



CPCBC4053

Apply building codes and standards to the construction process for Class 2 to 9 Type C buildings

Assessment 2 of 4

Short Answer Questions

Assessor Guide



Assessment Instructions

Task overview

This assessment task requires you to answer **nine (9)** short answer questions. Read each question carefully before typing your response in the space provided.

Additional resources and supporting documents

To complete this assessment, you will need to access the UP Building and Construction's Intranet (Case Study module: Module 1) – policy documents and procedures:

- UP Building and Construction: Best Practices

Supporting documents:

- Certificate of Conformity

To complete this assessment, you will need to access NCC 2019 Volume One that is explained in the learning and is available upon free registration on [ABCB's website](#).

Assessment Information

Submission

You are entitled to three (3) attempts to complete this assessment satisfactorily. Incomplete assessments will not be marked and will count as one of your three attempts.

All questions must be responded to correctly to be assessed as satisfactory for this assessment.

Answers must be typed into the space provided and submitted electronically via the LMS. Hand-written assessments will not be accepted unless previously arranged with your assessor.

Reasonable adjustment

Students may request a reasonable adjustment for assessment tasks.

Reasonable adjustment usually involves varying:

- the processes for conducting the assessment (e.g. allowing additional time)
- the evidence gathering techniques (e.g. oral rather than written questioning, use of a scribe, modifications to equipment)

However, the evidence collected must allow the student to demonstrate all requirements of the unit.

Refer to the Student Handbook or contact your Trainer for further information.



Please consider the environment before printing this assessment.

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Question 1

Identify the building regulation that applies if you are building a Class 2, 3, 9 building in your state/territory:

Instruction to the assessor:

Sample answer is provided below.

Your state/territory	Student must identify own state/territory where the fictitious project is located, such as NSW, QLD, VIC, ACT, SA, WA, NT, TAS.	
Building regulation	Australian Capital Territory	Building [General] Regulation 2008
	New South Wales	Boarding Houses Regulation 2013
	Northern Territory	Building Regulations 1993
	Queensland	Building Regulation 2006
	South Australia	Supported Residential Facilities Regulations 2009
	Tasmania	Building Regulations 2016
	Victoria	Residential Tenancies [Rooming House Standards] Regulations 2012
	Western Australia	Health [Construction Work] Regulations 1973

Question 2

Access and review the *UP Building and Construction: Best Practices workplace* document, then answer the questions in the table below.

Note: You can find the workplace document on UP Building and Construction's Intranet (Case Study module: Module 1), under 'Policies and Procedures'.

Instruction to the assessor:

This is an example of a competent response:

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Questions	Answers
List the 18 steps you should follow when building a complex designed and wide span building.	<p>Students must follow all 18 steps as per the UP Building and Construction: <i>Best Practices</i> document (the steps are identical for both complex designed and wide span buildings):</p> <p>Step 1: Consult with relevant stakeholders and construction trades Step 2: Survey the site Step 3: Design and plan the building Step 4: Conduct site tests Step 5: Organise engineering certification Step 6: Develop plans and specifications Step 7: Organise building permits and council approvals Step 8: Organise the fabrication of building components Step 9: Undertake site works Step 10: Organise material delivery Step 11: Build foundations Step 12: Lockup Step 13: Install internal structure Step 14: Services rough in Step 15: Internal fit-out Step 16: Fit off Step 17: Conduct compliance checks Step 18: Complete cleaning and handover with client</p>

Question 3

For each building component listed in the table below, made of a specified material, provide **one (1)** characteristic, **one (1)** property, and **one (1)** limitation.

