

THE INSTITUTE OF CARPENTERS

INTERMEDIATE EXAMINATION

HANDBOOK

(Operative from 1996)



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FOREWORD

The Institute of Carpenters is the leading authority in all forms of woodworking, celebrating the Centenary of its formation in 1990.

Throughout many of those years, a prime function of its examinations has been to assess those seeking election to membership at all levels. They have also provided an excellent opportunity for participants to acquire the added value to be gained from holding a professional qualification, and allows successful candidates the satisfaction of having proven their technical and tool skills, to a very high standard and in a set period of time.

The Institute of Carpenters is the only organisation which offers nationally, timed wood craft related practical examinations aimed at ensuring the maintenance of craft skills which both industry and the public sector can ill afford to lose.

The Institute's revised examinations Syllabi are carefully phrased bearing in mind those candidates who may be undergoing a period of training with a view to achieving a Scottish or National Vocational Qualifications (S/N.V.Q.). The Pre-Vocational Certificate is aimed at students in their final years of compulsory education or in their early years of post school vocational education/training. The Intermediate is offered to candidates at an advanced stage in their training towards a Level II wood craft S/NVQ., and the Licentiate/Member to those at an advanced stage in their training towards a Level III wood craft S/NVQ. For the foreseeable future, the Institute's Fellowship examination will continue to be offered to candidates already achieving a Member grade of membership and is for those involved in Supervisory Management, or aspiring to administration qualifications (S/NVQ Levels III/IV).

With the exception of the Fellowship award, an open access is maintained to all examinations for anyone wishing to have their proven ability in wood based skills independently assessed. The Institute, however, reserves the right to approve all applications for membership.

Further copies of this Syllabi and information regarding the Institute's full range of craft examinations, details of membership and all other matters related to the Institute are available upon application from Central Office. (The address is included at Annex 'B').

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The Institute of Carpenters

EXAMINATIONS HANDBOOK- 1996 ONWARD

The purpose of this handbook is to answer questions which may be asked by candidates wishing to register for any of the wide range of Institute of Carpenters wood craft examinations.

Q1. What will a candidate achieve by registering?

Ans. Institute of Carpenters examinations were originally conceived to assess relevant designatory letters which apply as shown in the structure diagram at Annex 'A'. An examiners report is published annually upon completion of each examinations series together with a list naming successful candidates. Following the publication of results, a Certificate of achievement is issued to candidates listing only those components in which they were successful and stating the grade(s) achieved, i.e. Fail, Pass, Credit or Distinction. All candidates are notified of their achievement towards the required standards in the components for which they are registered.

Q2. What is the procedure for registering an entry?

Ans. Candidates are requested to complete a simply worded registration card which may be obtained from (and when completed returned to) IOC Central Office (the address is included in Annex 'B').

Q3. What is the cost of registering an examination entry?

Ans. A schedule of registration fees is published annually and is included on publicity posters together with Examination dates and the closing dates for the receipt of entries. Information regarding current examination fees may be obtained by referring to the relevant publicity posters, or from the Central Office (the address is included in Annex 'B').

Q4. What form does the examination take?

Q5. What range of knowledge does a candidate need to possess?

Ans. These final two questions are best answered by considering each examination in turn and looking at the requirements for each.

1. Foundation Certificate in Carpentry and Joinery:

The Institute of Carpenters Pre-Vocational Certificate in Carpentry and Joinery remains accredited by the new School Curriculum and Assessment Authority (SCAA), which succeeded SEAC on October 1st 1993. In preparation for future development of General National Vocational Qualifications (GNVQs)/General Scottish Vocational Qualification (GSVQ) and their possible emphasis on the practical aspects of Manufacturing, the Board considers the Pre-Vocational Certificate an important facet of its provision. The Pre-Vocational Certificate is not allied specifically to Institute membership but requires candidates to achieve a suitable standard of competence in both wood based practical activities and associated technology. This is assessed with the aid of two papers provided by the Institute:

a) Paper One: Practical -

A Practical test piece, set by the Institute, and which is to be completed in a continuous period of time not exceeding **three hours** duration. Marking of the completed test piece is to be undertaken by the Examination Centre with the aid of a marking schedule devised by the Board.

b) Paper Two: Theory -

A written paper to be attempted in a continuous period of time not exceeding **one and a half** hours duration. The paper is composed of **40 questions**. Answers to all questions carry equal marks, be submitted on the question paper provided and be short in nature (sketched, written, calculated, etc.). The paper will be set and marking of the completed scripts undertaken by the Institute. **A third element requires 3 practical assignments set by the institute and marked by the centre.**

Following the publication of results, a Certificate of achievement will be issued to each successful candidate stating the overall grade achieved (Pass, Credit, Distinction).

