

P720/3
Building Construction
Paper 3
July/August
1½ Hours



UGANDA MUSLIM TEACHERS' ASSOCIATION

UMTA JOINT MOCK EXAMINATIONS 2015

UGANDA ADVANCED CERTIFICATE OF EDUCATION

Building Construction

Theory

Paper Three

1½ Hours

INSTRUCTION TO CANDIDATES:

- *The paper consists of five questions.*
- *Answer only three questions.*
- *All questions carry equal marks.*

1. (a) (i) Differentiate between a **natural** foundation and **artificial** foundation. (1 mark)
- (ii) Give **two** functional requirements of any foundation. (2 marks)
- (iii) Mention **two** factors that determine the choice and design of a foundation. (2 marks)
- (iv) State **two** causes of ground movement in any subsoil. (2 marks)
- (b) Draw labeled sketches to illustrate the following foundations;
- (i) Short- bored pile (2 marks)
- (ii) Raft (2 marks)
- (c) Explain the following terms as applied in foundations;
- (i) Back fill (1 mark)
- (ii) Ultimate bearing capacity (1 mark)
- (d) (i) What are the **three** ways in which the edge of a raft foundation can be protected from deterioration? (3 marks)
- (ii) State a foundation to suit each of the following site conditions
- Mining and other subsidence areas (1 mark)
 - Soft silt clays and made ground (1 mark)
- e) (i) Why does the building regulations require the sides of excavated trenches to be supported by timbering? (1 mark)
- (ii) Using labeled sketches, illustrate the type of timbering used in;
- Dry loose soils (3 marks)
 - Firm soils (3 marks)
2. (a) (i) What is the importance of a lintel in a building? (1 mark)
- (ii) Draw a labeled vertical section through a form work for a cast – in- situ concrete lintel (3 marks)
- (iii) State **three** materials used in lintel construction (3 marks)
- (b) With aid of sketches, define the following terms in respect to arches (6 marks)
- (i) Haunch
- (ii) Extrados
- (iii) Springing point
- (iv) Skew back
- (v) Soffit
- (vi) Depth

- (c) (i) With aid of sketches, describe a turning piece (2 marks)
- (ii) Name **two** types of arches as classified according to their shape and two according to the materials used for construction (4 marks)
- (iii) Give **two** functions of an arch (1 mark)
- (iv) With aid of sketches, show the difference between an **axed** arch and a **rough** arch. (3marks)
- (v) State **two** factors to be considered when designing a centre for an arch (2 marks)
3. (a) (i) List **two** characteristics of a good timber. (2 marks)
- (ii) With aid of a sketch, describe six parts of a tree trunk. (6 marks)
- (iii) Name **two** families of timber. (1 mark)
- (iv) Give **two** reasons why it is necessary to season timber before use. (2 marks)
- (b) (i) State **one** timber defect which is due to seasoning and one defect due to timber conversion. (1 mark)
- (ii) Which **two** timber defects cause failure in structural timber? (2 marks)
- (iii) Differentiate between **dry rot** and **wet rot**. (1 mark)
- (iv) With aid of sketches, show **two** natural and **two** artificial timber defects (4 marks)
- (c) (i) What is the effect of sap wood on a piece of timber? (1 mark)
- (ii) Differentiate between timber **preservation** and timber **seasoning**. (1 mark)
- (iii) Give **two** methods of timber preservation. (2 marks)
- (iv) What is the most effective method of timber preservation? (1 mark)
4. (a) (i) Apart from painting, state one other way of surface finish to timber doors (1 mark)
- (ii) State two objectives of painting any surface (2 marks)
- (iii) Give two methods of paint application to metallic surface of building (1 mark)
- (iv) What procedure is taken in surface preparation to a new timber door before any surface finish is done? (4 marks)
- (b) Describe the following types of floor finishes, giving where each one is suitably applied.
- (i) Sand and cement screed (3 marks)
- (ii) Plastic tiles (PVC) (3 marks)
- (iii) wood strip (3 marks)
- (iv) Terrazo (3 marks)

- (c) (i) Differentiate between rendering and plastering in regards to wall construction. (1 mark)
- (ii) Explain the procedure of plastering a brick wall. (3marks)
5. (a) (i) Define the term **concrete** as applied to building construction. (1 mark)
- (ii) Explain the following types of concrete;
- Mass/ plain concrete
 - Reinforced concrete
 - Precast concrete
 - Cast – in- situ concrete (4 marks)
- (iii) Give the purpose of each of the constituent materials used in making concrete. (4marks)
- (b) (i) What is **batching** in respect to concrete production ? (1 mark)
- (ii) Give **two** methods of batching. (1 mark)
- (iii) State **two** methods used in concrete mixing. (2 marks)
- (c) (i) What is **workability** in regards to concrete? (1 mark)
- (ii) State **two** methods of testing the **workability** of concrete . (2 marks)
- (iii) Give any **four** factors that affect the **workability** of concrete. (2 marks)
- (d) (i) What do you understand by water- cement ratio of a concrete mix? (1mark)
- (ii) State four precautions, two concerning **transportation** and the others about **placing** of concrete. (4 marks)
- (iii) Define **curing** as applied to concrete. (1 mark)
- (iv) Describe the **two** chemical failures subjected to concrete. (2 marks)
6. (a) (i) State **three** performance requirements of a window. (2 marks)
- (ii) Give **two** factors to be considered when determining the size, shape and location of windows in a room. (2 marks)
- (b) (i) What is a **casement** window? (1 mark)
- (ii) State **two** advantages of a casement window . (2marks)

(iii) Draw a labeled elevation of a timber casement window to show the following parts

- Fixed light
- Horn
- Jambo
- Mullion
- Side hang sash
- Transom

(6 marks)

(c) (i) What is **glazing** as applied in construction?

(1 mark)

(ii) Illustrate **two** methods that can be used for fix glass in timber frames.

(2 marks)

(iii) Name **two** types of glass used in windows.

(2 marks)

(d) (i) Describe the following types of windows

(3 marks)

- Dormer
- Skylight

(ii) State **two** iron mongery that can be used to hold a casement sash in the same position.

(2 marks)

(iii) Give **two** methods of fixing windows frames in an opening?

(2 marks)

END