Instruction to the assessor:

Sample answers provided below are examples of a competent answers:

Component	Characteristic [10-35 words]	Property [10-35 words]	Limitation [15-35 words]
Thermal mass and wall insulation	<p>Answers may include:</p> <ul style="list-style-type: none"> Assists in regulating the temperature of your house - or maintaining its 'thermal comfort'. Some materials, such as stone, 	<p>Answers may include:</p> <ul style="list-style-type: none"> Absorbs and stores thermal energy The right kind of wall insulation will not only help to regulate temperature and keep the inside of your house dry but may 	<p>Answers may include:</p> <ul style="list-style-type: none"> Thermal mass often needs to be used in conjunction with insulation and passive heating and cooling for it to work well. The wrong type of insulation can work

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	concrete, earth and brick are all wall-building materials which have a high thermal mass.	even have the added bonus of soundproofing.	against you by blocking heat when you want to retain it and vice-versa. [Source: Thermal mass and wall insulation BUILD]
Concrete roof tiles	<p>Answers may include:</p> <ul style="list-style-type: none"> • Concrete tiles are an alternative to terracotta tiles and are similar in many respects to their terracotta counterparts. • They can be made from a mixture of sand, cement and water, and they can either be painted or have colour mixed through before they are cast into their tile shape for a longer lasting finish. 	<p>Answers may include:</p> <ul style="list-style-type: none"> • Come in a variety of shapes (or profiles) which can be used to create visually appealing patterns. • Concrete tiles have a greater thermal mass, and will therefore store more heat during the day, to be released during the evening. • Concrete tiles also offer excellent insulative properties and do a good job of keeping heat and noise under control. 	<p>Answers may include:</p> <ul style="list-style-type: none"> • Concrete tiles can also be heavy however, meaning the load bearing capacity of the supporting walls and foundations may need to be greater for a concrete tile roof. • Painted finishes may degrade over time. <p>[Source: Concrete roof tiles BUILD]</p>

Question 4

SCENARIO:

A newly built hotel needed to have its second storey elevator lobby renovated, so customers had to take the stairs to get to the second storey of the hotel. On more than one occasion, people with visual impairment have had trouble finding the first step of the stairway, with some even misjudging the first step and falling over. No serious injury has happened yet, but the hotel manager decided something had to be done with the lack of indication of the first step of the stairway. An investigation was made after the third person tripped over the first step, and the investigation revealed that no research on who could possibly use the stairs was done.

Given the information above, complete the table below:

Instruction to the assessor:

Sample answers provided below are examples of a competent answers:

Identify one (1) factor that contributed to the failure of the people with visual impairment to find the stairs of the hotel. (10-15 words)	No tactile ground surface indicator assisting people with visual impairment of approaching a stairway.
Identify which clause from the Building Code of Australia Volume 1 was not properly applied. (1-3 words)	D3.8 Tactile indicators
Briefly explain how the identified clause from the Building Code of Australia Volume 1 was not properly applied. (10-15 words)	There were no tactile ground surface indicators indicating the presence of a stairway.
Identify which Australian Standard was not properly applied. (2-7 words)	AS 1428 – Design for access and mobility
Briefly explain how the identified Australian Standard was not properly applied. (15-20 words)	No measures were taken to ensure that people with visual impairment can identify where stairways are.
Describe the extent of work that needs to be done to rectify the hazard experienced by people with visual impairment. (10-15 words)	Tactile ground surface indicators that indicate the presence of stairways must be installed.

Question 5

SCENARIO:

The handrail of a staircase in a two-storey apartment located in a termite-risk area broke off while a tenant was climbing down the stairs. The handrail was hollow and was infested with termites. Upon further inspection, most of the staircase was constructed from untreated timber, and the project plans made no mention of the fact that the house was made in a termite-risk area.

What are the factors contributing to the degradation of the staircase and what is the extent of work that needs to be done to rectify the termite infestation?

(Approximate word count: 40-50 words)

Instruction to the assessor:

Sample answer is provided below.

[Type your response here]

Contributing factors are the staircase being built on a termite-risk area and being constructed from untreated timber. The extent of the work required is that parts of the apartment constructed with untreated timber must be replaced with those required by the building code of Australia.

