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: Nicholas Boyd

Participant signature: 

Assessor name:

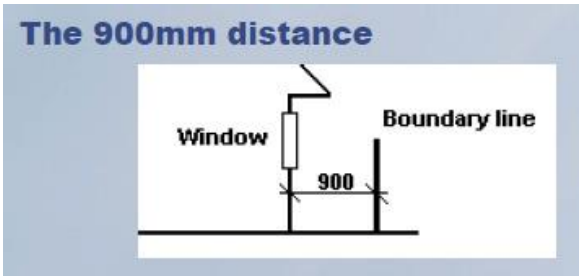
Assessor signature:

Date: 11/01/2018

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

A Performance-based regulation could allow a lesser distance to be used if appropriate justification was provided

The document could be found in the Building Code of Australia

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

Such thing that need to be considered are for example:

1. This dimension must also comply with:
Part 3.7.1 Fire Separation
Parts 3.7.1.3, 3.7.1.5
Figures 3.7.1.2, 3.7.1.3. (This wall is required to have a Fire-resistance level (FRL) of 60/60/60, so this consideration must be taken into account to maintain the FRL of the external wall of the residence when locating opening windows near boundaries)

2. Dimensions between external walls and boundaries may also be subject to 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 Building Code of Australia (BCA) is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Commonwealth Government 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** construction **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 BCA's goal is to enable the achievement of nationally consistent, minimum necessary standards of safety, health, amenity and sustainability objectives

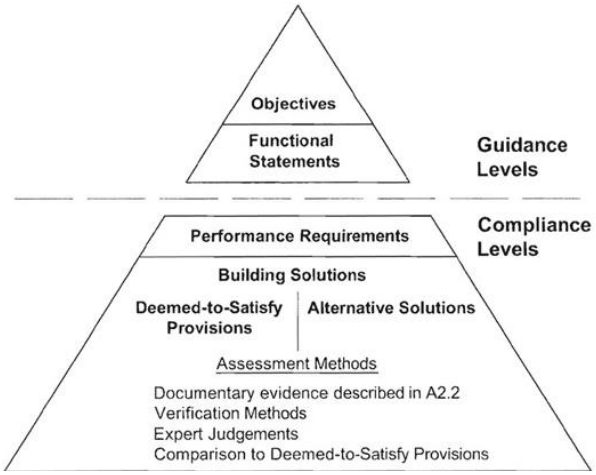
Q6. **How many volumes are there in the BCA and to what do the volumes refer?**

Answer There are 2 volumes of BCA

Volume One:
- Class 2 – 9 buildings
- Access requirements for people with a disability in Class 1b and 10a buildings
- Certain Class 10b structures including access requirements for people with a disability in class 10b swimming pools

Volume Two:
- Class 1 and 10a buildings
- Certain Class 10b structures (other than access requirements for people with a disability in Class 10b
- Class 10c

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



Answer

A **'Performance requirement'** is defined as the level of performance which a Building Solution must meet.

The performance levels are based on these outline a suitable level of performance for building materials, components, design factors, and construction methods in order for a building to meet the relevant functional statements and, in turn, the relevant objectives.

- E.g.: "A room/space must be of a height that does not unduly interfere with its intended function"

Meeting the Performance Requirements

Compliance with the Performance Requirements can only be achieved by:

a. Complying with the deemed-to-satisfy provisions
b. Formulating an alternative solution which:
    i. Complies with the Performance Requirements
    ii. Is shown to be equivalent to the deemed-to-satisfy provisions
    iii. A combination of (a) and (b)

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.
Note that It is important that an holistic approach is used when determining appropriate performance requirements as outlined in the following example

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

Deemed-to-satisfy provisions
These include examples of materials, components, design factors, and construction methods which, if used, will result in compliance with the performance requirements of the BCA. An example of a deemed-to-satisfy provision in the BCA is Ceiling heights must be not less than 2.4 metres in a habitable room.

Alternative solutions The key to the performance-based BCA is that there is no obligation to adopt any particular material, component, design factor or construction method. An approval authority may still issue an approval if a building proposal differs in whole or in part from deemed-to-satisfy provisions described in the BCA and if it can be demonstrated that the design complies with the relevant performance requirements

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 essentially means that the building solution complies in an equivalent or superior way to a deemed-to-satisfy provision.

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

A Class 1 building must be provided with the following:

1) A kitchen sink and facilities for the preparation and cooking of food.
2) A bath or shower
3) clothes washing facilities, composing of at least one wash tub and space for a washing machine
4) a closet pan and washbasin

The performance requirements for this provision is:

1) Suitable sanitary facilities for personal hygiene must be provided in a convenient location within or associated with a building, appropriate to its function or use.

2) For a bath or shower the minimum "performance requirement" that must be met to comply with the regulations are contained in the Building Code of Australia (BCA) Volume Two. The simplest way of meeting the performance requirements is by complying with the Deemed-to-Satisfy (DTS) provisions in Part 3 which gives two basic options to follow:
• Acceptable construction practice (ACP) outlined in Part 3.8.1 of the BCA;
• Acceptable construction manual (ACM) AS 3740 – Waterproofing of Wet Areas within Residential Buildings.

3) Laundering Facilities or spaces for laundering facilities must be provided in a convenient location within or associated with a building, appropriate to its function or use.

4) A food preparation facilities must be provided which includes:
- a means of food rinsing, utensil washing and waste water disposal
- a means of cooking food
- a space for food preparation

5) A sanitary compartment must be constructed with sufficient space or other means to enable an unconscious occupant to be removed from the compartment

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

Answer

Standards Australia is Australia's peak Standards body, recognised through a Memorandum of Understanding with the Commonwealth Government.

