Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2008

Construction Studies

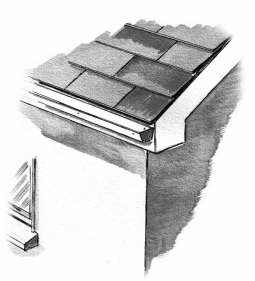
Theory - Ordinary Level

(200 marks)

Wednesday, 18 June
Afternoon 2:00 to 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. The sketch shows a tiled roof of a dwelling house, which is supported on a 300 mm external concrete block wall with an insulated cavity. The roof has a pitch of 30° and is a traditional cut roof.



(a) To a scale of 1:5, draw a vertical section through the eaves of the tiled roof and the external wall. Show all the construction details from 400 mm below the wall plate, through the eaves, and include **three** courses of tiles.

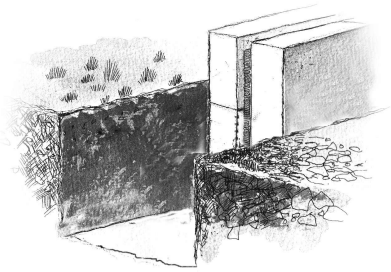
(b) On your drawing, show a method of providing ventilation to the roof members.

2. Strip foundations are widely used for modern dwelling houses.

(a) Using notes and ***neat freehand sketches,*** show the construction of a strip foundation for the external wall of a dwelling house.

Include the following in your sketch:

- depth of trench;
- width of foundation;
- thickness of foundation;
- position of a 300 mm wall on the foundation.



(b) On your sketch, show **one** design detail to ensure that the foundation is strong enough to support the external wall and the roof of the house. Include **two** typical dimensions.

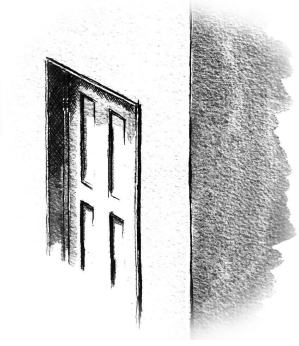
3. **(a)** Using a ***single-line labelled diagram,*** sketch a system to supply **cold** water to a wash hand basin and a water closet (WC) in a bathroom, as shown in the accompanying sketch.

Include the following in your diagram:

- water storage tank;
- rising main;
- pipework to wash hand basin and WC;
- typical sizes of pipework;
- all necessary valves.

(b) Using notes and ***neat freehand sketches***, show how the level of water is controlled in the cistern of the WC.

4. A four panel solid wooden door and doorframe are fixed in the external wall of a dwelling house, as shown in the accompanying sketch.
The doorframe is 120 mm x 75 mm and the top rail of the door is 120 mm x 50 mm. The wall is a 300 mm concrete block wall with an insulated cavity and is plastered on both sides.



(a) To a scale of 1:2 *(half full size)*, draw a vertical section through the external wall, doorframe and door. Show all the construction details from the 250 mm below to 350 mm above the concrete lintel at the door head.

(b) Include on your drawing a design detail to ensure that moisture does not penetrate to the inner leaf of the wall at the door head.

5. **(a)** State **two** reasons why it is necessary to apply for planning permission to erect a dwelling house.

(b) Explain what is meant by **outline planning permission** and describe one situation where a person might wish to apply for outline planning permission.

(c) Discuss in detail **two** reasons why a planning authority might refuse to grant planning permission for a dwelling house in the countryside.

6. Thermal insulation is used to reduce heat loss through the external walls of a dwelling house.

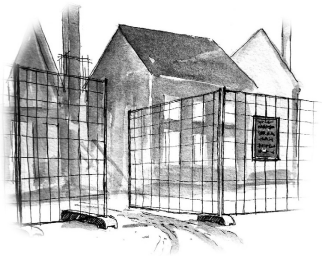
(a) Using notes and ***neat freehand sketches,*** show the location of a rigid insulation board in the cavity of an external wall of concrete block construction.
Show the typical thickness of the insulation board.

(b) Using notes and ***neat freehand sketches*** show how the insulation board is held in place in the cavity.

(c) Using notes and ***neat freehand sketches*** show another method of insulating the external wall of the house.

7. **(a)** List **two specific** safety precautions to be observed in **each** of the following situations:

- using a pillar drill in the Construction Studies room;
- fitting a double-glazed unit in a wooden window frame;
- using a contact adhesive to fix veneer to a wooden panel.



(b) Sketch **two** safety signs that should be displayed at the entrance to a construction site, as shown in the accompanying sketch, and explain the purpose of each safety sign.

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

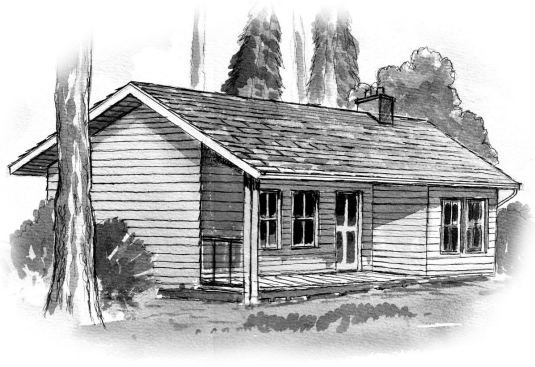
- dovetail joint;
- through and through sawing;
- damp proof membrane;
- pre-stressed concrete lintel;
- plasterboard;
- gully trap;
- inspection chamber.

9. The accompanying sketch shows a chalet with an external wooden cladding.

(a) Choose a suitable wood for the external cladding and give **two** reasons for your choice.

(b) Recommend a suitable applied finish to help preserve the cladding and, using notes and ***neat freehand sketches,*** describe the steps involved in applying the finish.

(c) The chalet shown is designed to help protect the cladding from the weather. Using notes and ***neat freehand sketches,*** show **one** design feature that helps protect the cladding from the effects of the weather.



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