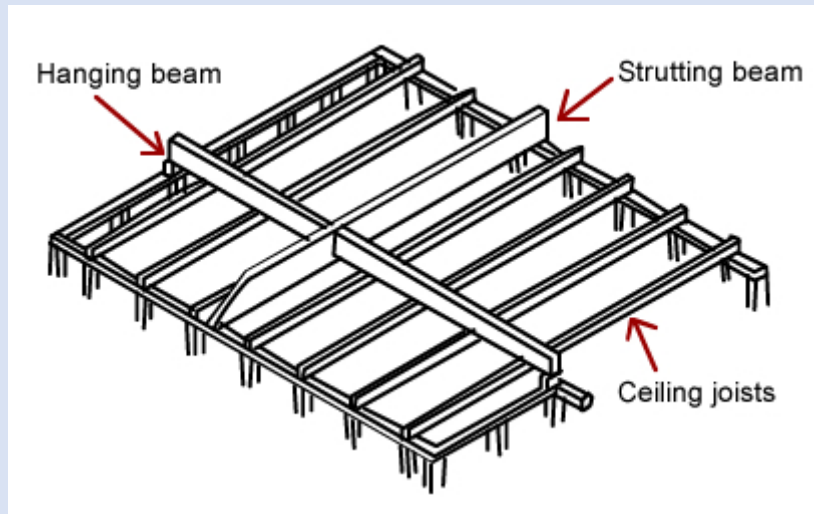
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Question 6

SCENARIO:

A customer is looking to remove a load bearing wall from a house to open up the lounge and kitchen area. They had the idea of installing a beam below the ceiling to support the roof structure and ceiling. However, due to the size of the beam this would reduce the ceiling height and not look as aesthetically pleasing.

You recommend installing the beam in the roof and hang the ceiling plaster batten from the beam which is still supporting the roof structure, as outlined in the picture below:



Ceiling joists and beams, by Build.com.au

In relation to stresses on the beam, provide responses for the following questions:

Instruction to the assessor:

Sample answers provided below are examples of a competent answers:

<p>What type of force is being applied to the hanging beam by hanging the ceiling battens from it? [2-15 words]</p>	<p>Bending force [force upwards at ends of beams and force downwards in the middle]</p>
<p>Describe a minimum of one (1) method that can be used to overcome this force. [20-25 words]</p>	<p>Students must describe 1 method from the list below:</p> <ul style="list-style-type: none"> • Use composite materials to withstand compressive forces on the upper section of beam, and tension force in the lower section. • Change the profile of the beam to reduce the compression and tensile forces [eg, if steel, the use of an I-beam could be considered].

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	<ul style="list-style-type: none"> Use engineered products with greater strength to weight ratios.
What type of force is being applied to a vertical wall stud as it supports the hanging beam? [2-5 words]	Compressive force.
If it was found that the stress on a vertical wall stud was greater than the specification for the stud, what could be done to remedy this situation? [30-35 words]	Stress is force/area, so reduce the force by reducing the mass of what it is supporting or sharing the force over another stud (effectively increasing the area) or using a larger sized stud.
The plaster ceiling is firmly attached to the hanging beam. If the strain in the hanging beam was much larger than expected, what would be an effect of this? [20-25 words]	Strain is the amount an object deforms when stress is applied. If the beam deforms too much, the plaster may crack.

Question 7

In the table below, identify and briefly explain **two (2)** ways of how a building can become more energy efficient, sustainable and environmentally friendly in relation to the use of natural resources.

Instruction to the assessor:

Answers may vary. Sample answers provided below are examples of a competent answers:

Two (2) ways to optimise energy use [50-60 words]	<p>The following are possible answers. Students must identify 2:</p> <ol style="list-style-type: none"> uPVC window frames and double-glazed glass that offer excellent insulation capabilities, making them essential for energy efficiency. Use solar panels to generate electricity that can be either used within the building at the time of generation or stored in batteries for later use, or put back into the grid Use solar energy to heat water, saving on electricity or gas consumption Collecting and using roof water to flush sanitary fixtures, saving the environment by reducing the consumption of clean drinking water
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Question 8

SCENARIO:

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A client you have worked with in the past has asked you to assist in a fire safety inspection of a building she owns. This is a large Class 2, Type B building.

