



*Leaving Certificate Examination 2006*

# *Construction Studies*

## *Theory - Ordinary Level*

*(200 Marks)*

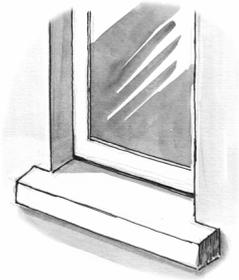
*Wednesday 21 June*  
*Afternoon, 2.00 - 4.30*

- (a) Answer **Question 1** and **three** other questions.*
- (b) All questions carry equal marks.*
- (c) Answers must be written in ink.*
- (d) Drawings and sketches to be made in pencil.*
- (e) Write the number of the question distinctly before each answer.*
- (f) Neat freehand sketches to illustrate written descriptions should be made.*
- (g) The name, sizes, dimensions and other necessary particulars of each material indicated must be noted on the drawings.*

1. A double-glazed timber casement window, as shown in the sketch, is fixed in a 300mm external concrete block wall with insulated cavity. The wall is plastered on both sides.

(a) To a scale of 1:2 (*half full size*), draw a vertical section through the concrete cill and timber cill of the window. The size of the timber cill is 80 x 80 mm. Show all construction details from 300mm below to 200mm above the concrete cill.

(b) Indicate on your drawing *one* design detail that would prevent the cold-bridge effect at the window cill.

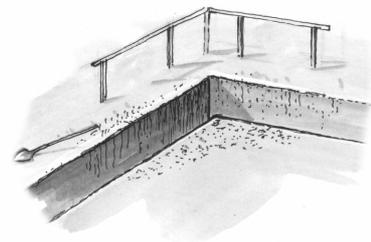


2. The sketch shows a trench for a strip foundation for an external wall of a dwelling house. The wall is a 300mm block wall and the foundation is 300mm thick throughout.

(a) Using notes and *neat freehand sketches*, describe how to mark-out the foundation trench under the following headings:

- Profiles;
- Test for squareness;
- Width of trench.

(b) With the aid of notes and *neat freehand sketches* show how to determine the level of the top surface of the foundation prior to placing the concrete.



3. (a) Using a clear *labelled diagram*, sketch a system to provide **cold water** to a wash hand basin, as shown in the sketch.

Include the following in your diagram:

- rising main;
- water storage tank and overflow;
- all pipework for cold water;
- necessary valves.

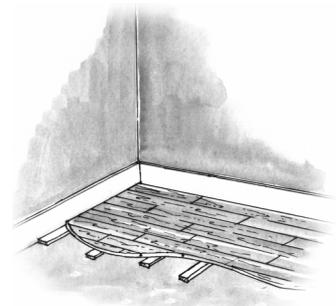


(b) Using notes and *neat freehand sketches*, show *one* method that would prevent the freezing of water in the storage tank.

4. A tongued and grooved hardwood floor is fixed, on battens, to a concrete ground floor slab, as shown in the sketch. The external wall of the house is a 300mm concrete block wall with insulated cavity and the wall is plastered on both sides.

(a) To a scale of 1:5, draw a vertical section through the ground floor and the external wall. The section should show all the construction details from the bottom of the foundation to 300mm above the hardwood floor.

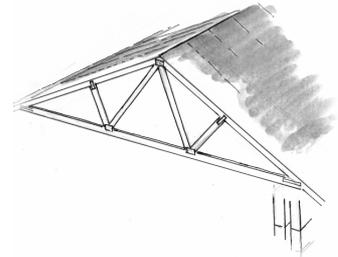
(b) Label and indicate the typical sizes of **four** main components.



5. (a) List and discuss **three** specific safety precautions to be observed when:
- Tiling a pitched roof;
  - Using a router to shape the edge of a wooden panel;
  - Placing a pre-stressed concrete lintel in position.
- (b) List **three** items of personal protection equipment that should be worn on a construction site and discuss the importance of **each** item for personal safety.

6. The sketch shows an external wall and prefabricated trussed rafters for a domestic dwelling.

- (a) Using notes and *neat freehand sketches*, show the position of the wallplate and indicate how it is to be secured to the external wall.
- (b) It is proposed to cover the roof with concrete roof tiles. Using notes and *neat freehand sketches* show the sequence of operations necessary to tile the roof.
- (c) List **two** advantages of prefabricated trussed rafters over a traditional cut roof.



7. Explain, with the aid of notes and *neat freehand sketches*, any **five** of the following:

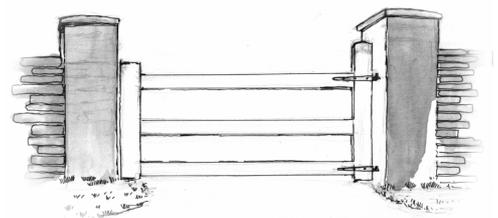
- Mortise and tenon joint;
- Window board;
- Tread and riser of a stairs;
- Internal flush door;
- Architrave;
- Sleeper wall or dwarf wall;
- Double-glazing.

8. A system consisting of a septic tank and percolation area is frequently used for the treatment of sewage from a dwelling house in a rural setting.

- (a) Using notes and *neat freehand sketches*, describe the system under the following headings:
- Design of the septic tank;
  - Location of the septic tank;
  - Function of the percolation area.
- (b) List **one** advantage and **one** disadvantage of a septic tank and percolation area system.

9. The sketch shows a new wooden entrance gate to a dwelling house.

- (a) Suggest a suitable wood for the gate and state **two** reasons for your choice of wood.
- (b) Explain, *using notes and freehand sketches*, the steps involved in preparing and painting the wooden gate.
- (c) Using notes and *neat freehand sketches*, show a suitable design detail that would prevent the gate from sagging.



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