CPCCBC4001A
APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LOW RISE BUILDING PROJECTS

THEORY EXAM INSTRUCTIONS

- This exam will occur under standard assessment conditions.
  - An oral examination may be allowed under certain circumstances. Answers will be documented and FT003 (Oral examination declaration form) must be completed.
- 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.
- 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: Erica Taylor

Participant signature: 

Assessor name:

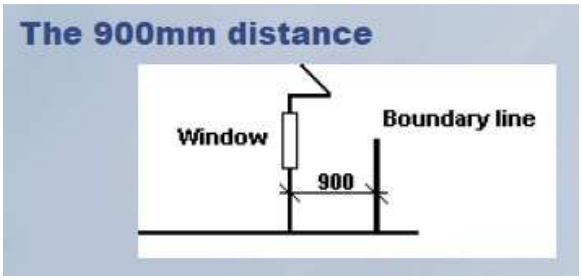
Assessor signature:

Date: 26/05/2018

Number of questions	Number of questions answered correctly	Satisfactory?	
		Yes	No
35		☐	☐

ASSESSOR COMMENTS

Q1. **The diagram below represents an external house wall, shows part of roof and eave and a window in the wall and the vertical boundary line fence is shown a prescribed measurement of 900mm from the house wall to allow light from the sun to reach the window.**



What type of regulation could allow a lesser distance to be used if appropriate justification was provided?

In what document/s might you find the appropriate information?

Answer Performance-based regulations – This involves proposing a different method of construction which will still achieve compliance. Information regarding how this can be achieved can be found in the BCA and local government planning laws.

Q2. **In regard to the above 900mm distance from house wall to boundary fence and in using or referencing performance-based regulations in the BCA what else should you be aware of and consider?**

Answer There are other performance requirements which must be considered such as standards in regards to fire separation and what boundary set outs are required by the local government planning laws.

Q3. **Who has responsibility for producing and maintaining The Building Code of Australia (BCA) and who is it done on behalf of?**

Answer The BCA is produced and maintained by the Australian Building Codes Board which is on behalf of the Commonwealth and each State and Territory Government.

Q4. **Fill in the missing words to complete the following two sentences.**

a. The BCA is a uniform set of Technical provisions **for the** design **and** constructiion **of buildings and other structures throughout Australia.**

b. It is a Performance based document **that is referenced so that your building system or material can demonstrate that it meets certain performance requirements in order to meet** Legislative requirements**.**

Answer

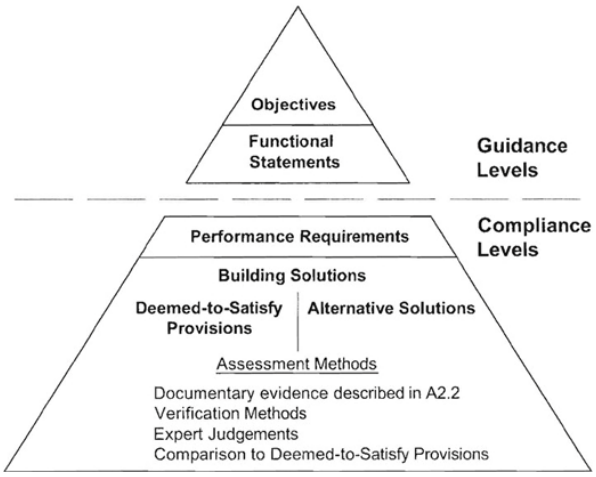
Q5. **What is the principal goal of the Building Code of Australia (BCA)?**

Answer The goal of the BCA is to achieve consistent, minimum necessary standards of safety, health, amenity and sustainability objectives on a national level.

Q6. **How many volumes are there in the BCA and to what do the volumes refer?**

Answer There are 2 Volumes of the BCA and each one covers different Classes of Construction. Volume 1 covers Buildings in the Class 2 to Class 9 category, access requirements for persons with disability including Class 1b and 10a and also certain Class 10b structures.
Volume 2 references Class 1, 10a & 10c Buildings and certain Class 10b structures, excluding access requirements for persons with disabilities.