Further information regarding the Institute of Carpenters Foundation Certificate in Carpentry and Joinery may be obtained from the Central Office (for address see Annex 'B').

Intermediate

The Intermediate award is aimed at candidates completing the gathering of competence evidence towards gaining a Level II Scottish or National Vocational Qualification (SVQ/NVQ), and will require success in two papers. Candidates should be aware that a study of additional material may be required.

i) Paper ONE: Craft Skills Competence

A practical test piece, set by the Institute, to be completed by the candidate in a continuous period of time not exceeding **four hours** duration.

Marking of the completed test piece is to be undertaken by the Examination Centre with the aid of a marking schedule devised by the Board.

ii) Paper TWO: Associated Vocational Technology

A written paper composed of **20 questions** to be attempted by the candidate in a continuous period of time not exceeding **one and half hours** duration. All questions carry equal marks and require answers that shall be submitted on the question paper provided and be short in nature (sketched, written, calculated, etc.)

Marking of the completed scripts shall be undertaken by the Institute.

Following the publication of results, a Certificate of achievement will be issued to candidates listing only those components in which they were successful and stating the grade(s) achieved (Pass, Credit, Distinction). All candidates are notified of their achievement towards the required standards in the components for which they are registered.

For Intermediate Associated Vocational Technology Topic Areas and Ranges see Page 7.

Advanced Craft leading to Membership of the I.O.C.

This award is aimed at candidates completing the gathering of competence evidence towards gaining a Level 111 Scottish or National Vocational Qualification (SVQ/NVQ) and will require success in two papers. Candidates should be aware that a study of additional material may be required:

i) Paper ONE: Craft Skills Competence -

A practical test piece set by the Institute to be completed in a period of time not exceeding **seven hours** duration within a single day. Marking of the completed test piece is to be undertaken by the Examination Centre or an External Examiner with the aid of a marking schedule devised by the Board.

ii) Paper TWO:

A General and Specialist Technology element which comprises a Single Associated Vocational Technology (AVT) Paper set and marked by the Institute and comprising two parts to be attempted in a total continuous time period not to exceed **three hours**.

Part A: A compulsory section to include 18 questions to be attempted in a recommended time of **one hour**. All answers shall carry equal marks, be submitted on the question paper provided and be short in nature (sketched, written, calculated, etc.) This Section shall attract up to 40% of the marks allocated to the AVT component of this examination.

Part B: Comprises 8 questions, only 4 of which are to be attempted in a recommended time of **two hours**. All questions shall carry equal marks, be submitted singly on the IOC headed stationery provided and require in-depth answers (sketched, drawn to scale, written, calculated, etc.) This Section shall attract up to 60% of the marks allocated to the AVT component of this examination.

Following the publication of results, a certificate of achievement will be issued to candidates listing only those components in which they were successful. All candidates will be notified of their achievement towards the required standard in the components for which they are registered and may be offered Member membership of the Institute. Any candidate registered for the Advanced Craft examinations and whose mark in the Associated Vocational Technology component falls short of that required to achieve a pass grade, may, if achieving the required standard in the Practical component, be offered Licentiate membership of the Institute.

Licentiate:

Candidates wishing only to attempt the Practical component of the Member examination will be registered as Licentiate entries. The conduct of the examination involving only Licentiate entries shall be the same as that for the Member Practical component. Competence requirements are the same as those which apply to the Member examination. Candidates registered as Licentiate entries and attaining the required standard to achieve a pass may be offered Licentiate membership of the Institute.

Fellowship:

The Institute's Fellowship examinations are offered to candidates already in IOC membership or may be eligible to do so, and shall comprise TWO papers, set and marked by the Institute, each to be attempted in a continuous time period not to exceed **three hours** : -

a) Paper ONE: Organisation and Supervision;

b) Paper TWO: Carpentry Practice,

OR

Joinery Practice.

The Board will consider the acceptance of a range of competence achievement evidence from those seeking Fellowship accreditation.

Details of the supporting knowledge evidence requirements for those members seeking Fellowship accreditation is available on a separate leaflet and may be obtained from Central Office (for address see Annex 'B').