It is an independent, non-government, not-for-profit organisation. In consultation with government, business, industry, community, academia and consumers, Standards Australia develops internationally aligned Australian Standards and related publications to help ensure the safety, reliability and performance of a range of products, services and systems.

Q13. **What are Australian Standards?**

Answer

Australia 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. Class 1a – a single dwelling b. Class 1b – boarding house, hostel
2	A building containing 2 or more sole-occupancy units each being a separate dwelling
3	A residential building, other than a building of class 1 or 2, which is a common place of long term or transient living for a number of unrelated persons (E.g.: boarding house, school, hotel)
4	A dwelling in a building that is Class 5, 6, 7, 8 or 9 if it is the only dwelling in the building
5	An office building used for professional or commercial purposes, excluding buildings of Class 6, 7, 8 or 9
6	A shop or other building for the sale of goods by retail or the supply of services direct to the public
7	A building which is Class 7a (a car park) or class 7b (for storage or display of goods or produce for sale)
8	A laboratory or building for the production, assembling, altering, repairing, packing, finishing or cleaning of goods for sale
9	A building of a public nature: Class 9a – health-care building, Class 9b – an assembly building, Class 9c – aged care building
10	A non-habitable building or structure: Class 10a – non-habitable building, Class 10b – fence, mast, pool, Class 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 It can be found within 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 They included

- Floor level plans
- Elevation plans
- Sectional drawings
- All specifications

☐

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 you will find that requirements of one BCA clause may have an 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

BCA Performance Requirements are mandatory and DTS provisions are optional

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

Answer

A solution which complies with the Performance Requirements and is:

- An Alternative Solution
- A solution which complies with the Deemed-to-Satisfy Provisions
- A combination of (a) and (b).

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

Answer

The Objective of this Section is to:

- safeguard people from illness or injury due to a fire in a building.
- safeguard occupants from illness or injury while evacuating a building during a fire.
- facilitate the activities of emergency services personnel.

avoid the spread of fire between buildings.

protect other property from physical damage caused by structural failure of a building as a result of fire.

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

Answer

It is necessary to identify and document performance-based solutions in order to:

- comply with organisational quality procedures and processes
- apply and interpret relevant documentation and codes
- accurately apply National and State and Territory OHS requirements relating to construction workplace
- identify faults and problems impacting on OHS and proposing appropriate action to rectify

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. As shown in the Hierarchy of the Performance-Based, a Building Solution can be achieved through complying with the Deemed-to-Satisfy Provisions, or by using an Alternative Solution to achieve the Performance Requirements

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

Answer

It is important that you maintain a detailed level of documentation to ensure that the building is compliant and can pass assessment.
The ability to refer to detailed documentation provides a vital reference tool required for inspections of key building elements, this ensures they are not inadvertently overlooked.
Refer to your state legislation to learn more about completing relevant documentation in accordance with BCA requirements

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

Answer

The detailed documents that must be provided are:

Clearly document (in the plans) all calculations of building areas, site areas, site coverage, floor areas, building heights, habitable rooms, windows and secluded private open space on adjoining allotments in order to enable the Authority to determine compliance with their Regulations.

In the case of plans or drawings, maintain all necessary notes, specifications and analysis to enable the Authority to determine compliance with the Act, the Regulations and the BCA. These may include construction of sanitary compartments, smoke alarms or a glazing calculation notes.

Contain full details of any Alternative Solution/s proposed - disclose full procedures and documentation' for further details.

Contain all submissions necessary in support of the exercise of discretionary powers under either National, State or Territory regulations

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

The building certifier's responsibility in relation to examination of details in plans and documents for compliance with building legislation and standards. This makes it clear that the responsible building certifier needs to carefully check the details of the plan against the applicable standards and codes.

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

The following:

- Building regulations
- Fire regulations
- Insurance company requirements
- Local government requirements
- Other regulatory authorities

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

Answer

Term	Explanation
Fire	**Fire** is 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	**Passive fire protection** is an integral component of the three components of structural fire protection and fire safety in a building. Passive fire protection attempts to contain fires or slow the spread, through the use of fire resistant walls, floors and doors.
Active Fire Protection	**Active fire protection** is an integral part of fire protection and is characterised by items and systems which require a certain amount of motion and response in order to work (eg: fire sprinkler system or fire detection devices).

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:

- Portable fire extinguishers
- Fire hydrants/hose reels
- Sprinkler systems
- Smoke detection and alarm systems

Passive Systems:

- Fire isolated stairs and passageways
- Fire resistant materials (walls, roofs, openings)
- Fire doors
- Fire curtains
- Fire rated ceilings
- Fire stop collars (in floor slabs)

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

Answer

Fire load refers to the amount of potential heat that can be liberated during the fire of the combustible contents of a given enclosure. It is expressed as a numerical value represented as kJ/kg (kilojoule per kilogram) or as MJ/kg (megajoules per kilogram).

Fire load density is the fire load of a given enclosure or building divided by floor area. It is expressed as fire load per unit area of floor space (the greater the fire load the more severe the 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)	Volume 2, Part 3.7.4.0 page 275
b)	NASH Standard 'Steel Framed Construction in Bushfire Areas
c)	Fire resistances and stability, Part C1

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

Answer a Fire Safety Schedule specifying the fire safety measure (both current and proposed) that should be implemented

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

Answer **Building certifiers** are responsible for ensuring specific compliance is achieved and they do this by conducting visual inspections. Inspections are the most effective way of confirming that the details of the documentation are reflected in the actual on-site construction.

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

Answer Building certifiers are not responsible for the quality of workmanship within the construction process as this responsibility is that of the builder to the client.

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

Answer Part 3.7 Fire safety