



## Hyne Design 7 Advanced Level Access Competency Assessment

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### Question 1

When would you select to use “General Structural Timber Design” as the design platform (Refer Project Data screen)?

#### Answer 1

- A. The project is not a Class 1 or Class 10 building as defined by the Building Code of Australia and is not generally within the bounds of AS1684 Residential Timber-Framed Construction.
- B. The project is a Class 1 or a Class 10 building as defined by the Building Code of Australia.
- C. Generalised Design of traditionally evolved timber framing system for house construction is required.

### Question 2

How are design settings for moist or high temperature environments adjusted?

#### Answer 2

- A. Click Humidity & Temperature under the tools menu to adjust the moisture content and the j2 factor for high moisture environments.
- B. Click Humidity & Temperature under the tools menu to adjust the moisture content and the j2 factor for timber which has had surface wetting and dried out.
- C. Click Humidity & Temperature under the tools menu to adjust the moisture content and the j2 factor for better design outcomes.

### Question 3

Which span dimension is generally the basis of AS1684 tables?

#### Answer 3

- A. Distance between centrelines of support
- B. Distance inside to inside of supports
- C. None of the above

### Question 4

When should “Cat 2 Primary Structural Element” be selected for design of members?

#### Answer 4

- A. Primary structural members in structures other than houses or elements in houses for which failure would be unlikely to affect an area greater than 25m<sup>2</sup>.
- B. Primary structural members in structures other than houses or elements in houses for which failure would be likely to affect an area greater than 25m<sup>2</sup>.
- C. When strength does not control the design outcome.



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### Question 5

What is the relevance of the “Wind loads” settings on the “PROJECT DATA” screen?

#### Answer 5

- A. The “N” and “C” categories listed are simply listed on the report to tell the building certifier what region the structure is to be built. They are not used in design at all.
- B. One of the wind load categories must be selected for the member to design. The selected wind category is irrelevant to design.
- C. Selection of the correct wind load category is essential for application of appropriate wind loads and obtaining accurate member design solutions.

### Question 6

In the case of a “Roof Beam” member design, when should the “Continuous Rafters Over” option be ticked and what will result from this action?

#### Answer 6

- A. “Continuous Rafters Over” should be ticked when there is more than one rafter supported on the roof beam. This will result in the rafter load being applied to the full length of the roof beam.
- B. “Continuous Rafters Over” should be ticked when the rafters above span continuously across the roof beam, ie. they are not cut or otherwise joined over the support. This will not affect the design loads or result, but will transfer the information to the report.
- C. “Continuous Rafters Over” should be ticked when the rafters above span continuously across the roof beam, ie. they are not cut or otherwise joined over the support. This will have the effect of increasing the Roof Load Width by a factor of 1.25.

### Question 7

A dynamic vibration check should normally be included in the design of which one of the following member applications?

#### Answer 7

- A. Hip rafter.
- B. Floor joist.
- C. Wall common stud.



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### Question 8

What is the Characteristic bending strength value (Bending Stress,  $f'_b$ ) for Hyne Beam 17 as reported in the Engineering Properties library of HD7 (Hint go to the “Product Control” screen) ?

### Answer 8

- A. 4.2 MPa.
- B. 33 MPa.
- C. 40 MPa.

### Data for Questions 9 – 11

Design a floor joist using Hyne I-Beam to the following criteria:

Basis for design: Residential Design only to AS1684

Two spans, span 1 = 6000mm, span 2 = 6000mm (Inside to inside supports)

Supported on 70mm wall frames

Use standard default domestic loading and deflection criteria

Floor = particleboard (30)

Lining = 10mm Plasterboard (12)

Bottom edge restraint = ceiling lining direct

Floor live load = General (1.5 kPa, 1.8 kN)

Floor joist spacing = 450mm

Floor dynamics: Select AS1684 Dynamics Check

Member Importance = CAT 1

### Question 9

What is the most economical Hyne I-Beam section product designed for this application?

### Answer 9

- A. Hyne I-Beam HI20070.
- B. Hyne I-Beam HI30070.
- C. Hyne I-Beam HI36090.

### Question 10

For the Hyne I-Beam design above, what is the critical design characteristic, load combination and Stress Ratio according to the design analysis report?

### Answer 10

- A. Moment (N.m) under load combination 1.2G+1.5Qf with stress ratio = 88 %.
- B. Deflection (mm) under load combination 1.2G+1.5Qf with stress ratio = 88 %.
- C. Deflection (mm) under load combination Qf on M2 Only with stress ratio = 100 %.



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### Question 11

For the Hyne I-Beam designed above, what is the maximum Support Reaction for 1.2G+1.5Qf strength load combinations and the Support Number at which it occurs, according to the Engineering Report?

#### Answer 11

- A. Vertical reaction 9.7 kN at support number 2.
- B. Vertical reaction 9.7 kN at support number 1.
- C. Vertical reaction 2.9 kN at support number 1.

### Question 12

Note the following statement and select the most correct response below:

The hole calculator applies to I-Beams only. Holes cannot be located directly over support and shall have to have a distance greater than 1.5 x depth of the joist. No holes are allowed in the cantilever section (except 40mm diameter). The web clearance has to be a minimum of 3mm of uncut web between the flanges, no cutting of flanges permitted. Minimum clear distance between holes shall be 2 times the largest hole dimension. Square or rectangular web holes should be centred at the I-Beam mid-height where possible. Holes shall be installed in accordance with the Hyne Pryda Installation Guide. Overcutting of holes shall not be permitted.

#### Answer 12

- A. All the above is correct.
- B. Some of the above is correct.
- C. None of the above is correct.

### Question 13

What is the deflection under dead load for the smallest allowable size LVL for a Deck Joist at 450mm centres and spanning 3900mm to centreline with the following loads?

PR Decking (25)

Self Weight

No Ceiling Lining

Balcony (3.0), [1.5], 1.8 live loads

#### Answer 13

- A. 10.8mm for 200 x 45 Hyne LVL
- B. 12.7mm for 245 x 45 Hyne LVL
- C. 3.3mm for 300 x 45 Hyne LVL



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### Question 14

What is the size and deflection under dead load for the smallest Straight Hyne Beam 17 bearer to support the above Deck Joist? The Bearer will span 4000mm / 3000mm continuous to centreline and will be above ground and exposed to the weather.

### Answer 14

- A. 230x65 Hyne Beam 17S at 9.3mm deflection
- B. 230x65 Hyne Beam 17S at 7.0mm deflection
- C. 230x65 Hyne Beam 17S at 3.7mm Deflection

I the undersigned confirmed that the responses given in the Hyne Design 7 – Advanced Level Access Assessment is my own work and not a collaboration with others.

**Name:**

**Company:**

**Position:**

**Signed:**

**Date:**

**For Hyne & Son Pty Ltd:**

**Date:**

Please attach this pdf and email to:

**info@hyne.com.au**

Hyne will then issue a certificate of competency based on successful completion of this assessment.