

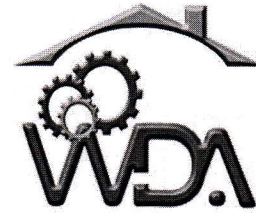
PWO – Construction Technology

T021

Tuesday, 15/11/2016

08:30 – 11:30

WORKFORCE DEVELOPMENT AUTHORITY



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2016,
TECHNICAL AND PROFESSIONAL STUDIES**

EXAM TITLE: Construction Technology

OPTION: Public Works (PWO)

DURATION: 3hours

INSTRUCTIONS:

The paper is composed of **three (3) main Sections** as follows:

Section I: Nineteen (19) compulsory questions. 55 marks

Section II: Attempt any three (3) out of five questions. 30 marks

Section III: Attempt any one (1) out of three questions. 15 marks

Note:

Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.

Section I. Nineteen (19) Compulsory questions**55marks**

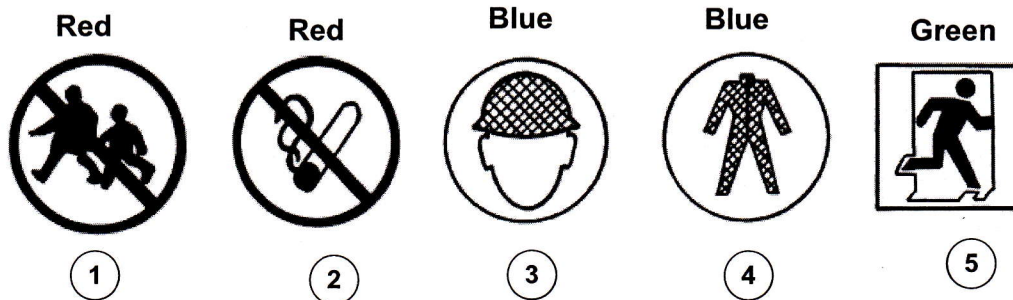
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- 01.** State the major requirements for a good foundation. **2marks**
- 02.** Give two classes of deep foundations. **2marks**
- 03.** Define the damp proof membrane (DPM). **2marks**
- 04.** What are the two types of floors? **2marks**
- 05.** Mention four (4) materials used in flooring. **4marks**
- 06.** With clear definitions differentiate the structural and non-structural wall. **2marks**
- 07.** What do you understand by the word “mortar”? **2marks**
- 08.** What should be the main characteristics of a good mortar? **2marks**
- 09.** Mention three (3) types of mortar. **3marks**
- 10.** Compare pointing with jointing. **2marks**
- 11.** Give out three (3) types of arches. **3marks**
- 12.** Name one type of roofing sheet which is forbidden in Rwanda and give one reason. **3marks**
- 13.** Mention five (5) types of stairways. **5marks**
- 14.** State the four (4) conditions a good building must satisfy. **4marks**
- 15.** Give two primary aims of implementing the trial pits and hand auger holes while carrying out the site investigation. **4marks**
- 16.** Give and explain three (2) methods used to check that the walls of a building are at a right angle during the building setting out. **4marks**
- 17.** With definitions differentiate manual excavation from mechanical excavation **2marks**
- 18.** State four (4) types of excavation. **4marks**
- 19.** Name three (3) classes of a single (pitched) roof type. **3marks**

Section II. Choose and answer any three (3) questions.

30marks

20. Explain the meaning of below signs on a construction site.

10marks

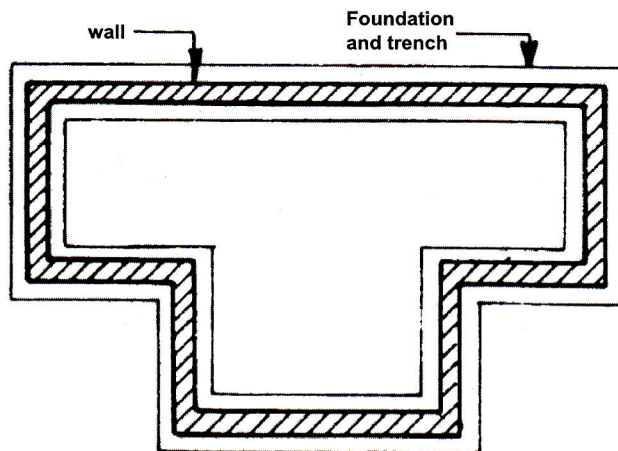


21. With help of neat sketches explain the procedure of silt test for sand. What is the objective of this test? **10marks**

22.

a) Given the foundation plan, show the layout of profile boards for excavation. **(6marks)**

b) Summarize the objective of setting out trenches in two (2) main points. **(4marks)**



23. a) Explain the role of joints in rigid paving. What are their two main classifications?

b) Upon what factors depend the spacing of road joints in rigid paving?

10marks

24. a) Briefly differentiate between putlog scaffolds and independent scaffolds?

b) Describe the characteristics of a good working platform?

10marks

Section III. Choose and answer any one (1) question.

15marks

25. Aggregate is one of key ingredients of cement concrete. Discuss the influence of aggregate properties below on the quality of concrete:

- a) Particle shape and surface texture
- b) Abrasion resistance
- c) Water absorption
- d) Gradation / Particle size distribution
- e) Cleanness and deleterious materials

26. Name five (5) laboratory and in situ tests which are recommended for a road construction project and discuss briefly the purpose of each test.

27. The following figure illustrates a typical cross section of a road whereby main parts are coded from A to E. Name and discuss each part.

