



Skill India
कौशल भारत - कुशल भारत



N.S.D.C.
National
Skill Development
Corporation

Transforming the skill landscape

Sample Test Project

Regional Skill Competitions – Level 3

Skill 26 - Carpentry

Category: Construction and Building Technology

Table of Contents

A. Preface	3
B. Test Project	4
C. Marking Scheme.....	7
D. Infrastructure List	14
E. Instructions for candidates.....	17
F. Health, Safety, and Environment	18

SAMPLE

Section - A

A. Preface

Skill Explained:

Carpentry includes the production and Installation of structure framing. The Carpenter can read and interpret drawings, carry out the set out, measure, cut form joints, assemble, install and finish the assigned job to meeting the desired standards by working on the issued guidelines.

The artefact is named as Carpenter. It includes face, case and frame. The frame has a small structure showing wall, both wall connected from corner and with 2 hip roof. Description of skill Carpentry covers the setting out and construction of wooden roof structures and other wooden structures of conventional and modern design.

Eligibility Criteria (for IndiaSkills 2018 and WorldSkills 2019):

Competitors born on or after 01 Jan 1997 are eligible to attend the Competition.

Total Duration: 6 Hrs

Section - B

B. Test Project

The Carpentry project is a small format garden Gazebo. It has four modules: floor, uprights and framing, roof and a dormer with complex rafters. The proposal is also viable / usable without the dormer module.

The Balustrade in Module B.2 may also be provided as a finished component so that the competitors have to cut the ends of the top and bottom rails to the drawing specifications. Other finished components can be added following the competition to satisfy the requirements of the eventual owners of the Gazebo (e.g. shingle tiles (or a similar product) on the roof or a gate at one or both openings).

