

CPCCBC4006B

SELECT, PROCURE AND STORE CONSTRUCTION MATERIALS FOR LOW RISE PROJECTS

THEORY EXAM INSTRUCTIONS

- This exam will occur under standard assessment conditions.
 - An oral examination may be allowed under certain circumstances, whereby the Participant's answers will be documented by a party other than the Participant. This must be acknowledged in writing (e.g. in the Assessor Comments)
- Participants must provide enough detail in their responses to demonstrate their knowledge and skills.
- Please fill in the details below, providing your name, signature and date of assessment.
 - Your signature acknowledges that this is your own work.
- Assessors are to complete marking in pen of a different colour to the Participant.
- If a Participant initially answers a question incorrectly but modifies their response, they must follow the instructions below:
 - If a Participant changes their response in writing, they must put their initials next to the written change.
 - If a Participant changes their response verbally, this must be noted on the exam paper by the assessor.

Participant name _____

Participant signature _____

Date _____

Assessor name _____

Assessor signature _____

Date _____

Number of questions	Number of questions answered correctly	Task outcome (Tick)	
		Satisfactory	Not Yet Satisfactory
44		☐	☐

Q1. Which of the following documents and/or people would you refer to when selecting materials for a building project? Tick all that apply.

Answer

Choice	Possible Answers
✓	Australian Standards
✓	Contract
✓	Drawings
✓	Manufacturer
✓	National Construction Code
✓	Specifications
✓	Tolerances

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Q2. Identify the Volume and Parts of the NCC that relate to suitability of materials for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Part A5.0	Volume 1, Part A5.0

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Q3. Identify the assessment methods used to verify a performance solution.

Answer

Should resemble: Evidence of suitability

Verification method

Expert judgement

Comparison with the Deemed-to-Satisfy provisions

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Q4. Which of the following solutions for material selection often references the Australian Standards? Tick your response.

Answer

Choice	Possible Answers
✓	Deemed-to-Satisfy solution
	Performance solution

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- Q5. Identify five (5) materials commonly used for *low rise buildings* in your region. For each material, identify the following:
- Its name
 - Properties of the material

Answer

#	Material name	Properties
1	Assessor's discretion	Assessor's discretion
2		
3		
4		
5		



- Q6. For each of the materials in Q5. identify the following:
- Quality of the material (i.e. durability, serviceability, cost effectiveness)
 - Compatibility and non-compatibility of the material (i.e. what it would/would not be suitable for)

Answer

#	Quality	Compatibility
1	Assessor's discretion	Assessor's discretion
2		
3		
4		
5		



Q7. Identify five (5) physical characteristics that may be considered when evaluating potential building materials.

Answer

Assessor discretion. May include: Density and specific gravity; Strength; Electrical conductivity; Thermal conductivity; Moisture absorption; Acoustics



Q8. Match the terms and definitions below by writing the appropriate letter next to each number in the centre column.

Answer

Term		Answers	Definition	
1	Carbon footprint	1 - B	A	The amount of energy required to manufacture a product
2	CO ₂ e	2 - E	B	Total GHD emissions produced during manufacture construction and use
3	Embodied energy	3 - A	C	Greenhouse gas emissions
4	Embodied water	4 - D	D	The amount of water required to manufacture a product
5	GHG	5 - C	E	CO ₂ equivalent tonnes emitted into the atmosphere



Q9. Which of the following materials would be considered as 'low energy content'? Tick all that apply.

Answer

Choice	Possible Answers
	Bricks
✓	By-products of other industrial processes
	Cement
	Glass
	Metals
	Plastics
✓	Sand
✓	Stone
✓	Timber



Q10. Refer to the table below and identify the wall material type that has the smallest embodied energy and emission impact.

COMPONENT	kWh/ m2 indoor floor area	Kg CO2e/ m2 indoor floor area
Floor suspended slab 114 - 117 mm	208	68
Floor suspended timber on stumps	76	26
ROOF		
Roof steel frame colorbond steel or tile	209	72
Roof timber frame colorbond steel or tile	143	47
WALLS		
Walls double brick; s/b interior	312	103
Walls brick veneer timber frame	204	67
Walls timber frame fibro clad	61	20
Walls steel frame fibro clad	90	30
Walls Timber frame timber clad	68	23
Walls pre-cast concrete	264	88
Walls concrete block	160	53
OTHER , APPLICABLE TO ALL HOMES REGARDLESS OF TYPE		
Construction, admin, transport, other materials such as copper pipes, glass, aluminium	406	144
Floor coverings assume approx. 50% ceramic tile 50% polypropylene carpet	61	20
Fittings, fixed appliances built in \$ bathroom, kitchen, w/robes	96	43
ADDITIONS	kWh/ m2 area or m length	Kg CO2e/ m2 area or m length
Roofed open areas - alfresco / porch / verandah / carport	352	117
Garage single brick or cavity walls, concrete slab, steel or tile roof	675	219
Open Carport	352	117
Fence brick or metal (per metre length, assuming 1.5 m height)	186	61
Paving (brick or concrete)	96	32
Pool (concrete below ground)	534	198