INTERMEDIATE

Associated Vocational Technology

Topic Areas and Ranges

1. Materials:

The candidate shall be able to

- a) Describe the identification characteristics of softwoods to include :- Douglas Fir, Hemlock, Norway Spruce, Parana Pine, Scots Pine, (European Redwood), Western Red Cedar;
- b) Describe the identification characteristics of hardwoods to include :- Ash, Afrormosia, Beech, Elm, Iroko, Mahogany, Oak, Ramin, Sapele, Teak, and Utile;
- c) Explain the growth, structure, properties and uses of the softwoods and hardwoods listed at (a) and (b) above;
- d) Describe and illustrate basic methods of timber conversion;
- e) Describe and illustrate the composition and state the uses of Manufactured Boards/Sheets to include :- Plywood, Chipboard, Blockboard, Laminboard, Hardboard, Medium Density Fibre Board (MDF), Wafer Board, Plasterboard, Laminated Plastic.

2. Craft Related Drawing:

The candidate shall be able to

- a) Display a knowledge of British Standard recommendations for Building Drawing Practice B.S. 1192;
- b) Use a scale rule to produce construction drawings;
- c) Identify types of construction drawings to include Location, Component and Assembly;
- d) Produce drawings using projection types to include Orthographic and Pictorial;
- e) Prepare setting out rods;
- f) Demonstrate the geometrical construction of plane figures;
- g) Demonstrate the geometrical construction of flat, segmental and semi-circular arch shapes;
- h) Geometrically develop true lengths and bevels for square on plan equal pitched hip roofs;
- i) Geometrically develop moulding profiles.

3. Timber Related Science:

The candidate shall be able to

- a) State the reasons for seasoning timber;
- b) Describe the process of air and kiln seasoning of timber to achieve a required moisture content;
- c) Determine the moisture content of timber;
- d) Describe the terms “Equilibrium Moisture Content” and “Fibre Saturation Point”;
- e) Identify timber defects/degrade resulting from seasoning;
- f) Identify timber growth defects and state their effects on usage;
- g) State the types of timber preservatives suitable for interior and exterior use and describe methods of application;
- h) Explain the application, properties and uses, including storage requirements, for Animal, Polyvinyl Acetate (PVA), Contact & Synthetic Resin adhesive types;
- i) Outline the causes, effects and methods of treatment related to Wet and Dry Rot;
- j) Outline the causes and effects of damage by the following insects :- Furniture, Powder Post, Death-Watch and House Longhorn;
- k) Describe the types, function and use of materials designed to increase thermal and sound insulation to include sheet, quilt and granular;
- l) State the causes, effects and methods of preventing condensation;
- m) State the effects on timber component manufacture of capillary attraction and surface tension;
- n) Describe the types, function and use of flexible and non flexible sealants;
- o) Explain the basic principles of bracing and triangulation.

4. Wood Trades Calculations:

The candidate shall be able to

- a) Solve simple decimal problems of addition, subtraction, multiplication and division;
- b) Compile material specifications and cutting lists;
- c) Estimate quantities of materials including percentage for waste;
- d) Evaluate simple costings with allowance for waste;
- e) Determine area and perimeter of plane figures;
- f) Calculate quantities in linear, superficial and cubic measurement;
- g) Determine the number and lengths of joists and rafters;
- h) Demonstrate the use of pocket calculators.

5. Safety:

Range: R.I.D.D.O.R. 1996, Construction (Design and Management) Regulations 1994, Codes of Practice, Management of Health and Safety at work Regulations 1992, Workplace (Health, Safety, and Welfare) Regulations 1992, Health and Safety (Display Screen Equipment) Regulations 1992, Manual Handling Operations Regulations 1992, Personal Protection Equipment 1992, Provision and Use of Work Equipment 1992, Health and Safety at Work Act (H.S.A.W.A.) 1974, C.O.S.H.H., Noise at Work Act 1989, Factories Act 1961, Control of Pollution Act 1971, Fire Precautions Act 1971, Office Shops and Railway Premises Act 1963. PUWER.

Competence requirements:

With regard to safety, health and welfare on the site and in the workshop, the candidate shall be able to.

- a) Define the requirements of current legislation;
- b) Define the duties of employers/employees;
- c) Define and explain safe methods of working;
- d) Describe fire and emergency procedures and precautions;
- e) Identify classification of fires and correct use of extinguishers.

6. Protection, Storage and Safe Handling:

Range: Timber and Associated Sheet Materials, Timber Components, Hardware, Ironmongery.

The candidate shall be able to

- a) State the factors affecting the handling and storage of materials and components on-site and in the workshop;
- b) Describe and illustrate safe methods of handling materials and components during manufacture and on completion
 - i) on-site and in the workshop;
 - ii) during transit;
- c) Describe and illustrate methods of providing care and safe storage for materials and components
 - i) on-site and in the workshop;
 - ii) during transit.