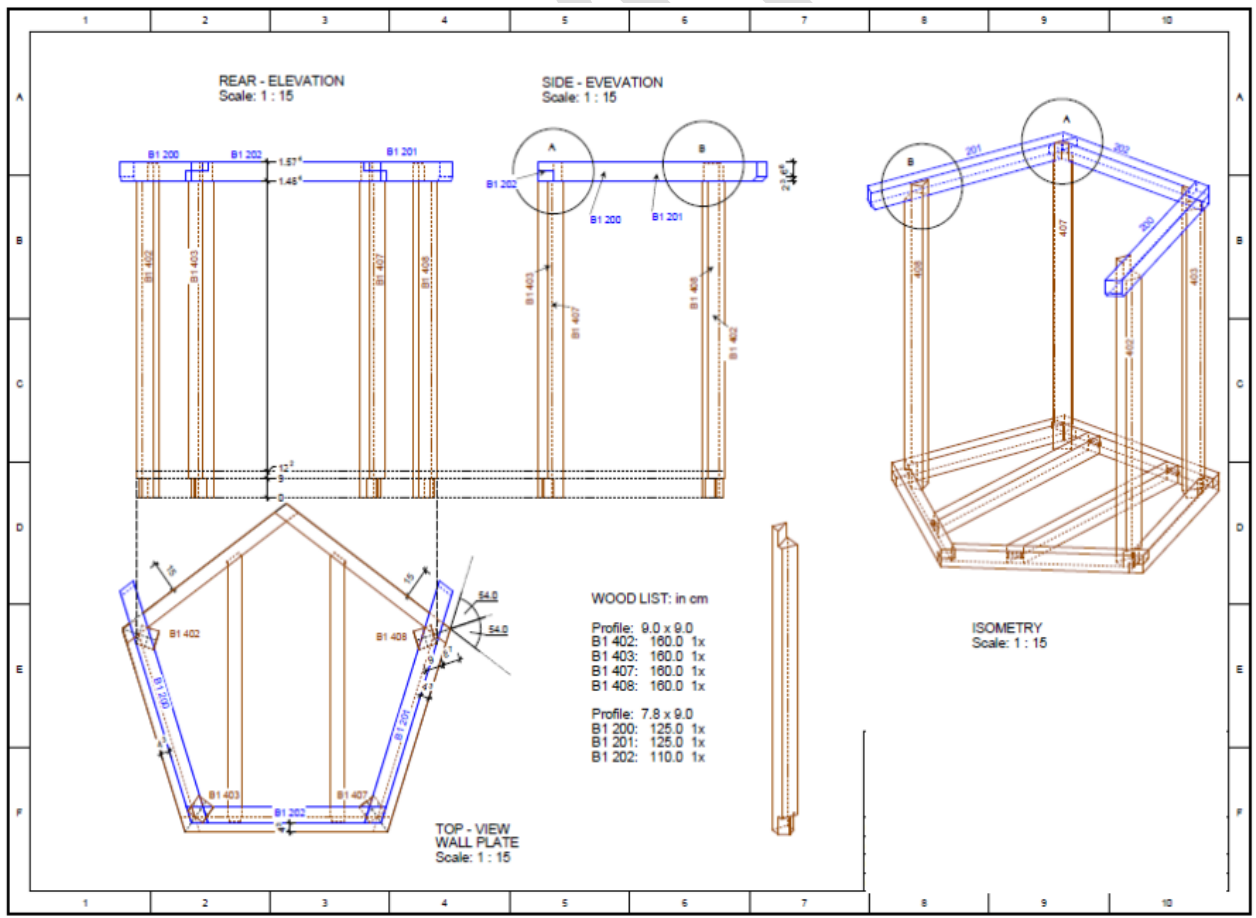
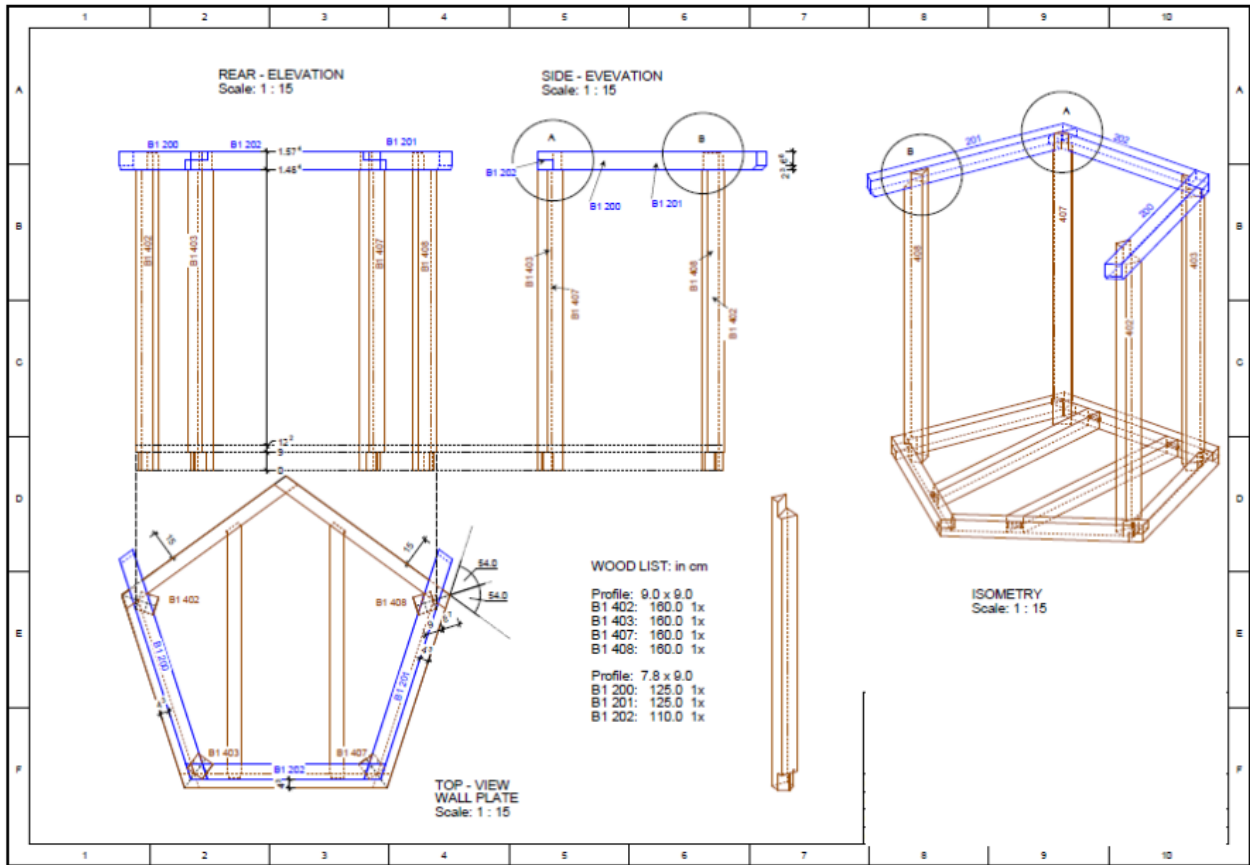
This proposal was arrived at by reference to the Technical Description and design considerations including; aesthetic, in-use, reusability etc. The level of difficulty in each module can be adjusted to establish an agreed WorldSkills standard. This project is intended as a child's play structure and requires smaller sections of material than for a full scale adult sized structure. Material profiles have been simplified as far as possible.