Q7. **Explain the BCA performance requirements for low rise projects from the diagram below.**



Answer

The Objectives are the need to regulate and safeguard the occupants of the dwelling by ensuring things such as room heights or size will not cause injury or loss of use. The Functional Statements explain HOW the building will meet community expectations. Both of these fall under the Guidance Level which is classed as advice or information.

Performance Requirements are the basis of the BCA and the only part in which compliance is mandatory. They outline the level of performance which must be met for a building to meet relevant functional statements and therefore relevant objectives. This includes the performance of building materials, the design and construction methods.

The Building solutions are how compliance is achieved and can be broken down into Deemed-to-satisfy, in which the use of material, design and construction methods will result in compliance with the requirements of the BCA and Alternative Solutions. As the performance requirements do not outline what materials, methods etc must be used and it's only the performance of these items that will ensure compliance, in many cases Alternative solutions will still satisfy the provision described in the BCA. Alternative solutions differ in whole or in part from the deemed-to-satisfy provision. Assessment of the Building Solutions are carried out by several methods: Documentary Evidence, Verification, Expert Judgement and a comparison with the Deemed-to-Satisfy Provisions.

Q8. **What is the intent of the 'Relevant Performance Requirements' in the BCA?**

Answer

The **intent of the 'Relevant Performance Requirements'** is to set out the method of determining the appropriate Performance Requirements to be used when an Alternative Solution is used to prove that a Building Solution complies with the BCA.

Q9. **Building solutions set out the means of achieving compliance with the performance requirements. The BCA provides for two methods that can be followed to develop a building solution. Explain these two methods.**

Answer

The Building solutions are how compliance is achieved and can be broken down into Deemed-to-satisfy, in which the use of material, design and construction methods will result in compliance with the requirements of the BCA and Alternative Solutions. As the performance requirements do not outline what materials, methods etc must be used and it's only the performance of these items that will ensure compliance, in many cases Alternative solutions will still satisfy the provision described in the BCA. Alternative solutions differ in whole or in part from the deemed-to-satisfy provision. Assessment of the Building Solutions are carried out by several methods: Documentary Evidence, Verification, Expert Judgement and a comparison with the Deemed-to-Satisfy Provisions. (this is taken from my answer to Q7)

Q10. **The deemed-to-satisfy building solution establishes a clear and concise process for compliance for a builder, building surveyor or the like (building certifier) who does not want to develop a new means of achieving performance requirements; what does 'deemed-to-satisfy' mean?**

Answer

Deemed-to-satisfy basically means, someone else has already done the research and has worked out what works so as long as you follow the process, compliance will be met because the methods are deemed to meet any and all requirements.

Q11. **Write an example of a 'deemed-to-satisfy' provision for a class 1 building including deemed-to-satisfy requirements for kitchen, bathroom, laundry and sanitary facilities.**

Nominate where you found the information in the BCA.

Answer

Sanitary Compartment – Windows have been installed which are openable and not less than 5% of the floor area of the room NCC Volume 2: Part 3.8.5.2 Ventilation Requirements

Kitchen – a kitchen sink and facilities for the preparation and cooking of food have been provided NCC Volume 2: Part 3.8.3.2 Required Facilities

Bathroom - framed shower screens must be glazed in a Grade A safety glazing materials NCC Volume 2: Part 3.6.4.5 Bathroom, ensuite and spa room glazing

Laundry – walls separating the laundry from a habitable room must provide insulation against impact generated sound sufficient to prevent illness or loss of amenity to the occupants. NCC Volume 2: Part P2.4.6 Sound Insulation

Q12. **Who and what is Standards Australia?**

Answer

Standards Australia is an independent, non-government and not for profit organisation and is Australia's peak Standards body. It is recognised through a Memorandum of Understanding with the Commonwealth Government. These Standards are aligned with international standards to help ensure the safety, reliability and performance of products, services and systems and are developed in consultation with government, business, industry, community, academia and consumers.

Q13. **What are Australian Standards?**

Answer

"Standards are published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to.
They establish a common language which defines quality and safety criteria."

