# THE INSTITUTE OF CARPENTERS

## Fellowship Examination

## 9th - 13th June 1997

## Paper 1: JOINERY PRACTICE

## TIME ALLOWED: THREE HOURS

**The following instructions should be read by all CANDIDATES before they commence work.**

**To obtain full marks Candidates must answer SIX questions. The answer to each question should be submitted on a separate sheet of paper.**

**The question number and your candidate number must be clearly written in the top right-hand corner of each answer sheet.**

1. The main components produced by a timber engineering factory include trussed rafters, stressed skin panels and box beams.

   a) Sketch an example of each type of component and describe how each may be assembled in the factory;

   b) For **ONE** of the above components, sketch a plan of the factory layout indicating the respective position of the machines and associated equipment including the probable sequence of use.

2. A large joinery organisation is to set up additional workshop space to produce laminated structures.

   a) List the machinery and associated equipment which may be required for this type of specialist production work, indicating the function of each.

   b) Sketch THREE different methods of jointing timber laminations lengthways, and state the machinery which may be required in the production of each.

   c) Explain TWO methods of applying glue to timber laminations.

3. a) Describe THREE different methods of providing protective finishes to good class hardwood joinery components stating the necessary surface preparations for each.

   b) Explain the "Double Vacuum" process of timber preservation application.

4. During the renovation work to an old mansion a segmental ceiling is to be formed to a long, 1.800m wide corridor. The plaster work ceiling, which rises 500mm at its centre, is to be constructed from ribs which are to be manufactured in a joinery shop.

   a) Describe with the aid of sketches a method of :-

      i) determining the radius of the ribs;

      ii) construction for the ribs.

   b) Describe how a number of ribs may be produced to ensure consistency of shape.

   c) List the equipment required to produce the ribs.

5. Describe the various types of portable and static sawing machines available for joinery production, and comment on each type and allocate a specific use.

6. The drying of timber by means of a kiln is an important process to establish a moisture content necessary for any timber to remain stable in a given environment.

(a) Sketch a kiln suitable for the drying of timber for any specified moisture content.

(b) Describe the function and use of a Kiln Schedule.

(c) State a situation where the use of kiln dried timber would be essential.

(d) Define the term "case hardening".

(e) State the precautions to be taken to enable timber to be kept at it's correct moisture content during the manufacture of joinery items and their subsequent transport to and storage on the site.

7. The following specification refers to an enquiries counter to be installed on the third floor of an existing building. The overall length of the counter, which includes a flap and door each end, is 7.500m. The unit height is 1.050m, width of carcase 700mm and top 850mm. Front panels are to be of veneered plywood and the top is to be constructed using 25mm MDF faced with 3.2mm linoleum and edged with a hardwood nosing. The 25mm plinth is to be faced with black plastic laminate.

Describe the manufacture and installation of the unit and state any problems that may be envisaged and the precautions that should be taken in the joiners shop to ensure a minimum of site work.

8. A geometric stair with a 44mm thick cut and bracketed string includes six tapered steps in a 180° turn. The steps radiate from the centre of a 300mm diameter well and each main step has a going of 275mm and a rise of 150mm.

Draw :-

a) The development of the Wreathed string to form the 180° turn.

b) Illustrate with sketches a method of;

i) building up the curved string;

ii) jointing the curved portion to the straight string.