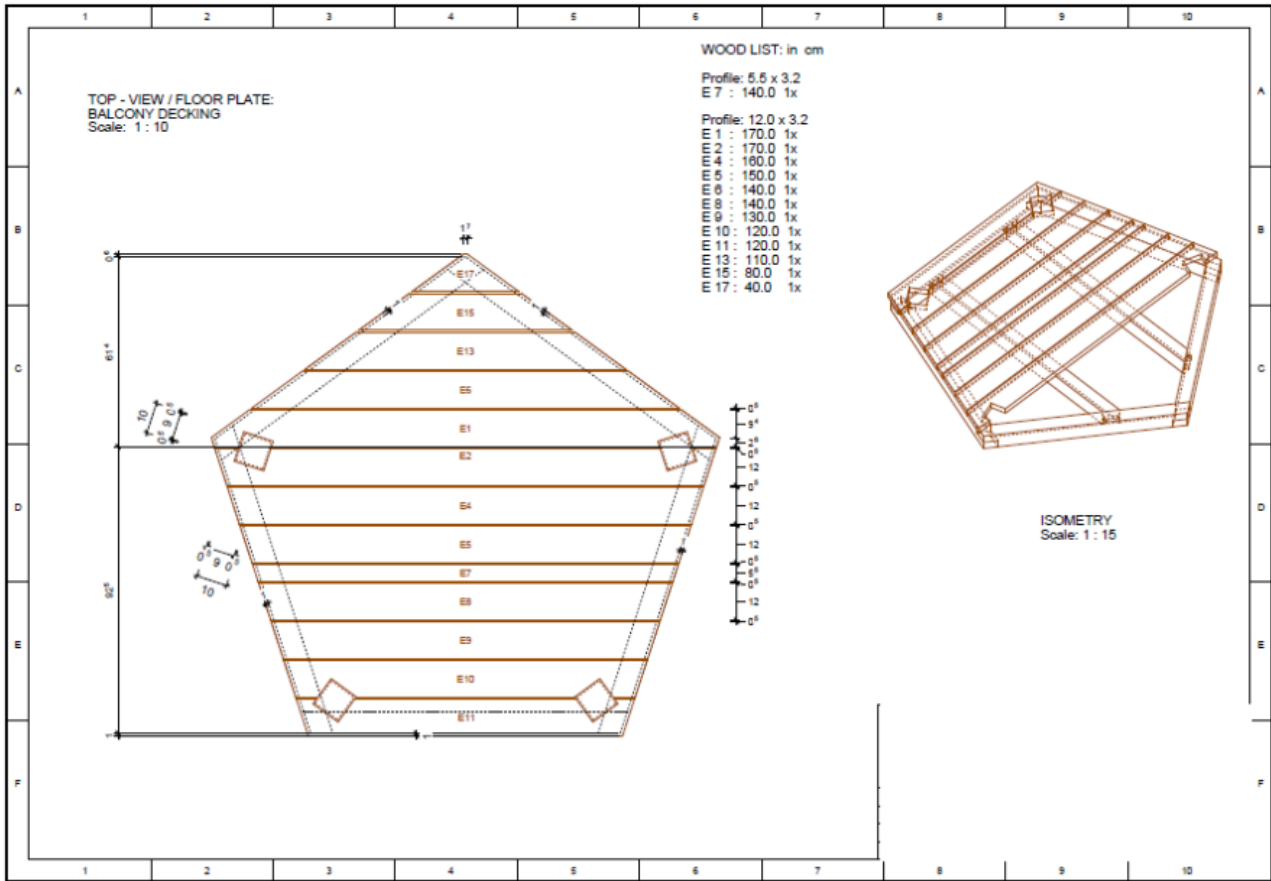
From a practical point of view, it would not be possible to alter the material sections as part of the 30% changes. Changes to the individual modules should be the goal when modifying the proposal at the competition (with all experts being present and within the limits of the available materials).

