P720/3
BUILDING CONSTRUCTION
THEORY
Paper 3
July/August 2017

2 hours

WAKISSHA JOINT MOCK EXAMINATIONS.

Uganda Advanced Certificate of Education.

TECHNICAL DRAWING

BUILDING

THEORY

Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of six questions.*
- *Answer only four questions.*
- *All questions carry equal marks.*

1. a) Distinguish between applied finishes and in situ finishes. *(02 marks)*

b) Give any **five** factors that affect the choice of a wall finish. *(05 marks)*

c) i) Why is it important to plaster a wall before applying ancther wall finish. (give any **four** reasons) *(04 marks)*

ii) Describe the following terms as applied to the process of plastering a wall;

- Plumbness. *(02 marks)*
- Cleaning the wall. *(02 marks)*
- Hydration of the wall *(02 marks)*

d) i) With the aid of suitable sketches illustrate how the following finishes are applied;

- Tongue and grooved timber floor finishes. *(03 marks)*
- Hard wood strips. *(02 marks)*

ii) Explain what is meant by the following terms in relation to finishes;

- Undercoating. *(01 mark)*
- Cornices *(01 mark)*
- Skirting *(01 mark)*

2. a) i) State any **three** functional requirements of foundations to a building structure. *(03 marks)*

ii) Outline any four factors which influence the choice and design of a foundation. *(02 marks)*

b) Distinguish between the following terms;

i) bearing capacity and bearing pressure. *(02 marks)*

ii) made ground and backfill. *(02 marks)*

c) sketch a suitable foundation for each of the following site situation;

i) shrinkable clay soils.

ii) made ground.

iii) sloppy ground. *(06 marks)*

d) Make a sketch of formwork used for foundation design. *(03 marks)*

e) i) Describe **three** possible positions of damp proof courses in a wall. *(03 marks)*

ii) State any **four** properties of damp proofing materials. *(04 marks)*

3. a) i) Mention any **four** factors that influence the choice of a door. *(04 marks)*

b) i) What is glazing as applied to windows. *(01 marks)*

ii) Using a sketch illustrate how glazing is done without beads when fixing glass in a window frame. *(04 marks)*

c) Distinguish between the following terms as used in door construction;
   i) a muntin and a mullion. *(02 marks)*
   ii) a door frame and a door lining. *(02 marks)*
   iii) a brace and a ledge. *(02 marks)*

d) With the aid of sketches describe the following ironmongery;
   i) parliament hinge. *(02 marks)*
   ii) tee hinge. *(02 marks)*
   iii) butt hinge. *(02 marks)*

e) Illustrate how a wooden door frame is secured /fixed into brick work/its opening. *(04 marks)*

4. a) Briefly describe the following temporary constructions on site;
   i) scaffolding. *(02 marks)*
   ii) planking. *(02 marks)*
   iii) formwork. *(02 marks)*
   iv) shoring. *(02 marks)*

b) i) What is site investigation? *(01 marks)*

   ii) Soil Investigation targets the subsoil beneath the site under investigation and could be part of site investigation. Give any three reasons why soil investigation should be carried out. *(03 marks)*

   iii) Make a sketch to illustrate how timbering can be done in dry loose soils name the individual parts. *(04 marks)*

c) With the help of sketches briefly write about the following terms showing where and how used in trench foundation excavation and levelling
   i) Profile boards. *(03 marks)*
   ii) Bottoming. *(03 marks)*
   iii) Travelers sick. *(03 marks)*

5. a) i) Outline any **four** functions of a roof. *(04 marks)*
   ii) List any **four** roof coverings. *(04 marks)*

b) Differentiate between a flat roof and a pitched roof. *(02 marks)*

c) i) What is an eave in relation to roofs? *(01 mark)*
   ii) With suitable sketches, illustrate any two types of eaves. *(04 marks)*

d) Write short notes on the following roof items are.
   i) Sprockets. *(02 marks)*
   ii) Roof underlays. *(02 marks)*
   iii) dormers. *(02 marks)*

Turn Over

e) Identify and sketch two methods through which a flat roof can be made to the required slope or fall. *(04 marks)*

6. a) A domestic solid ground floor consists of three main components hard core, damp proof course and the concrete bed. Write short notes on them giving their purpose in floor construction. *(06 marks)*

b) Using diagrams differentiate between a suspended timber ground floor and a solid ground floor. *(04 marks)*

c) Describe the following ways in which floor screeds are laid;
   i) monolithic screeds. *(02 marks)*
   ii) unbonded screeds. *(02 marks)*
   iii) floating screeds. *(02 marks)*

d) i) Explain why it is necessary to strut between floor joists in timber upper floor construction. *(02 marks)*
   ii) Show with sketches the two methods of strutting between joists in (c) i) above. *(04 marks)*

e) Define the following terms in relation to floor construction;
   i) Sleeper wall. *(01 mark)*
   ii) Concrete over site. *(01 mark)*
   iii) Blinding concrete. *(01 mark)*

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BUILDING CONSTRUCTION
THEORY

Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES

This paper consists of **six** *questions.*

Answer only **four** *questions*

All questions carry equal marks

Any additional question answered will not be marked.