Read the client's comments in points a, b and c below, review the pictures after each comment, taken at the property, then provide advice and supporting evidence from the NCC and Australian Standards in relation to whether the issues raised do or do not meet compliance requirements and steps required to resolve identified issues to ensure fire safety compliance.

a. Painted fire sprinkler

The client made the following comment: 'A previous tenant had painted the ceiling and covered the fire sprinklers in paint around a year ago. Is this acceptable?'



Painted fire sprinkler, by QRFS.com

Is the painted fire sprinkler compliant?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Explain your answer with reference to NCC and Australian Standards. (70-170 words)	<p>This is an example of a competent response. Key points are bolded:</p> <ul style="list-style-type: none"> • The NCC Fire resistance CP2 Performance Requirements stipulate that the spread of fire needs to be avoided through a number of measures. • The building is considered as a Type B, as such the building requires a sprinkler system. The concern now is that the fire sprinkler system may not function as intended, • CV3 (c) (ii) (B) stipulates the sprinkler system must be capable of providing sufficient flow as per the AS 2118.1. • Specifications provided in E1.5a also provides a number of Australian Standards that must be complied with in relation to fire sprinklers. • To ensure this compliance is still in place now the sprinkler heads have been painted, tests would need to be carried out to assess the

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	<p>fire sprinklers would still operate as intended in the event of a fire, however this will be costly.</p> <ul style="list-style-type: none"> • The manufacturer of the sprinkler heads would also need to be consulted to ensure the sprinkler heads, now painted, still meet the requirements specified in AS 2118.1 and other relevant Australian Standards.
Your recommendation (20-25 words)	<p>This is an example of a competent response:</p> <p>My advice would be that the sprinkler heads are changed out to ensure they work as intended in the event of a fire.</p>

b. Out of date fire extinguisher

Client's comment: 'Only one of these fire extinguishers have a testing tag on it. I am not sure whether the others have been tested. I pay to get them serviced, but I am not sure if they should all have a tag on them. What is your recommendation?'



Instruction to the assessor:

Sample answer is provided below.

Are the fire extinguishers compliant?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Explain your answer with reference to NCC and Australian Standards. (50-150 words)	<p>This is an example of a competent response. Key points are bolded:</p>

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	<ul style="list-style-type: none"> • NCC Volume One Part E1.2 specifies that fire extinguishers must be installed to the degree necessary to allow occupants to undertake an initial attack on a fire. Hence these fire extinguishers have been installed in this location as part of the fire safety design when built. • As part of the manufacturers' guidance and AS 2444 provide information in relation to inspections that need to be carried out on this equipment to ensure it is in good working condition. This is achieved by the routine checking and testing of this equipment on a scheduled basis, the date of these inspections and testing is noted on the tags attached to the fire extinguishers • As part of the fire safety inspection of the overall building these tags are checked to ensure they have been tested within the appropriate times, if the tags are missing there is no way to tell when they were last inspected/tested.
<p>Your recommendation (40-55 words)</p>	<p>This is an example of a competent response:</p> <p>My advice would be to ring and speak to the business that is providing the regular inspection service and question them around why there are no tags attached to this equipment and why hasn't this been identified earlier and testing tags replaced. Alternatively, I would recommend organising the testing of the equipment.</p>

c. Penetration through a fire wall

Client's comment: 'Recently there was some work completed by contractors as pictured below. The wall pictured is apparently a fire wall and the penetrations do not meet the required standards. Can you please advise on the actions I should take?'



Instruction to the assessor:

Sample answer is provided below.