DESCRIPTION OF PROJECT AND TASKS

The proposal consists of four modules:

1. **Floor:** This is framed and finished with a plywood floor (Other materials such as decking may be more appropriate for this component).
2. **Uprights and framing:** This has four vertical posts which carry two wall-plates for supporting the roof. The joints between the posts and wall-plates are braced for stability. There are also frames sidings on two sides of the hexagonal layout and between the posts. These sidings form a balustrade.
3. **Roof:** This is sloping and is hexagonal in plan.
4. **Dormer:** This is of standard outline. It also contains complex rafters which test the competency of the candidates at a very high level. The dormer is usable without these complex rafters as they can be substituted with a standard rafter layout.





Section – C

C. Marking Scheme

The Assessment is done by awarding points by adopting two methods, Measurement and Judgments Measurement –One which is measurable, is used to assess accuracy, precision, and other performance which can be measured in a robust way. It is used where there should be no ambiguity.

Judgments-Based on Industry expectations is used to assess the quality of performance, for which there may be small differences of view when applying the external benchmarks.

Measurement is used to assess accuracy, precision, and other performance which can be measured in unambiguous way. Mark is awarded in full for a dimension with in tolerance and zero when it is out of tolerance.

Judgment is used to assess the quality of performance, about which there may be small differences of opinion

The scores from 0 to 3 are awarded for conformity with industry standards (score 1 stands for 1/3 and score 2 for 2/3 of the maximum mark allotted for the criterion).

- 0: performance below industry standard to any extent, including a non-attempt
- 1: performance meets industry standard
- 2: performance meets industry standard and surpasses that standard to some extent
- 3: excellent or outstanding performance relative to industry's expectations

Example-Judgment Marking

If maximum marks for Judgment criteria is 1 and if all 3 Experts (Juries) give 3 points to a candidate, the candidate will get 1 mark for that aspect. If 2 Experts give 3 and 1 Expert gives 2 points, then candidate will get $(2+2+1/9)*1 = 0.55$ marks for that aspect (out of 1).

Aspects are criteria's which are judged for assessment

Marking Scheme

Section	Criterion	Marks		
		Subjective (if applicable)	Objective	Total
A	Interior joints	10	0	10
B	Dimensions	0	50	50
C	Exterior joints	0	25	25
D	Neatness of finish, cleanness	10	0	10
E	Deductions	0	5	5
Total:		20	80	100

	Skill name	
	Carpentry	
	Criteria	Mark
A	Interior Joints	10.00
B	Dimensions	50.00
C	Exterior Joints	25.00
D	Neatness of finish, cleanness	10.00
E	Deductions	5.00

Total Marks: 100

Criterion - A

Aspect Type O = Obj S = Sub	Aspect - Description	For Objective Assessment Only		Max Mark
		Requirement or Nominal Size	Add - (Extra Aspect Information)	
S	Form joints using saw only, Cut accurately to lines		Form joints neatly, Produce clean, accurate cuts. Avoid re-cutting or touching up.	1.50
S	Form joints using saw only, Cut accurately to lines		Form joints neatly, Produce clean, accurate cuts. Avoid re-cutting or touching up.	1.50
S	Form joints using saw only, Cut accurately to lines		Form joints neatly, Produce clean, accurate cuts. Avoid re-cutting or touching up.	4.50
S	Form joints using saw only, Cut accurately to lines		Form joints neatly, Produce clean, accurate cuts. Avoid re-cutting or touching up.	2.50