7. Hand Tools:

Range: Measuring, Setting/Marking-Out, Sawing, Planing, Chiselling and Paring, Drilling/Boring, Impelling, Levering, Levelling and Lining-In.

Competence Requirements:

The candidate shall be able to

- a) Name and state the function of hand tools;
- b) Correctly select tools for specific purpose;
- c) Describe the care use and maintenance of hand tools;
- d) Explain precautions to be taken when storing/guarding tools not in use.

8. Timber Jointing:

Range: Joints used in Framing, Carcassing, Widening and Lengthening Timber Elements and Components.

Competence requirements:

The candidate shall be able to

- a) Recognise and illustrate methods of jointing timber elements and components;
- b) State the factors affecting choice of jointing method;
- c) Describe safe, economical hand and machine techniques used in manufacture.

9. Fixings:

Range: Proprietary Fixings (to include those used in cartridge operated fixing tools) to Wood, Metal, Plastic, Manufactured Sheet Materials, Brickwork, Blockwork, Concrete and Stone.

Competence requirements:

The candidate shall be able to

- a) Explain the factors effecting item choice;
- b) Recognise and correctly specify items;
- c) Describe and illustrate the function and correct use of items.

10. Hardware and Ironmongery:

Range: Doors, Door Frames, Casement Windows, Floors, Roofs, Partitions, Domestic Fittings.

Competence requirements:

The candidate shall be able to

- a) Explain the factors effecting item choice;
- b) Recognise and correctly specify items;
- c) Describe and illustrate the function and correct use of items.

11. Portable Powered Tools:

Range: Electrically Powered Circular Saw, Chop Saw, Jig Saw, Planer, Router, Orbital and Belt Sander, Screwdriver and Drill.
Electrical Power Supplies - Reduced Voltage.
Cartridge Operated (Ballistic) Tools.

Competence Requirements:

The candidate shall be able to

- a) Correctly select tools for specific purpose;
- b) Describe functions, capacities and limitations;
- c) Explain maintenance and safe use;
- d) Explain the construction and use of simple jigs;
- e) Explain the function and use of transformers;
- f) Identify types and uses of abrasive papers and grits.

12. Woodworking Machinery:

Range: Circular Cross Cutting Saw, Circular Rip Saw, Surface Planing Machine, Thicknesser, Chisel Morticer and Narrow Band Sawing Machine.

Competence requirements:

For each machine in the range, the candidate shall be able to

- a) Explain the requirements of related current safety legislation;
- b) Describe operational use;
- c) Name the component parts and explain their function;
- d) Identify appropriate tooling;
- e) Describe and illustrate the function and use of appropriate tooling;
- f) Describe procedures for maintenance, setting up and safe operation;
- g) Explain the holding, clamping and feeding of materials during machining processes;
- h) Describe and illustrate the construction and function of jigs and safety aids for use during machining processes;
- j) State the factors affecting the surface finish of timber during machine operations.

13. Doors:

Range: Domestic, Side hung - Battened, Framed, Panelled, Glazed, Flush and Fire.
Domestic Sliding - Straight Track.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe methods of construction and sequence of manufacture;
- c) Explain methods of fitting, hanging and finishing;
- d) State positioning of ironmongery.

14. Door Frames & Linings:

Range: Plain and Rebated linings.
Moulded and Rebated Door Frames to include Transoms and Fanlights.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe methods of construction, sequence of manufacture and methods of fixing;
- c) Describe the procedures for positioning and alignment;
- d) Describe methods used to prevent spread of fire.

15. Casement Windows:

Range: Single and Multiple Light Traditional and Stormproof Casements and Frames with Opening Lights - Side, Top or Bottom Hung.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe methods of construction, sequence of manufacture and methods of fixing;
- c) Describe the purpose and function of and constructional requirements for single and double glazing systems.

16. Fitments:

Range: Domestic Free Standing and Built-In, Purpose-Made and Proprietary Wall and Floor Units .
Proprietary and Purpose-Made Shelving Units.
Proprietary and Purpose-Made Work Surfaces.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate
 - i) procedures for assembly, fitting, fixing and finishing;
 - ii) methods of manufacture, assembly, fitting, fixing and finishing;
 - iii) provisions for services.

17. Stairs:

Range: Straight Flight.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Design, for a given situation and to comply with recognised criteria and relevant legislation;
- c) Describe and illustrate
 - i) the requirements of current legislation with regard to construction and guarding;
 - ii) construction, assembly and fixing;
 - iii) the construction of landings;
 - iv) the finishings to well openings.

