THE INSTITUTE OF CARPENTERS



Member Examination

13th June 2000

Associated Vocational Technology Paper Section B

Total Time Allowed For Papers A and B

THREE HOURS

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

Section B: Consists of **8** questions only **FOUR** of which are to be answered. All questions carry equal marks.

Each answer **MUST** be submitted on a separate sheet of paper, and your candidate number **MUST** be written in the top right hand corner of **EACH** answer sheet in the box provided.

Member Examination

Associated Vocational Technology (Section B)

(Answer FOUR questions only)

- 1. A number of segmental bow windows of stormproof design are required to be manufactured to suit the situation illustrated in Figure 1.
 - a) Describe with the aid of sketches,
 - i) the measurement and other information required prior to manufacture;
 - ii) a practical method of drawing the curve which does not require the radius to be calculated.
 - b) Draw full size sections through the head, mullion and cill of the window.



2. The plan of a rectangular building measures $16 \text{ m x } 8 \text{ m and is to be covered with a } 45^0$ equally pitched hipped roof.

Draw in first angle orthographic projection to a scale of 1:200;

- (a) The plan of the roof including true lengths, plumb and seat cuts for a one hip rafter.
- (b) The front elevation of the roof;
- (c) The end elevation of the roof;
- (d) The true shape of one of the hipped ends.
- 3. Timber framed buildings two storey's and above are often constructed using the "**Platform**" method of construction. Sketch a part section showing the intersection of the external wall and upper floor to illustrate this method.

4. A circular platform 10 m diameter 750 mm high is to be erected in a Leisure Centre for use at a musical festival. The top of the platform is covered with 18 mm plywood, and the vertical face covered with 9 mm plywood.

Calculate :-

- (i) Area of the top of the platform
- (ii) Cost of material for the top of the platform, adding 20% for cutting waste, given 18mm plywood costs £6.50 m2.
- (iii) Area of vertical face
- (iv) Cost of vertical face, adding 15% for cutting waste given 9mm plywood costs £3.50 m2.
- 5. A semi-circular arch centre is to be constructed and erected to support facing brick in the formation of a 1 m wide arched door opening.

Describe with the aid of sketches where necessary :-

- (i) How the shape of the arch is set out;
- (ii) The name of the curved members in the arch centre;
- (iii) The method of jointing the members in the arch center;
- (iv) One method of propping, easing and striking the arch centre.
- 6. Describe, with the aid of sketches, jointing methods which may be used for the elements listed below when manufacturing panelled doors from stock which is rebated and ovolo moulded.
 - a) Machine scribed Top Rail to Stile;
 - b) Edge jointed narrow boards in solid door panels;
 - c) The intersection of vertical and horizontal Glazing Bars;
 - d) The intersection of a Top Rail with curved lower edge, to a door Stile shown at figure 2.



- 7. A stair is to be manufactured to provide access to an upper floor extension in a private house.
 - (a) State :-
 - (i) The site measurements that must be accurately taken;
 - (ii) Potential health hazards arising from forming the stair opening in the existing ceiling.
 - (b) Calculate the rise and going of each step to comply with current regulations if the storey height is 2.650 m with a maximum total going of 3.480 m
 - (c) State the maximum pitch permitted to comply with current regulations.
 - 8. (a) Figure 3 shows a line drawing of a Plywood-Faced Portal Frame without ply and erected in place at the open gable-end of a new church building. The boom and leg are constructed of chords (125 mm x 50 mm) with studs or ribs glued and butt-jointed as stiffeners. Show and identify the following :-
 - (i) Concrete foundation and floor;
 - (ii) Details at eaves, plus roof members;
 - (iii) Joint at apex showing fixture;
 - (iv) Core at toe area.
 - (b) State the type of timber and ply-wood that would be used in the construction of this type of Portal Frame.
 - (c) Give three advantages of all timber frames compared with other types of portal frame.



MEMBER Membership

Member membership of the Institute of Carpenters is available to candidates achieving success in the Institute's Member Examination, also to Teachers/Lectures/Instructors of Woodcrafts possessing a trade background.

Further information and application forms may be obtained from

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