<p>Is this fire wall compliant?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Explain your answer with reference to NCC and Australian Standards. [45-145 words]</p>	<p>This is an example of a competent response. Key points are bolded:</p> <p>NCC Volume One CP8 specifies that:</p> <ul style="list-style-type: none"> • Any building element provided to resist the spread of fire must be protected, to the degree necessary, so that an adequate level of performance is maintained: <ul style="list-style-type: none"> ○ A) where openings, construction joints and the like occur; and ○ B) where penetrations occur for building services • C2.7 and C3.15 specifies various other specific requirements around what needs to occur when a fire wall is penetrated. In short, if it has been determined that a wall needs to meet a specific FRL, this FRL needs to be maintained once the penetration has been made. • In this case, not knowing the FRL, the wall is supposed to meet the situation will need further investigation. However, in most cases whenever a wall is penetrated, the installation of a fire collar around the pipe will meet the

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	relevant Performance Requirement. These can be retrofitted onto existing pipes.
Your recommendation (10-15 words)	This is an example of a competent response: I recommend the installation of fire collars on these pipes to resolve the issue.

Question 9

SCENARIO:

You are currently building 15 small, two-bedroom townhouses on a small construction site. There is little room outside of each unit as the units have been designed for retirement living. The construction is considered medium density.

The designer has indicated that they would like to use the external cladding produced by James Hardie Australia PTY Ltd called Axon™ Cladding.

The designer has stated that a Certificate of Conformity is available for the product.

Complete the following compliance report to ensure the installation meets the requirements of the NCC.

Relevant people that may be involved through this process are as follows:

- Builder owner: Jamie Diaz
- Builder: You
- Architect: Alex Brown
- Building Designer: Cameron Cook
- Cladding installer: Sam Dimple

Before commencing the task, it is recommended to review the Certificate of Conformity that is located [here](#).

Instructions to the assessor:

This is an example of a competent response:

Compliance Report	
Scope of project (30-35 words)	The answer is based on the scenario: 15 small two-bedroom townhouses. There is little room outside of each unit as the units have been designed for retirement living. The external cladding planned for installation is called Axon™ Cladding.

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<p>Relevant stakeholders [List five.]</p>	<p>The information is provided in the scenario as follows:</p> <ul style="list-style-type: none"> • Builder owner: Jamie Diaz • Builder: You • Architect: Alex Brown • Building Designer: Cameron Cook • Cladding installer: Sam Dimple
<p>List two [2] applicable Performance Requirements from NCC Volume One</p>	<p>Students must list both Performance Requirements:</p> <ul style="list-style-type: none"> • BP1.1 [b] (i) & (iii) Structural reliability – Permanent and wind actions • FP1.4 Weather proofing – External walls
<p>Is a Performance Solution or Deemed-to-Satisfy Provision used to ensure compliance with the Performance Requirements?</p> <p>According to the Axon Cladding’s Certificate of Conformity, what are the limiting conditions that affect this option? [5-10 words]</p>	<p>This is an example of a competent answer:</p> <p>Deemed-to-Satisfy Provision</p> <p>There are 2 limiting conditions, such as:</p> <ol style="list-style-type: none"> 1. Axon TM Cladding must nly be installed in accordance with the “Axon TH Cladding installation guide, August 2021” 2. To satisfy FP1.4 & P2.2.2 via verification requires the site specific evaluation of the relevant design against FV1.1 and/or V2.2.1 to the satisfaction of the appropriate authority as defined by the NCC: <ul style="list-style-type: none"> [a](i) has a risk score of 20 or less, when the sum of all risk factor scores are determined in accordance with the Table FV1.1/V2.2.1a; and [a](ii) is not subject to an ultimate limit state wind pressure or more then 2.5kpa; and [a](iii) includes only windows that comply with AS 2047
<p>From the information provided in the Certificate of Conformity for Axon Cladding, in relation to the installation of this product, is there anything to suggest that Limitation One could not be achieved?</p>	<p>Not from the information provided.</p>

To ensure Limitation One could be achieved, who would you recommend speaking with to ascertain the building specific installation requirements? List a minimum of two [2] .	<p>Students must list 2 from the following:</p> <ul style="list-style-type: none"> • Speak to the installers onsite • Speak to the building designer • Speak to the building architect • Speak to the manufacturer as required
Date and signature	Student to insert date and signature.

Assessment checklist

Students must have completed all questions within this assessment before submitting. This includes:

9 short answer questions to be completed in the spaces provided	<input type="checkbox"/>
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Congratulations, you have reached the end of Assessment 2!

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