - c. Coating Warranties
 - d. None of these
 - e. All of these
21. Who is the key decision maker when it comes to selecting the type of building material to be used?
- a. Architect
 - b. Homeowner
 - c. Retailer
 - d. Installer
 - e. Builder
22. What's new about Cedar?
- a. Nothing
 - b. More supply
 - c. Its durable
 - d. it's the "natural alternative"
 - e. new warranty

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23. Why is Western Red Cedar considered an environmentally friendly product:
- a. Sustainable
 - b. Biodegradable
 - c. Naturally durable
 - d. Certified facilities
 - e. All of the above
24. Which of the following has the least environmental impact based on life cycle analysis:
- a. Recycled Plastic
 - b. Wood
 - c. Steel
 - d. Cement
 - e. They're all bad for the environment
25. Which of the following is not true about Western Red Cedar's properties
- a. Cedar is dimensionally stable, so it lays flat and stays straight
 - b. Cedar is free of pitch & resin, therefore accepts stains readily
 - c. Cedar is easy to handle, cut and transport
 - d. Cedar is resistant to insect and termite attack
 - e. All are true.
26. Members of the WRCLA account for how much of the world's supply of Western Red Cedar?
- a. 40%
 - b. 50%
 - c. 60%
 - d. 70%
 - e. 100%
27. Which of the following activities is currently not part of the WRCLA's marketing campaign:
- a. Public Relations
 - b. Print Advertising
 - c. Radio Advertising
 - d. Internet marketing
 - e. Tradeshow

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28. The primary focus of the advertising campaign is on which segment:
- a. consumer
 - b. trade
 - c. builders
 - d. architects
 - e. other
29. How many potential customers visit WRCLA websites on a monthly basis:
- a. 5,000
 - b. 40,000
 - c. 70,000
 - d. 90,000
 - e. 1,000,000
30. The purchasing cedar tool directs consumers and builders to:
- a. member companies
 - b. cedar producers
 - c. cedar retailers
 - d. Certified Cedar Distributors
 - e. WRCLA field representatives

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Module 6: Installation of Cedar

Cedar Siding Installation

1. Proper siding installation ensures longer service life, fine appearance, and reduced maintenance. T F
2. Building paper or house wrap is installed vertically and should overlap at least 6" T F
3. Flashings are installed above all horizontal breaks and transitions before the siding is installed. T F
4. Copper is always a suitable material for flashings T F
5. Sidings should be installed tight to rooflines. T F
6. Kiln dried sidings should be used for applications over rigid foam insulations. T F
7. Dark colors are the best choice for siding applied over rigid foam. T F
8. Masonry walls require a minimum 1" furring strip. T F
9. Sidings should be at equilibrium moisture content with the local climate before installation. T F
10. Ring or spiral shanked nails have more holding power than smooth shanked nails. T F
11. Fasteners should penetrate solid wood a minimum of 1-1/4" (ring shank). T F
12. Caulking provides moisture protection at corners and field joints. T F
13. Bevel sidings should be securely nailed at the tip and bottom to prevent movement. T F
14. Rabatted bevel siding pieces should be installed tight together. T F
15. Bevel siding is installed from the top of wall to the bottom. T F
16. Pattern sidings must be nailed securely at each edge to hold the joint in place. T F
17. Horizontal installations of pattern siding require the weather proofing tongue to face up the wall. T F
18. Butt joints on vertical sidings should be cut at 45o to improve weatherproofing. T F
19. In Board & Batten siding, the boards should be installed tight together to improve weatherproofing. T F
20. Nails are placed 1/2" in from the edge of each board to hold it flat. T F

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Cedar Deck Installation

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| 21. Cedar deck boards should be installed tight together. | T | F |
| 22. Spacing of the deck joists is a factor to consider when choosing the right thickness of deck boards. | T | F |
| 23. Deck fasteners must be corrosion resistant. | T | F |
| 24. Iron stains and rust are common problems due to the wrong fasteners | T | F |
| 25. Deck boards joins are made at the joists. | T | F |
| 26. Joist spacing for 5/4" decking can be up to 24" on center. | T | F |
| 27. Screws should penetrate a minimum of 1 ½" into the joist. | T | F |
| 28. Concealed fasteners improve appearance and reduce stain problems. | T | F |
| 29. Install deck boards with the best appearing face up. | T | F |
| 30. Using electro-plated nails is the most common mistake by deck builders. | T | F |

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Module 7: Finishing & Maintenance

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| 1. Better quality finishes deliver better performance | T | F |
| 2. Real Cedar has poor finish retention characteristics | T | F |
| 3. Lack of pitch and resin creates a superior surface for adhesion | T | F |
| 4. Extractives are mobilized by moisture | T | F |
| 5. Moisture content at the time of finishing has little effect on coating life | T | F |
| 6. Smooth surfaces are the best choice of penetrating finishes | T | F |
| 7. Corrosion resistant fasteners avoid rust and iron stains | T | F |
| 8. Factory finishing assures optimum performance from exterior coatings | T | F |
| 9. The thicker film formed by paints has no effect on service life | T | F |
| 10. The greatest value of solvents is their ability to penetrate the wood's surface and deliver the solids component into the wood. | T | F |
| 11. Flexibility, color fastness and durability are characteristics of solvent borne coatings. | T | F |
| 12. Penetrating finishes form a film and do not breath. | T | F |
| 13. Primers have an important function in solid color systems | T | F |
| 14. Alkyd oil stain blocking formulations are the best primers | T | F |
| 15. Latex primers are prone to show extractive bleeding | T | F |
| 16. Pigments reduce the effects of surface weathering | T | F |
| 17. Cedar should be allowed to weather before finishing | T | F |
| 18. Using ferrous bristle brushes will not cause iron stains | T | F |
| 19. Painting over mildew will make it go away | T | F |
| 20. Clear water repellents provide the best protection from surface weathering. | T | F |
| 21. Touch sanding smooth surfaces improves absorption of penetrating finishes | T | F |
| 22. Penetrating stains should be liberally applied to provide enough coating to completely fill the pours of the wood. | T | F |
| 23. Transparent and semi transparent stains should be applied following a natural break or join from one end of a row to another. | T | F |
| 24. Done properly, solid color paints and stains provide the longest service life. | T | F |
| 25. Decks provide the easiest environment for finishes. | T | F |

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| 26. Finishes containing mildewcides are formulated for direct application on wet wood covered in mildew. | T | F |
| 27. Penetrating finishes are best for decks | T | F |
| 28. Routine maintenance reduces the effort required to maintain a finish | T | F |
| 29. Using bleach is a good way to clean the surface of a deck | T | F |
| 30. All deck finishes should contain a water repellent component | T | F |