1. a) (i) Why is mastic asphalt always used to finish the upper surface of the concrete flat roofs that is exposed to drastic weather conditions. *(2 marks)*

(ii) State and sketch four types of single roofs *(4 marks)*

b) (i) Differentiate between a monolithic screed and a bonded screed. *(4 marks)*

(ii) Why is it always advisable to place concrete at a height below one meter from the place of deposition? *(1 mark)*

(iii) With nice sketches mention at least three types of natural timber defects. *(6 marks)*

c) Using a sketch show the members that constitute the raking shores. *(6marks)*

d) Write the following abbreviations in full.

(i) M.H.

(ii) IC *(2 marks)*

2. a) (i) What does the term iron mongery mean in building construction *(1 mark)*

(ii) Give any three advantages of cavity walls over solid walls. *(3 marks)*

(iii) How is a cavity wall treated around a window opening to prevent damp from entering the wall? *(2 marks)*

b) Explain in a logical sequence how cement is manufactured in the wet process. *(4 marks)*

c) Distinguish between the following terms

(i) Coarse aggregates and fine aggregates

(ii) Shuttering and centering

(iii) Mortar and concrete

(iv) door frame and door lining *(8 marks)*

d) Sketch neatly a large view of a semi-circular arch and show the following parts

(i) Spandrel

(ii) Sophit

(iii) The key brick

(iv) The Springer

(v) The voussiors

(vi) Extrados

(vii) Span *(7marks)*

e) With the aid of sketches show how a strip foundation differs from a pad foundation. *(6marks)*

3. a) In constructing a building there are various materials used. Briefly write about the following materials giving where and how they are used.
   i) reinforcement bars
   ii) DPC (polythene)
   iii) aggregates
   iv) bricks *(8marks)*

   b) What is batching as related to concrete *(1mark)*

   c) Give any two methods of batching. *(2marks)*

   d) Describe how one of the batching methods mentioned above is done. *(4marks)*

   e) State any four reasons why concrete is a widely used material in flat roofs and floor construction as compared to timber. *(4marks)*

   f) i) Define the term chimney. *(1mark)*
   ii) With the aid of a vertical cross section sketch, name at least six parts that make up a fire place. *(5marks)*

4. a) Give the functions of the following mechanical plants used in site leveling and excavations
   (i) Augers,
   (ii) Backactor / hoe
   (iii) Bulldozer *(3marks)*

   b) With the aid of sketches write short notes on the following
   (i) Green roof
   (ii) Gusset plate
   (iii) Half space landing
   (iv) Herringbone strutting *(8marks)*

   c) Distinguish between the following terms
   (i) Boot lintels and the concealed lintel
   (ii) A brick and a block
   (iii) Rabble walling and ashlar walling *(6marks)*

   d) Sketch neatly large views to show details of the following:
   (i) Corbel
   (ii) Pointing
   (iii) Retaining wall
   (iv) Pier *(4marks)*

   e) Define the following terms in relation to wall construction
   (i) underpinning
   (ii) Brick bonding:
   (iii) Raking back *(3marks)*

Turn Over

5. a) Describe the following construction components on site
   (i) Damp proof course
   (ii) Damp proof membrane
   (iii) Datum post *(6marks)*

   b) Discuss the following categories of floor finishes with at least two relevant examples that are used to finish the floors
   (i) Insitu floor finishes
   (ii) Applied floor finishes
   (iii) Timber floor finishes *(6marks)*

   c) With nice sketches mention at least two types of framing joints used in the making of the Match boarded Doors *(5marks)*

   d) Differentiate between the following:
   (i) A Door lining from a door frame
   (ii) A dormer window and a sky light
   (iii) Double glazing and double hung sash windows
   (iv) Fencing and hoarding *(8marks)*

6. a) With the aid of sketches write short notes on the following brick work bonds
   (i) English bond
   (ii) Flemish bond
   (iii) Quetta bond
   (iv) stack bond *(08marks)*

   b) (i) What do you understand by the term Bridging of the dump proof course. *(1mark)*

   (ii) State and explain any three ways through which walls show signs of failing. *(6marks)*

   (iii) What is the function of retaining walls in building construction? *(2marks)*

   (iv) Mention and explain at least three types of retaining walls *(6marks)*

   (v) Give at least two advantages of independent scaffolds over the putlog scaffolds. *(2marks)*

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