

NATIONAL TVET ASSESSMENT, RTQF LEVEL 5, 2019

INSTRUCTIONS TO CANDIDATES: PART I

1. A candidate should fill in the actual names and the Index number on the cover of this questions and answer booklet on the provided place(Black Box).
2. It is illegal for a candidate to write any of names, Index number or school name inside the answer booklet.
3. A candidate should check if all pages of the answer booklet are complete i.e. from page 1 of 28 up to page 28 of 28. No candidate should remove or tear any pages or part of it in the answer booklet.
4. A candidate should answer in the language in which the examination is set.
5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.
6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.
7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.
8. Write your answers on the 16 lined pages (From page 7 of 28 to page 22 of 28).
9. Use the last non-lined pages as draft (From page 23 of 28 to page 28 of 28).
10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

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OPTION/TRADE: ROAD CONSTRUCTION

SUBJECT: Cost Estimation and Site Management

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II

The paper is composed of two (2) Sections as follows:

Section I: Attempt all the eight (8) questions **40 marks**

Section II: Attempt any six (6) questions out of eight (8) **60 marks**

Allowed materials:

- Ruler or Square
- Calculator

Note:

Every candidate is required to carefully comply with the provided assessment instructions.

Section I: Attempt all the eight (8) questions**40 marks**

- (01) It is a problem when the estimated cost is greater than the budget available for the road project to be implemented. Propose solution to that problem. **(5marks)**
- (02) Differentiate total float from free float. **(5marks)**
- (03) Assume you are seeking the job of road construction site recorder in a certain road construction company. Provide the reason why we link “work breakdown structure” with “organization breakdown structure” in project planning. **(5marks)**
- (04) In project costing, two (2) types of costs (approximate cost and actual cost) are identified. According to you, what is the difference between those two terms? **(5marks)**
- (05) In the context of road construction site management, how to differentiate indoor to outdoor location of a project? **(5marks)**
- (06) Discuss the aim of effective management of road construction project and highlight three (3) steps to be followed while determining its duration. **(5marks)**
- (07) Being site manager requires a good understanding about dummy activity. Explain what is meant by dummy activity and mention the two (2) cases when it is needed in AOA representation. **(5marks)**
- (08) Road construction site management involves scheduling and planning activities. How do you differentiate the two activities? **(5marks)**

Section II: Attempt any six (6) questions out of eight (8)**60 marks**

- (09) Mss. Munezero has been assigned the task of setting out a road ditch. Advise her by giving the five (5) factors to consider for providing safety measures in her work. **(10marks)**
- (10) As a Site Estimator in ABC Construction Company, determine the quantities of bricks, sand, and cement for a volume of 24m³ of brick work in superstructure. Use a ratio of 1:4 and the measurement of a standard clay brick (0.1025 x 0.065 x 0.215m). **(10marks)**
- (11) The invoice is a well-known concept in road construction site management. State any seven (7) elements of invoice and highlight six (6) types of invoices you can send to your road construction site supplier, if you are nominated the site manager. **(10marks)**

(12) The construction of a reinforced concrete wall involves placing 660 m³ concrete, fixing 50 ton of steel, and 790 m² of formwork. The following information includes the tasks involved in this activity:

- ❖ A 6-man concrete crew can place 16 m³ of concrete/day.
- ❖ A steel-fixer and assistant can fix 0.5 ton of reinforcement/day.
- ❖ A carpenter and assistant can fix and remove 16 m² of shuttering/day.

Calculate the duration of the activity considering the steel-fixer as the critical resource.

(10marks)

(13) The Ministry of Local Government has a small 3 houses project for VUP. The main segments of a single house, the responsibilities, and the logical relationship are identified as follows:

- 11 work packages are involved: A and B (civil work, substructure), C, D, E, and F (civil work, superstructure), G (electrical, interior), H (electrical, exterior), I (mechanical, HVAC), J (mechanical, elevator), and K (mechanical, plumbing).
- Substructure is supervised by Paul (activity A), and Abel (activity B).
- Superstructure is supervised by Hosiane (activities C and F) and Pascal (activities D and E).
- All electrical work is supervised by George.
- HVAC and plumbing are supervised by Abas; elevator work is supervised by Sammy.
- Activities E and F follow activity B.
- Activity C precedes activity G.
- Activity I follows the completion of activity E.
- The predecessors to activity K are activities H and I.
- Activity D follows activity A and precedes activity H.
- Activity J is preceded by activities F and G. It is required to create a WBS (work breakdown structure) and OBS (organization breakdown structure) chart.

Draw the AOA (Activity on Arrow) and AON (Activity on Node) networks for the project.

(14) When conducting construction site supervision, it is a must of being familiar with activities relationships. With examples, explain four (4) types of site activities relationships that exist in site management.

(10marks)

(15) If you are a manager at a road construction site, what are the five (5) indicators that will guide you to know whether delivered sand is good or not?