Criterion – B

Aspect Type O = Obj S = Sub	Aspect - Description	For Objective Assessment Only		Max Mark
		Requirement or Nominal Size	Add - (Extra Aspect Information)	
O	Length of side 1 (right upper side on the drawing)	1000		3.00
O	Diagonal 1 (perpendicular to mirror axis)	1618		3.00
O	Diagonal 2 (in the mirror axis)	1539		5.00
O	Distance of A16 and A18 (under side on the drawing)	441		3.00
O	Length of A16 (right side on the drawing)	1226.5		3.00
O	Length of B1 202 wall plate	937.5		3.00
O	Length of B1 201 wall plate	1140.5		3.00
O	Distance 408 post and end of wallplate	229.5		5.00
O	Height from top of A12 to top of 201	1484		3.00
O	Height from top of A3 to top of 200	1484		3.00
O	5mm gaps between boards (worst gap)	5		3.00
O	10mm overhang (wrongest one in every corner)	10		3.00
O	Length of board (under side of the drawing)	1014.5		4.00
O	Summarised width of boarding (left under side)	1014.5		3.00
O	Summarised width of boarding (mirror axis)	1555		3.00

Criterion - C

Aspect Type O = Obj S = Sub	Aspect - Description	For Objective Assessment Only		Max Mark
		Requirement or Nominal Size	Add - (Extra Aspect Information)	
O	Corner joint C1.1		For the above and all following aspects of marking these rules apply:	5.00
			If gaps are:-, Less than < 0.5 =10 points (Full Marks)	
			If gaps are between >0.5 and <1.0 = 8 points (0.4 Marks)	
			If gaps are between >1.0 and <1.5 = 6 points (0.3 Marks)	
			If gaps are between >1.5 and <2.0 = 5 points (0.25 Marks)	
			If gaps are between >2.0 and <2.5 = 4 points (0.20 Marks)	
			If gaps are between >2.5 and <3.0 = 3 points (0.15 Marks)	
			If gaps are between >3.0 = 2 points (0.10 Marks)	
O	Corner joint C1.3			5.00
O	Corner joint C1.2			3.00
O	Joist bottom C1.6			3.00
O	Joist top C1.7			3.00
O	Bottom of post C2.1		For the above and all following aspects of marking these rules apply:	3.00
			If gaps are:-, Less than < 0.5 =10 points (Full Marks)	
			If gaps are between >0.5 and <1.0 = 8 points (0.4 Marks)	
			If gaps are between >1.0 and <1.5 = 6 points (0.3 Marks)	
			If gaps are between >1.5 and <2.0 = 5 points (0.25 Marks)	
			If gaps are between >2.0 and <2.5 = 4 points (0.20 Marks)	
			If gaps are between >2.5 and <3.0 = 3 points (0.15 Marks)	
			If gaps are between >3.0 = 2 points (0.10 Marks)	
O	Decking		For the above and all following aspects of marking these rules apply:	3.00
			If gaps are:-, Less than < 0.5 =10 points (Full Marks)	
			If gaps are between >0.5 and <1.0 = 8 points (0.4 Marks)	

			If gaps are between >1.0 and <1.5 = 6 points (0.3 Marks)	
			If gaps are between >1.5 and <2.0 = 5 points (0.25 Marks)	
			If gaps are between >2.0 and <2.5 = 4 points (0.20 Marks)	
			If gaps are between >2.5 and <3.0 = 3 points (0.15 Marks)	
			If gaps are between >3.0 = 2 points (0.10 Marks)	

Criterion -D

Aspect Type O = Obj S = Sub	Aspect - Description	For Objective Assessment Only		Max Mark
		Requirement or Nominal Size	Add - (Extra Aspect Information)	
S	Group 1		Overall appearance, cleanness and flat surfaces, all modules marked together by 3 groups of 5	3.33
S	Group 2			3.33
S	Group3			3.34