18. Floors:

Range: Hollow Ground & Single Span Upper Floors in Timber.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate
 - i) methods of construction;
 - ii) methods of trimming floors to hearths, openings and stairwells;
 - iii) the laying, jointing and fixing of all types of timber flooring and sheet materials;
 - iv) the positioning of notches and holes in joists for services to comply with current legislation;
 - v) the function, purpose, fitting and fixing of strutting to upper floors;
 - vi) methods of constructing and securing access traps.

19. Wall Panelling:

Range: Framed and Flush Dado Height Wall Panelling in Timber and Sheet Materials.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate
 - i) construction, fitting, fixing and finishing to include internal and external corners and secret fixing methods;
 - ii) different panel forms;
 - iii) the construction, lining-in and fixing of individual battens and framed grounds.

20. Finishings:

Range: Door & Windows Openings, Skirting Boards, Dado and Picture Rails, Encasing Pipes and Baths.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Explain methods of cutting and fixing vertical and horizontal mouldings to include forming scribes, mitres and header joints;
- c) Describe the function, procedures for fitting and methods of fixing plinth blocks, window boards and linings;
- d) Methods of construction and fixing pipe casings and bath panels;
- e) Provision of access traps.

21. Partitions:

Range: Timber Stud and Proprietary Systems - In-Situ and Pre-Fabricated.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate
 - i) procedures for construction, assembly, erection and fixing;
 - ii) methods of forming and finishing openings;
 - iii) provisions made for fittings and services.

22. Roofs:

Range: Single and Double Pitched up to 8 Metres Span with Hipped or Gabled Ends and Over Right-Angled Plans.
Monopitched. Traditional Construction Methods and Trussed Rafters.
Flat.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate methods of
 - i) construction and erection to comply with current legislation;
 - ii) providing trimming and weathering to openings;
 - iii) constructing, storing, handling and erecting trussed rafters;
 - iv) construction to provide for services;
 - v) construction and finishing at verges, eaves and abutments;
 - vi) construction and finishing access traps to loft spaces;
 - vii) providing adequate ventilation to roof spaces to comply with current legislation.

23. Formwork:

Range: Timber Forms Only.
Foundations - Strip, Raft.
Lintels, Cills, Posts and Steps (Max. 3 in number).

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Explain the types, function and methods of application of release agents;
- c) Explain the influence of fluid pressure on design;
- d) Describe and illustrate
 - i) design and construction for concrete which is to be cast in-situ;
 - ii) design and construction for concrete which is to be pre-cast;
 - iii) methods of erection, support, easing and striking for single and multi-use formwork.

24. Scaffolding:

Range: Proprietary Systems, Trestle, Hop-Ups.
Ladders and Stepladders.

Competence requirements:

The candidate shall be able to

- a) Recognise and state the function of commonly used components;
- b) Describe and illustrate
 - i) the requirements of current legislation related to the erection; dismantling and safe use;
 - ii) types indicated in the range;
 - iii) procedures for the safe erection and dismantling;
- c) Describe the storage, safe usage, inspection procedures and securing for safe use.

25. Shoring:

Range: Dead Shoring - Timber & Steel to Two Storey Buildings.

Competence requirements:

The candidate shall be able to describe and illustrate

- a) the components used;
- b) erection, safe use and dismantling procedures.

26. Centering:

Range: Timber and Sheet Materials for Flat, Segmental and Semi-Circular to Brickwork and Stonework, Maximum 2 metres span and walls up to 300 millimetres thick.

Competence requirements:

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate
 - i) the joints used and methods of construction;
 - ii) methods of propping, easing and striking;
 - iii) the procedures for levelling and lining-in;
 - iv) the types and function of laggings.

27. Setting Out and Levelling:

Range: Straight Edge, Spirit Level, Plumb Rule and Bob, Water Level, Pegs.

Competence requirements:

The candidate shall be able to

- a) Explain methods of transferring levels;
- b) Explain the use of a datum line;
- c) Describe and illustrate methods of
 - i) taking and recording measurements on site;
 - ii) plumbing, levelling and lining-in; iii) setting out and checking right angles.

28. Repairs and Maintenance:

Range: Removing and Replacing Architraves and Skirtings, Frames Linings, Doors and Ironmongery, Sash Cording.

Competence Requirements.

The candidate shall be able to

- a) Identify related elements and components;
- b) Describe and illustrate methods of
 - i) removal and replacement of defective components;
 - ii) treatments of replacement components;
 - iii) safe removal and disposal of defective component.

Past papers and information on all the exams can be obtained by visiting the Institute of Carpenters examinations web page on www.ioceams.co.uk. Or alternatively contact :-

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