Answer Walls timber frame fibro clad



Q11. Identify the Volume and Parts of the NCC that relate to energy efficiency of materials for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Part 3.12	Volume 1, Part J

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Q12. Identify the relevant section of the Standards and Tolerances Guide and the associated Australian Standard that addresses residential slabs and footings.

Answer

Standards and Tolerances Guide	Australian Standard
Assessor's discretion. The QBCC Guide refers to this in Section 2.0.	AS 2870

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Q13. Identify the relevant section of the Standards and Tolerances Guide and the associated Australian Standard that addresses roof tiles.

Answer

Standards and Tolerances Guide	Australian Standard
Assessor's discretion. The QBCC Guide refers to this in Section 6.0.	AS 2049

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Q14. Identify the Volume and Parts of the NCC that relate to safety barriers for swimming pools for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Part 3.10.1.0	Volume 1, Part G1.1, G1.3

☐

Q15. In some states, barriers and fences for swimming pools are not entirely regulated by the NCC, as noted in the Ancillary Provisions and State and Territory Variations. Identify the applicable Act and Regulation that regulate safety barriers for swimming pools in your jurisdiction.

Answer

In Queensland: Building Act 1975 and Building Regulation 2006

In NSW: Swimming Pools Act 1992 and Swimming Pools Regulation 2008

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Q16. Identify the Australian Standard that relates to safety barriers for swimming pools.

Answer

AS 1926

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Q17. True or False (Tick your response): According to the Standard in Q16. all gates must be fitted with a self-closing device that will return the gate to a closed position from any position without the use of manual force.

Answer

✓	True
	False

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Q18. Identify the Volume and Parts of the NCC that relate to fire-resistance of building elements for Classes 1 and 10, and Classes 2 to 9.

Answer

Classes 1 and 10	Classes 2 to 9
Volume 2, Schedule 5	Volume 1, Schedule 5

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Q19. Identify the Australian Standard that relates to fire-resistance tests for elements of construction.

Answer

AS 1530

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Q20. For all NCC Classes, where the ground or subfloor space is excessively damp or subject to frequent flooding, which durability class must the subfloor framing must be used where above ground?

Answer

Class 1 or 2 timbers or H3 preservative treated timbers

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Q21. Identify the Australian Standards that must be observed when meeting the requirements for Q20.

Answer

AS 1684.2, AS 1684.3 or AS 1684.4

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Q22. True or False (Tick your response): Where materials are not used as intended (or without considering NCC requirements), this can make a significant difference to the life or serviceability of the structure.

Answer

✓	True
	False

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Q23. Explain why durability and serviceability impact on the cost effectiveness of chosen materials.

Answer

Assessor's discretion. May resemble: Materials that are cheap, but not durable or have high serviceability costs, do not end up being cheaper in the long run. However, spending a little more money on materials that are durable and require minimal maintenance will cost less in the long run – as they do not need to be replaced as frequently and have low ongoing costs.

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Q24. Provide an example of short term degradation of materials and describe its effects on a building on structure.

Answer

Assessor's discretion.

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Q25. Provide an example of long term degradation of materials and describe its effects on a building on structure.

Answer

Assessor's discretion.

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Q26. You have spoken to a supplier who has indicated that some of the client's desired materials are unavailable. When considering alternative building materials what must be taken into consideration (i.e. other than the client's requirements)?

Answer

Assessor's discretion. May resemble: When choosing an alternative material or building practice it should only be considered if it is performance tested, efficient, environmentally sustainable and/or more cost-effective than what has been recommended in the specification as a natural or man-made product or material.

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It is also important to consider availability, transportation, handling, testing, waste reduction, reuse/recycling, renewable/non-renewable, environmental impact: embedded energy, fire resistance rating, compatibility, acoustic properties, life-cycle cost, short and long-term degradation.

Q27. Identify two (2) things that you should look for when receiving a delivery of materials.

Answer

Should resemble: Quantity – check that all items are there

Condition – check that no items are damaged

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Q28. If you encounter issues with delivery, what two (2) options do you have?

