**CPCCBC4001A Apply building codes and standards to the construction process for low rise building projects**

**Knowledge Based Assessment**

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| **BCA Volume 2** | | **Achieved/Not achieved** |
| **1** | BCA Introduction and General requirements |  |
| **2** | BCA Performance Provisions |  |
| **3** | Acceptable construction |  |

**Instructions to student** Time allowed: **90 minutes**.

* All questions must be attempted.
* You must achieve a satisfactory performance in all parts of the assessment
* If you do not demonstrate satisfactory performance you will be required to provide further evidence. This could be in the form of another knowledge based assessment, interview or other method deemed appropriate by your assessor.
* Open book assessment – You may use the BCA during the assessment
* Write answers in black or blue ink

**Candidate’s Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Date**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assessor Feedback:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**1. BCA - Introduction and General Requirements.**

**1.** Briefly explain how the BCA is given its legal effect in WA.

***The BCA is given its legal effect in any state through adoption under State legislation. In WA, the Building regulations 1989.***

**2.** The BCA requirements are in a performance format to provide flexibility.

In your own words explain what this flexibility refers to.

***The BCA requires compliance with the Performance Requirements and allows flexibility to designers by complying with the Acceptable construction solutions or formulating an Alternative Solution.***

**3**. A building solution will comply with the BCA if it satisfies the -

***The Performance Requirements***

**4.** The “Deemed to Satisfy” provisions can be found in Parts  ***3.1***  to  ***3.12***  in volume two of the BCA.

**5.** Explain the difference between “Deemed to Satisfy” and an Alternative Solution?

***A deemed-to-satisfy solution is a prescriptive solution that is contained in the BCA and is deemed to comply with the Performance Requirements.***

***An Alternative Solution is a solution other than a DTS that can be assessed using an assessment in the BCA.***

**6.** Classification of buildings and structures are found in Section 1 of the BCA. How is the classification of a building determined?

***By the purpose for which it is designed, constructed or adapted to be used.***

**7.** A Building Solution can be assessed in different ways. Explain a method of determining that a building solution complies with the Performance Requirements.

***BCA 1.0.9 Assessment Methods (either one can be used)***

***Evidence of compliance with the Performance Requirements***

***Verification method***

***Comparison with the DTS provisions***

***Expert Judgement***

**2. BCA - Performance Requirements**

**8.** Describe the Objective for providing light within a building.

***BCA Part 2.4 o2.4.4 Light***

***To safeguard occupants from injury, illness or loss of amenity due to-***

***Isolation from natural light, and***

***Lack of adequate artificial light***

**9.** State the Functional Statement for smoke alarms.

***F2.3.2 Fire detection and early warning***

***A Class 1 building is to be provided with safeguards so that occupants are warned of a fire in the building so that they may safely evacuate.***

**10.** State the number and title of the Performance Requirement that would be applicable for a footing on a Class A site and list at least 4 actions that should be considered.

***P2.1 Structural stability and resistance to actions***

***(Note: there are approx 10 from 15 to choose from)***

1. ***Permanent actions or dead loads***
2. ***Imposed loads or live loads***
3. ***Ground movement – swelling, shrinking, subsidence etc***
4. ***Ground water action***

**3. Acceptable construction**

**11.**  The Acceptable construction practice in the BCA for unreinforced masonry can only be used for buildings, provided-

***BCA 3.3.1.1 Application***

1. ***It is constructed on footings that comply with Part 3.2***
2. ***It is located in an area with a design wind speed of not more than N3***
3. ***Masonry accessories are installed in accordance with Part 3.3.3***

**12.** Name two acceptable construction practices for the maximum heights of a double brick external wall?

***BCA 3.3.1.2 External walls (3 main choices)***

1. ***The height of the wall must not be more than 3 meters between lateral supports***
2. ***Cross walls must be installed not more than 9 meter centres.***
3. ***Each leaf of brickwork must be not less than 90mm thick.***

**13.** Masonry wall ties must be protected against corrosion. What level of protection would be suitable for a building located within 50m of the foreshore of the Swan River in Nedlands?

