

Construction Technology and  
Material Knowledge

019

Friday, 04 Nov. 2011 8.30 – 11.30 AM

WORKFORCE DEVELOPMENT AUTHORITY



P.O. BOX 2707 KIGALI Tel: (+250) 255113365

**ADVANCED LEVEL NATIONAL EXAMINATIONS 2011  
PROFESSIONAL AND TECHNICAL OPTIONS**

**SUBJECT: CONSTRUCTION TECHNOLOGY AND  
MATERIAL KNOWLEDGE**

**OPTION: CONSTRUCTION (CST)**

**DURATION: 3HOURS**

**INSTRUCTIONS:**

This paper consists of three sections: **A** and **B**

**Section A:** Answer **all** the questions. (55marks)

**Section B:** Answer **three** questions of your choice. (45marks)

**Section A: Answer all the questions.**

**(55marks)**

01. Write down seven (7) use of buildings in a school offering also technical education *← chargée.* **(7marks)**
02. Mention three (3) types of loads on a building foundation **(3marks)**
03. List five (5) protective cloths that can be used in a building project **(5marks)**
04. Name six (6) members contractor's construction team **(6marks)**
05. Show six (6) facilities needed in a building site for good health and hygiene of workers there **(6marks)**
06. Identify eight (8) things that a building surveyor investigates on a building site **(8marks)**
07. Mention eight (8) construction documents including drawings used in the construction work **(8marks)**
08. List eight (8) facilities and services that should be available in a well managed construction site **(8marks)**
09. Show the types of excavations which workers on a small building sites carry out. Name four (4) different types **(4marks)**

**Section B: Answer three questions of your choice. (45marks)**

10. Draw and show clearly all the parts of timbering in supporting the sides of an excavation of a strip foundation **(15marks)**
11. (a) What is an excavation plant **(1mark)**
- (b) Explain the use of the following mechanical excavation plants as used in excavation works. *engin de terrassement* **(14marks)**
- (i) Bulldozers                      (ii) mechanical shovels                      (iii) backacter
- (iv) Mechanical auger                      (v) pneumatic drill                      (vi) dump truck
- (vii) tipper truck

← Confe sui fait p-e la  
fondate s'echave

12. (a) Describe any six (6) main causes of foundation failures in construction work **(12marks)**
- (b) State any three (3) measures that can be adapted to increase the bearing capacity or power of foundation soil, (any three methods) **(3marks)**
13. (a) With a clear sketch, draw the following types of walls: **(12marks)**
- (i) load bearing external walls (3mks)
  - (ii) non-load bearing external walls (3mks)
  - (iii) load bearing internal walls (3mks)
  - (iv) non-load bearing internal walls (3mks)
- (b) Mention any three (3) brick laying hand tools used in construction; **(3marks)**
14. (a) Using a clear drawing, sketch the following types of mortar joints:
- (i) half-round or concave joint
  - (ii) weather-struck joint
  - (iii) recessed joint
  - (iv) flush joint **(8marks)**
- (b) List the four (4) main types of bonding in brickwork **(4marks)**
- (c) Mention any three (3) materials used in making concrete **(3marks)**
15. (a) Explain the use of fireplaces and flues **(1.5marks)**
- (b) With a clear drawing, sketch a fire-place and label the following parts: **(13.5marks)**
- (i) chimney
  - (ii) flue
  - (iii) rendering
  - (iv) breast
  - (v) gathering
  - (vi) throat
  - (vii) jamb
  - (viii) fireback
  - (ix) concrete hearth