Answer ☐ Should resemble:
 Accept the shipment with 'conditions'
 Reject the entire shipment

**Q29. Which of the following should be assessed before shifting materials?
 Tick all that apply.**

Answer ☐

Choice	Possible Answers
✓	What needs to be relocated (e.g. size, weight)
✓	The relocation area, site layout and obstacles
✓	Distance and time to relocate load
✓	Whether a team is available and/or appropriate
✓	Whether PPE must be worn (e.g. for hazardous materials)

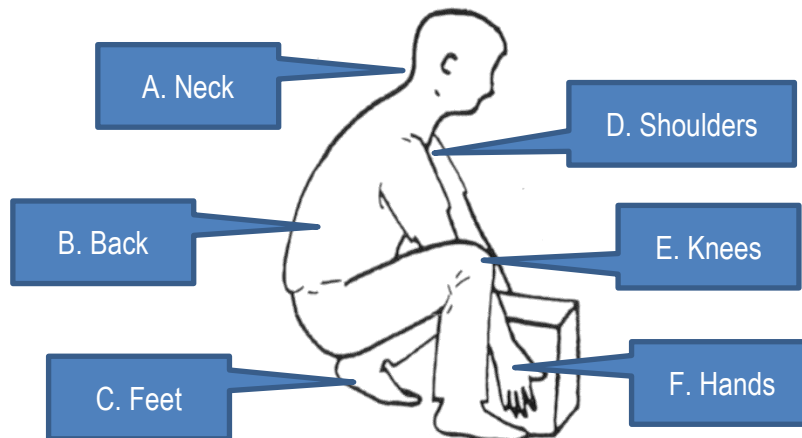
Q30. What document should you refer to for guidance on how to handle and store hazardous chemicals?

Answer ☐ Safety Data Sheet (SDS)

Q31. Name three (3) ways you can reduce the risk of injury if a load is too heavy for one person to carry, push or pull.

Answer ☐ Assessor's discretion. May include: Lighten the load
 Team lift
 Mechanical lift

- Q32. In the diagram below a person is lifting a tool box.
Filling in the table, indicate how each body part should be used/placed.



Answer ☐

Area of body (Letter)	How it should be placed
D	Level
A	Upright
F	Good grip
B	Natural curve
E	Bent
C	Flat, facing load

- Q33. How should construction materials and components be handled?
Tick all that apply.

Answer ☐

Choice	Possible Answers
☒	Sorted to suit material type and size, separating hazardous material
☒	Stacked or stockpiled for ease of identification and retrieval
☐	Stored in access ways for ease of retrieval
☒	Stored clear of access ways
☒	Handled and positioned ready for installation

- Q34. Identify the Australian Standard that relates to the storage and handling of LP gas.

Answer AS/NZS 1596 ☐

Q35. List one (1) testing method for each of the building materials listed below.

Answer	Material name	Properties	☐
	Concrete	Assessor's discretion. May include: Slump test; Using a hydraulic press on concrete cylinders or cubes.	
	Metals	Assessor's discretion. May include: Repeated loading; Ductility testing by bending a bar around a pin over a wide angle; Hardness testing by indentation with a diamond or hardened steel ball; Toughness using tension test	
	Timber	Assessor's discretion. May include: Visual grading; Stress grading machines	

Q36. What Code gives detailed tables which state the required grade of timber for specific sizes and uses?

Answer Australian Timber Framing Code ☐

Q37. Name two (2) ways that defects may be seen in timber.

Answer Assessor's discretion. May include: Knots; Splits; Gum veins; Pockets of resin; Insect damage ☐

Q38. Identify two (2) tests that may be performed to determine the durability of stone.

Answer Assessor's discretion. May include: Acid emersion test; Water absorption ☐

Q39. Name two (2) ways that defects may be seen in stone.

Answer

Assessor's discretion. May include: Cracks and fissures in the rock surface.

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Q40. True or False (Tick your response): Under a contract, builders and other specialist tradespersons are the ones most likely to rectify or remedy problems that arise from incorrect installation, application or placement of materials.

Answer

✓	True
	False

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Q41. Name two (2) established methods that may be used to preserve timber.

Answer

Assessor's discretion. May include: Paint; Termite barriers; Soil poisoning;

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Preservative treatments

Q42. Identify two (2) established methods that may be used to protect ferrous metals.

Answer

Assessor's discretion. May include: Cathodic protection; Corrosion

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inhibitors; Painting; Galvanisation

Q43. Explain why the corrosion resistance of non-ferrous metals is superior to that of ordinary steel.

Answer

Assessor's discretion. May include: This is a result of the production of a ceramic coating of oxide or salt on the metal which protects it from further corrosion.



**Q44. When should aluminium be coated with bituminous paint?
Tick all that apply.**

Answer

Choice	Possible Answers
	At all times
✓	When it is buried in soil
✓	When it comes in contact with chemical materials
✓	When it is immersed in water
	When it is used on bitumen