Criterion - E

Aspect Type O = Obj S = Sub	Aspect - Description	For Objective Assessment Only		Max Mark
		Requirement or Nominal Size	Add - (Extra Aspect Information)	
O	Replacing or re-cutting pieces due to error	0	Replacement of new piece of timber - Deduction of 2.5 Marks	5.00
			Replacement of second piece of timber - Deduction of another 2.5 Marks	
			No more than 2 pieces to be replaced	
			Recutting a piece - Deduct 1.25 Marks	
			Not more than 4 Recuts are allowed and for each deduct 1.25 Marks	
			Thus 2 recuts + 1 New piece of timber = (2 x 1.25) + (1 x 2.5) = a deduction of 5 Marks	

Subjective marking

Scores are awarded on a scale of 1 to 10

Skill assessment specification

The skill assessment criteria are clear, concise aspect specifications which explain exactly how and why a particular mark is awarded.

A - Interior joints

Form cuts using saw only Cut accurately to lines

Form joints neatly Produce clean, accurate cuts Avoid re-cutting or touching up with plane or chisel

B – Dimensions

Cut and assemble members to a high degree of accuracy.

C - Exterior joints

Form joints with no gaps

D - Neatness of finish, cleanness and general impression

Flat faces, tight joints, no missing pieces neat fixings, minimum pencil marks and stains

E - Deductions

Complete the project using only the material provided

Skill assessment procedures

The Chief Expert divides the Experts into marking teams taking into consideration WorldSkills experience, language and culture.

All Experts assess a similar percentage of the overall marks.
Each Expert marking team is allocated an aspect or aspects of the project to assess for all Competitors.

A – Interior joints

The Experts assess accuracy of cuts to lines and cleanness of joints and cuts.

B - Dimensions

The Experts will decide which dimensions will be measured. Dimensions are measured by two groups of three Experts, one primary group and one control group.

+/- 0 – 1 mm	10 points
+/- 1.1 – 2 mm	9 points
+/- 2.1 – 3 mm	8 points
+/- 3.1 – 4 mm	7 points
+/- 4.1 – 5 mm	6 points
+/- 5.1 – 6 mm	5 points
+/- 6.1 – 7 mm	4 points
+/- 7.1 – 8 mm	3 points
+/- 8.1 – 9 mm	2 points
+/- 9.1 – 10 mm	1 points

C - Exterior joints

Experts decide which groups of joints to assess and identify on drawing. The biggest gap in each cluster of joints is measured.

Less than < 0.5	10 points
Less than < 1.0	8 points
Less than < 1.5	6 points
Less than < 2.0	5 points
Less than < 2.5	4 points
Less than < 3.0	3 points
More than > 3.5	2 points

D – Neatness of finish, cleanness and general impression

All Experts judge the overall finished project on a scale of 1-10 for neatness of finish, cleanness and general impression.

E - Deductions

Up to their deduction credit, Competitors may request permission to re-cut (maximum 4 re-cuts)
A new piece of wood (maximum 2 pieces)

This is to be recorded by the signature of at least two experts. The following deductions apply:

Recuts - 1.25 point

New pieces - 2.50 points

SAMPLE

Section - D

D. Infrastructure List

1. Firmer chisel
2. Mortise chisel
3. Hand saw
4. Try square
5. Bevel square
6. Mortise gauge
7. Mallet
8. Nails
9. Glue

Material list

Please note:

To all pieces of wood 5 cm have been added in length. Then all measures have been rounded up to the next full 10 cm.