***BCA Table 3.3.3.1 Corrosion protection for wall ties***

***Areas less than 100m from salt water not subject to breaking surf***

***Either, Grade 316 or 316l stainless steel, or***

***Engineered polymer***

**14.** The BCA provides an acceptable construction practice for roof tie downs. When can this method be used.

***BCA 3.3.3.3 Fixing straps and tie downs***

***In areas with a design wind speed of N1 or N2 with a building width of not more than 10m in the direction of roof span***

**15.** The BCA requires some building elements to be *fire-resisting.* Briefly explain why the term *fire-resisting* is in italics and what the term means.

***It is in italics because it is a defined term in the BCA.***

***BCA Part 1.1 Interpretation***

***It means a structural member or other part of the building having the FRL required for that member or part.***

**16.** In a building, external walls and any openings must comply with the fire separation requirements when constructed close to allotment boundaries. On the diagram below, highlight the following:-

1. Which walls or parts of walls are required to be *fire-resisting.*

***Any part of a wall within 900mm from the boundary.***

**b**. What level should the fire resistance be? ***60/60/60***

**c**. What is the requirement for the laundry door?

***Self closing solid core door not less than 35mm thick because it is closer than 900mm (BCA 3.7.1.5(b))***

***Either of these walls can be made fire resisting***

750

shed

750

L’ndry door

500

Pergola

Alfesco

dinning

***900mm***

Road

**17.** The BCA allowscertain encroachments between the building and the allotment boundary. List at least 4 allowable encroachments and if required, the minimum allowed distance from the allotment boundary.

***3.7.1.7 Allowable encroachments***

1. ***Eves with non combustible linings and roof covering up to 450mm***
2. ***Pergolas, sunshades, water tanks etc***
3. ***Un-roofed terraces, decks, landings, stairs etc***
4. ***Light fittings, electricity or gas meters, aerials or antennas***

**18.** Smoke alarms must comply with what standard? ***AS 3786 (BCA 3.7.2.2)***

**19.** An alternative smoke alarm system must comply with -

1. ***Performance Requirement P2.3.2***
2. ***The relevant Performance Requirements determined in accordance with 1.0.10***

**20.** Draw a sectional drawing of a typical stepped down shower recess for an enclosed shower. Include all dimensions and locations of waterproofing.

***Figure 3.8.1.10 Typical stepped down shower construction***

***There are four details that can be chosen from for this answer***

**21.** Natural light must be provided to all habitable rooms in Class 1 buildings. How must this be provided?

***3.8.4.2 Natural lighting***

***Must be provided through windows with an aggregate light transmitting area of 10% of the floor area of the room and must be open to the sky or court or other space that is open to the sky.***

**22.** Separating walls between Class 1 buildings are required to be insulated from sound. What are the sound insulation requirements for a wall that separates two kitchens in different Class 1 buildings?

***Table 3.8.6.1***

***Achieve a weighted sound reduction index (Rw = Ctr) of 50 and be installed in accordance with the requirements of 3.8.6.3.***

**23.** The BCA requires metal roof assemblies and their connections to be testing in cyclonic areas. Briefly describe the requirements of this test.

***3.10.1.0 (f) and Table 3.10.1***

***Must be capable of withstanding the pressure sequences A to G as defined in Table 3.10.1.***

**24.** List two (2) Acceptable construction manuals for high wind areas that are reference by the BCA

1. ***AS 1684.2 and 1684.3 Residential Timber framing Code***
2. ***AS 4100 Steel framing, AS4600 Cold from steel structures, NASH Residential low rise steel framing.***

**25.** Briefly explain the meaning of terrain category when applied to wind loadings.

***Terrain category is the categories listed in AS 1170 which is given to a site depending on the surrounding terrain. There are 4 Categories example, Cat 1 = open terrain, Cat 2 = Grasslands, Cat 3 = 3-5m high obstructions, Cat 4 = 10-30m high obstructions.***