Q14. **The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used. Please summarise the 10 building classifications below.**

Answer

Class	Summary
1	One or more buildings which in association, constitute a single dwelling (Class 1a) or boarding house/hostel (Class 1b)
2	Building which contains 2 or more sole occupancy units provided they are used as a separate dwelling
3	Residential Building, not Class 1 or 2 which provides transient living or long term dwelling for a number of unrelated persons. Examples would be a hotel or boarding house
4	A dwelling in a building that is classed as 5, 6, 7, 8 or 9 provided it is the only dwelling in the building
5	Office building used for commercial or professional purposes which doesn't fall into Class 6, 7, 8 or 9
6	A shop or other building for the sale of good by retail or supply of services directly to the public
7	7a - Carpark 7b – Storage or display of goods or produce for sale
8	A lab or building for the manufacture, assembly, alteration, repair, packing, finishing or cleaning of goods for sale
9	Building of a public nature such as health care or aged care buildings
10	Non-habitable building or structure: 10a – non-habitable building 10b – fence, mast, pool 10c - shelter

Q15. **Other than the 10 BCA building classifications (A3.2), there are also multiple classifications (A3.3) where each part of a building is classified separately.**

Where would you find a full list of Past A3 classification of Buildings and Structures?

Answer These can also be found in the Building Codes Australia ☐

Q16. **True or False (Tick your response): If a building or part of a building has more than one classification applying to the whole building or part in accordance with, that building or part must comply with all the relevant provisions of the BCA for each classification.**

Answer

☒	True
☐	False

☐

Q17. **Familiarity with plans and specifications for a project when interpreting a building solution and therefore trying to interpret clauses and other referenced documents in the BCA is important.**

What do plans and specifications include?

Answer The plans include floor plans, elevations and sectional drawings which will give a clear picture of the intended structure which can help identify the requirements of the BCA. The specifications will include details of the design and materials to be used which can be referenced to ensure they comply. ☐

Q18. **You must have a clear picture of the building to be constructed and be able to identify the criteria that you will need to compare to the Deemed-To-Satisfy (DTS). What is it you must also consider when constructing complex buildings?**

Answer Complex buildings also carry the issue where one BCA clause may impact on the requirements of another. ☐

Q19. **Complete the missing words from the sentence below and explain the difference between these points.**

BCA Performance Requirements are Mandatory **and Deemed-to-Satisfy provisions are** Optional**.**

Answer

As performance requirements are mandatory, this means all requirements must be met for example, in a Class 1 building, any window that faces a boundary of any adjoining allotment MUST not be less than 900m from that boundary. These requirements do not dictate how to achieve the requirements themselves, these solutions are called Deemed-to Satisfy and are provided by the BCA to show standard solutions that MAY be used. Hence why they are classed as optional.

Q20. **What is a Building Solution?**

Answer

A building solution is one which complies with the Performance requirements and is one or more of the following: an alternative solution or a solution which complies with the Deemed-to-satisfy provisions. It can also be a combination of both.

Q21. **Referring to the BCA, what are the objectives of Section C Fire Resistance?**

Answer

Section C Fire Resistance relates mostly to fire safety including safe access and escape. The objective is to ensure that fire does not spread from one building to another but also ensures the structural integrity of the structure is maintained should a fire occur, to ensure the occupants can evacuate and the fire brigade is able to bring the fire under control.

Q22. **Why is it necessary to identify and document performance-based solutions?**

Answer

Performance based solutions must be identified and documented to comply with organisational quality procedures and processes, so the relevant documentation and code can be applied and interpreted. So faults and problems impacting OHS can be identified and appropriate action to rectify proposed and to accurately apply National, State and Territory OHS requirements.

Q23. **In the context of the Building Code of Australia what are Assessment Methods used to determine?**

Answer

Assessment methods are used to determine whether a building solution complies with the relevant BCA performance requirements. There are 4 assessment methods which include, evidence of suitability, verification methods, a comparison with the DTS provisions and expert judgement.

Q24. **Explain the importance of maintaining detailed documentation for a building project.**

Answer

The importance of detailed documentation is to ensure that the building is compliant and can pass assessment. These documents become a vital reference tool for the inspection of key building elements and ensures they are not overlooked.

Q25. **With regard to detailed documentation what are some of the documents that must be provided and maintained by contractors?**

Answer

On the plans, calculations of building, site and floor areas, building heights, habitable rooms, windows and secluded private open space on adjoining allotments must be clearly documented to allow the Authority to determine if they comply with their regulations. Drawings and plans must also be maintained with necessary notes, specs and analysis to enable the Authority to determine compliance with the Act, regulations and the BCA. Full details of any proposed Alternative Solutions. The documents must also contain all submissions necessary in support of the exercise of discretionary powers under National, State or Territory regulations.

