

PWO – Site Management Works

T019

Friday, 11/11/2016

08:30 – 11:30

WORKFORCE DEVELOPMENT AUTHORITY



P.O. BOX 2707 Kigali, Rwanda Tel: (+250) 255113365

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

EXAM TITLE: Site Management Works

OPTION: Public Works

DURATION: 3hours

INSTRUCTIONS:

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

Section I: Fifteen (15) 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

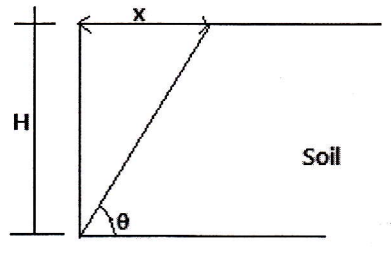
The use of calculator is admitted

Note:

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

Section I. Fifteen (15) Compulsory questions**55marks**

01. On the site construction work, the retaining wall to be constructed is show as follows

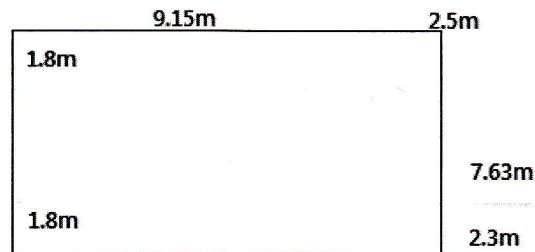


a) What are the forces acting on this structure? **2marks**

b) If $x = 0.50\text{m}$ and $H = 4\text{m}$, Calculate the slope of retaining wall. **3marks**

02. Arrange in the right order the components materials of concrete that must be prepared manually. **1mark**

03. Estimate the volume of excavation required for the basement shown in the figure below. The values shown at each corner are depths of excavation. **6marks**



04. A digital theodolite was set up at point 200m away from a transmission tower. The angle of elevation to the top of the tower was $30^{\circ}30'$, whereas the angle of depression to the bottom as $2^{\circ}30'$. Calculate the total height of the transmission tower. **6marks**

05. State at least five (5) excavation equipments that are involved in the excavation work. **5marks**

06. What are the two (2) types of leveling? **2marks**

07. What are the five (5) principle resources involved in a construction project? **5marks**

08. Define the word management. **2marks**

09. What are the three (3) levels of management? **3marks**

10. Classify the work according to the implementation. **3marks**

11. What are the three (3) main categories of stores? **3marks**

12. Give the model of table of receipts of materials taken from contractor. **6marks**

13. What are the two (2) factors affecting job site productivities? **2marks**

14. What are the two (2) classifications or categories of wood as the important material in construction? **2marks**

15. List any four (4) preservatives products of timber. **4marks**

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

30marks

16. In a context of staff competences on a construction site, differentiate between a “competent person” and a “qualified person”? **10marks**
17. A well planned site including all temporary facilities and utilities lead to increase productivity and safety, reduce area(s) needed for temporary construction, and maximize utilization. If safety measures have been carefully set out, what are other ten site layout planning elements to be considered for a good site layout? **10marks**
18. Plants used on a construction site can be bought or hired or where there are a number of similar items a combination of buying and hiring could be considered. **10marks**
- i) What are advantages of: - hiring a plant?
- Buying a plant?
- ii) Scrapers are available in three basic formats, what are they?
19. Discuss about a birdcage scaffold. What risk control measures that should be implemented for birdcage scaffolds made from tube and coupler scaffolding? **10marks**
20. Discuss about below labour characteristics: **10marks**
- a) Quality of works
 - b) Quantity of works
 - c) Job knowledge
 - d) Judgement
 - e) Initiative
 - f) Resource utilization
 - g) Analytical ability
 - h) Interpersonal skills
 - i) Ability to work under pressure
 - j) Planning effectiveness

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

15marks

21. Consider a backacter plant with 1m³ capacity bucket engaged in normal trench excavation in a clayey soil and discharging directly into an attendant haulage vehicle. Calculate its anticipated and net outputs for following parameters:
- 1) Optimum output: 60 bucket per hour
 - 2) Task efficiency factor: 0.8
 - 3) Operator efficiency factor: 75%
 - 4) Swell factor of 30%
- If the Bill of Quantities gives a total net excavation of 950m³, calculate the number of days required to finish the work if the plant works 8 hours per day allowing for a maintenance time of ½ hour. **15marks**
22. In the context of supervision on a construction site, fill in below table relevant information:

Obligations	
Contractor	Supervisor Engineer

15marks

23. Figures 1 and 2 illustrate the layout of building materials and access roads for the purposes of servicing two hoists for the erection of a low-rise building. If on figure 2 the layout is an improvement option of figure 1 layout, criticize figure 1 layout and give positive comments on figure 2 improvement layout. **15marks**