(10marks)

(16) GISAGARA District Hospital needs a simple residential building for the Doctor. It will be constructed by ABC Constructors, and CEO Ltd

(Supervision Company) has provided its drawings (plan view, section plan). The Hospital needs whole cost estimation for the simple residential building for budget preparation. As a construction site supervisor, the Hospital asks you to carry out the following tasks:

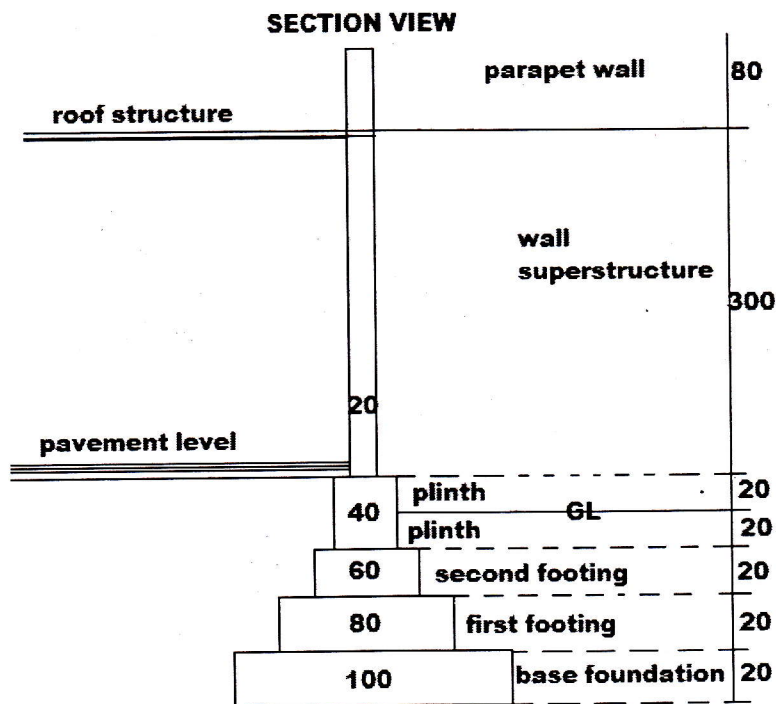
- a) Prepare the bill of quantities
- b) Calculate the rough cost

5marks

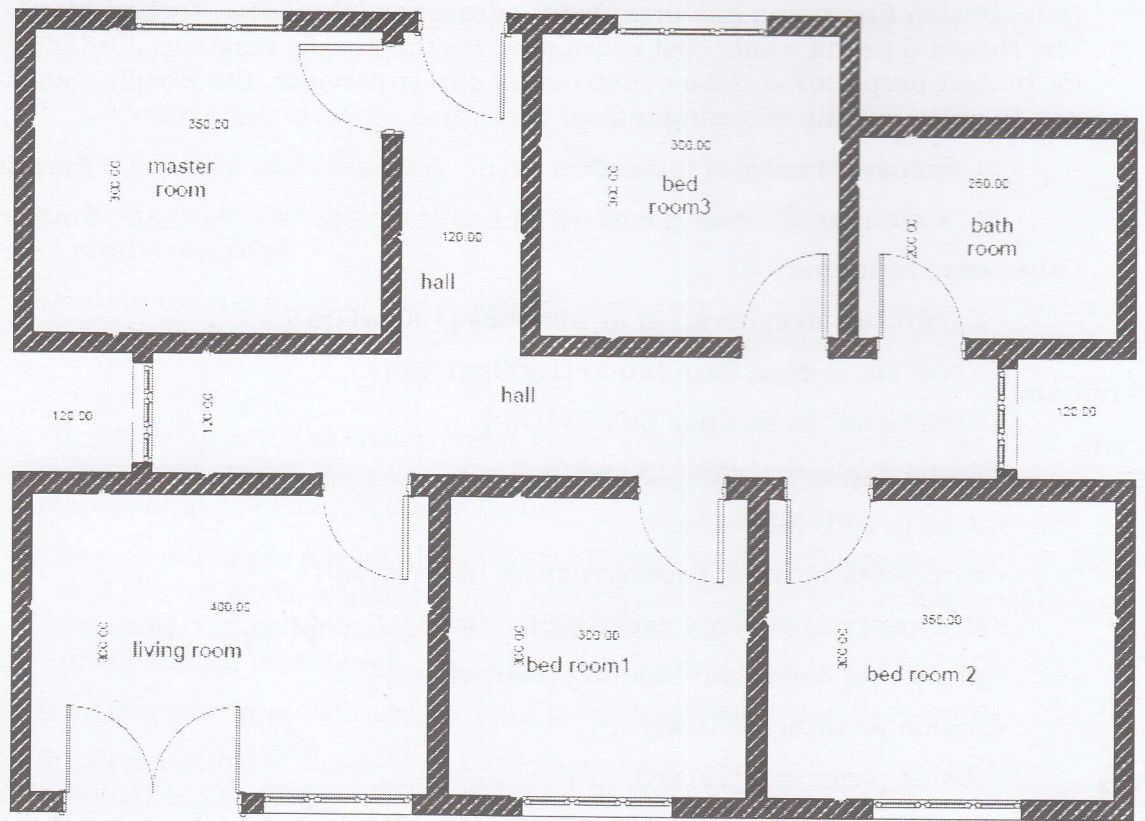
5marks

Other specifications:

- ✓Earthwork in excavation in trenches [400rwf/m³]
- ✓Concrete in base foundation [1500rwf/m³]
- ✓Stone work in footings [200rwf/m³]
- ✓Stone work in plinth [200rwf/m³]
- ✓2.5mm DPC [80rwf/m²]
- ✓Brickwork in walls superstructure [300rwf/m³]
- ✓Brickwork in parapet walls[300rwf/m³]
- ✓plastering inside the building [100rwf/m²]
- ✓Inside painting [100rwf/m²]
- ✓Inside pavement [150rwf/m²]
- ✓Inside ceiling [90rwf/m²]
- ✓Plastering of the outside walls with parapet walls [100rwf/m²]



all dimensions are in cm



the dimensions of doors are 90*210 for single doors and 180*210 for double door while windows are 150*150 for big windows and 100*150 for small windows in halls only