WOOD LIST:

MODULE :A

	Item	Width	Thickness	Length	Quantity	Description	Notes
in cm	A 3 :	6,8	9,0	110,0	1	European Redwood	
	A 12 :	6,8	9,0	110,0	1	Pinewood	
	A 14 :	6,8	9,0	110,0	1		
	A 16 :	6,8	9,0	130,0	1		
	A 18 :	6,8	9,0	130,0	1		
	A 19 :	6,8	9,0	110,0	1		
	A 20 :	6,8	9,0	110,0	1		

MODULE :B

	Item	Width	Thickness	Length	Quantity	Description	Notes
in cm	B1 402:	9,0	9,0	160,0	1	European Redwood	
	B1 403:	9,0	9,0	160,0	1	Pinewood	
	B1 407:	9,0	9,0	160,0	1		
	B1 408:	9,0	9,0	160,0	1		
	B1 200:	7,8	9,0	125,0	1		
	B1 201:	7,8	9,0	125,0	1		
	B1 202:	7,8	9,0	110,0	1		

MODULE: C

	Item	Width	Thickness	Length	Quantity		Description	Notes
in cm	E 7 :	5,5	3,2	140,0	1		European Redwood	
							Pinewood	
	E 1 :	12,0	3,2	170,0	1			
	E 2 :	12,0	3,2	170,0	1			
	E 4 :	12,0	3,2	160,0	1			
	E 5 :	12,0	3,2	150,0	1			
	E 6 :	12,0	3,2	140,0	1			
	E 8 :	12,0	3,2	140,0	1			
	E 9 :	12,0	3,2	130,0	1			
	E 10 :	12,0	3,2	120,0	1			
	E 11 :	12,0	3,2	120,0	1			
	E 13 :	12,0	3,2	110,0	1			
	E 15 :	12,0	3,2	80,0	1			
	E 17 :	12,0	3,2	40,0	1			

Central connection

SPAX Exterior Screws



Coach Screws



MODULE: A	number required	screw / bolt / size	length / mm	description	purpose
	20	4,0	80	Spax / Torx	frame corners
	8	5,0	180	woodscrew	beam connection
MODULE: B	number required	screw / bolt / size	length / mm	description	purpose
	16	5,0	140	woodscrew	connection below
	4	5,0	180	woodscrew	connection above
	16	4,0	120	woodscrew	connection above
MODULE: B.2	number required	screw / bolt / size	length / mm	description	purpose
	42	4,0	70	Spax / Torx	baluster
	9	4,0	70	Spax / Torx	covering shelf
	18	4,0	70	Spax / Torx	supports

	12	4,0	70	Spax / Torx	double tie
MODULE: E	number required	screw / bolt / size	length / mm	description	purpose
	100	3,5	70	Spax / Torx	flooring

SAMPLE

Section – E

E. Instructions for candidates

A period of **one hour** will be allowed at the beginning of the competition to inspect the drawing and have any queries discussed.

General Instructions to Candidates

1. Modules A & B: Draw on the board provided as necessary only.
2. Modules C & D: The development of rafters in modules C & D should be made on the board.
3. Draw, mark out and process each module in sequence. When module one is completed, work may commence on module two, and so on.
4. When each module has the complete “**marking onto timber**” (before processing\cutting), **submit for marking**.
5. **Before assembly** (after all cuts are made) of each module, **submit for marking**.
6. Assemble module A & B before processing (cutting) the module C pieces.
7. Each cut must be either by machine **or** hand and cannot be reworked thereafter.
8. Marks will be deducted when a cut has been re-worked following the initial cut. (An exception to this rule arises when a machine cut cannot be made to the full depth). Exceptions will be agreed by the Experts.
9. Joints may be fitted but not assembled until the module is marked.
10. When each module is assembled, **submit for marking**.
11. The use of any tools or devices for adjustments is not permitted during assembly unless agreed on and recorded by two Experts. (see 5.4.F of T.D. No 24)

Note: The dimensions on the drawings are in centimetres (cm.). The use of a calculator is allowed.

Section – F

F. Health, Safety, and Environment

1. All accredited participants and supporting volunteers will abide by rules and regulations with regards to Health, Safety, and Environment of the Competition venue.
2. All participants, technicians and supporting staff will wear the required protective Personnel clothing. The Competitors must wear proper dress suiting the task and wear goggles while performing wood work
3. All participants will assume liability for all risks of injury and damage to property, loss of property, which might be associated with or result from participation in the event. The organizers will not be liable for any damage, however in case of Injury the competitor will immediately inform the immediate organizer for medical attention.