Photos or images can also be helpful. For example, although the certifier should be inspecting partiwalls before they're sheeted, having photos clearly showing that fire separation requirements have been met will help prove compliance without having to remove gyprock once the project is completed.

Q26. **Other than the Builder maintaining detailed documentation, who will also have responsibility to resolve and correct errors for any ambiguity identified in the plans?**

Answer

It is the Building Certifiers responsibility to also exam details in plans and documents for compliance with the building standards and legislation.

Q27. **The threat of an accidental fire in a building and to prevent it are important to understanding fire and taking all steps to prevent or confine fire and to prevent fire spreading within the structure as well as to adjoining or adjacent buildings.**

In this regard Fire Protection Systems are paramount and are subject to?

Answer

1. Building Regulations
2. Fire Regulations
3. Insurance Company Requirements
4. Local Government Requirements
5. Other Regulatory Authorities

Q28. **Briefly explain the following fire definitions:**

Answer

Term	Explanation
Fire	The rapid oxidation of a gas, liquid or solid substance accompanied by the release of heat and light. Chemically, fire represents an exothermic or heat-producing reaction
Passive Fire Protection	Essential component of the 3 components of structural fire safety in a building and of structural fire protection. For example, the materials which are used in the structure must be fire rated.
Active Fire Protection	Items and systems which require motions and response in order to work. An example would be fire sprinkler systems or smoke alarms.

Q29. **The purpose of fire protection is to:**
1. Prevent/reduce the possibility of fire and
2. Reduce the spread of fire within and around a building

Name the two categories or systems that provide measurement and arrangements for fire protection.

Answer

Active Systems which include fire extinguishers, fire hose reels, sprinkler systems, smoke detection and alarm systems.

Passive systems are items such as fire doors, curtains, stop collars in floor slabs, fire resistant materials along with fire isolated stairs and passageways.

Q30. **With respect to the general level of fire protection explain separately the terms 'Fire Load' and 'Fire Load Density'?**

Answer

The fire load is expressed as a numerical value in either kilojoule per kilogram (kJ/kg) or megajoule per kilogram (MJ/kg) and refers to the potential amount of heat which can be generated during a fire of combustible materials in a given enclosure.

Fire Load Density is the aforementioned fire load, divided by the floor area. This calculation is expressed as fire load per unit area of floor space. A higher fire load equals a more severe fire.

Q31. **Using Volume 2 of the BCA respond to the following:**

a) Where in the BCA would you look to find requirements for building in bushfire prone areas for Class 1 and 10 buildings?

b) Where in the BCA would you look to find requirements for building in bushfire prone areas for Class 2-9 buildings?

c) What Australian Standard must be complied with to satisfy the Deemed to Satisfy Provisions for construction of Class 2 and 3 buildings in bushfire prone areas?

Answer

a)	BCA Volume 2 Part 3.7 FIRE SAFETY – 3.7.4 Bushfire Areas
b)	BCA Volume 1 Section G ANCILLARY PROVISIONS Part G5 Construction in Bushfire Prone Areas
c)	AS 3959 – Construction of Building in Bushfire-Prone Areas

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Q32. **What is a *Fire Safety Schedule* and its relationship to the approval of development of a class 2 – 9 building?**

Answer

The Fire Safety Schedule is issued AFTER the approval of development of a class 2-9 building, usually with the construction certificate. This document lists all the Essential Fire Safety Measures which must be installed in the building and the performance standard to which each of these measures must be capable of operating.

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Q33. **What are building certifiers responsible for?**

Answer

Building Certifiers are responsible for ensuring specific compliance is achieved and undertake this role by conducting visual inspections. This is the most effective way of confirming the construction matches the documentation.

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Q34. **What are building certifiers not responsible for?**

Answer Quality of workmanship ☐

Q35. **Where in the BCA would you determine the level of fire resistance required for the construction of buildings?**

Answer For Class 1 and Class 10 the level of fire resistance can be found in Volume 2, Part 3.7 and for Class 2-9, Section C. ☐