Copy for St Construction.

CST - Cost Estimation

T024

Tuesday, 05/11/2013

1: 30 – 4:30 PM

WORKFORCE DEVELOPMENT AUTHORITY

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

ADVANCED LEVEL NATIONAL EXAMINATIONS, 2013, TECHNICAL AND PROFESSIONAL TRADES

EXAM TITLE: **Cost Estimation**

OPTION: **Construction (CST)**

DURATION: **3hours**

INSTRUCTIONS:

The paper contains **Three (3)** Sections :

Section **I**: Sixteen **(16)** questions, all **Compulsory**. **55marks**

Section **II**: Five **(5)** questions, **Choose any Three (3)**. **30marks**

Section **III**: Three **(3)** questions, **Choose any one (1)**. **15marks**

Section I: All the 16 questions are compulsory 55marks

01. Define the term "estimate" in construction. **2marks**

02. A detailed estimate may be prepared in two ways, what are they? **2marks**

03. List down at least six forms of dimensions and principal units that can be used in preparing a bill of quantities. **3marks**

04. Give any four key functions of a quantity surveyor. **4marks**

05. What can be considered as six basic tender documents? **3marks**

06. In a tabular form, give a clear difference between "detailed form of measurement" and "abstract of estimate". **2.5marks**

07. Explain in short the following terms common in estimating and costing: **3marks**

i) Valuation **ii)** Money value **iii)** Bill of quantities.

08. Which measurement do you use in measuring the following units of work: **5marks**

i)	Brick work	iv) R.C.C work	vii) Electric wiring	x) Handrail.
ii)	Roof tiles	v) Pointing	viii) Iron gate	
iii)	Furniture	vi) Flooring	ix) Reinforcement steel	

09. List down at least three ways in which a construction contract may be entered. **3marks**

10. Discuss three widely known methods of tendering. **3marks**

11. a) Identify three persons involved in preparation of an approximate cost. **2marks**

b) Differentiate between approximate cost from actual or real cost. **2marks**

12. The processes of BOQ calculation and tendering will finally lead to the signing of a contract between owner and contractor.

i) How do you define a construction contract? **2marks**

ii) What do you understand by a non-binding or non-allowable construction contract? **2marks**

13. Identify the four ways in which a construction contract can be discharged or terminated? **4marks**

14. a) The construction industry requires the teamwork spirit from beginning to completion. How can you define a building team? **1mark**

b) List down any four members of the building team. **2marks**

15. Prepare an approximate estimate of building project with the help of the plinth area method if the total plinth area of all building is 800 sqm. And from following data.

a) Plinth area rate Rs. 4500 per sqm

b) Cost of water supply at 7½% of cost of building.

c) Cost of Sanitary and Electrical installations each at 15% of cost of building.

d) Cost of roads and lawns at 5% of building cost.

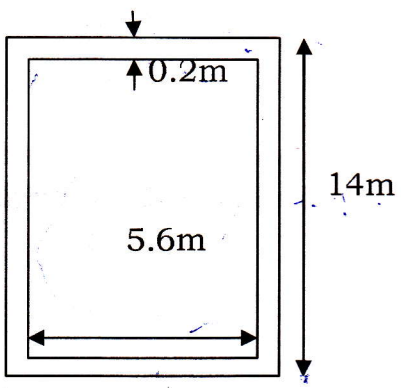
e) Contingencies at 4% of building cost.

Determine the total cost of building project. **5marks**

16. With the purpose of meeting the estimated cost and maximizing the benefits, both the client and the contractor may decide the use of sub-contraction method. Discuss three types of sub-contractors common in construction industry. **4.5marks**

Section II: Choose and answer any three questions 30marks

17. Given the single roomed house floor plan below:



If the depth of foundation trenches to be excavated from the ground level is 0.5m; answer to the following questions:

i) Cleary detail the data to use in calculations. **3marks**

ii) The area of the cement pavement needed. **2marks**

iii) The volume of soil in foundation excavation. **2marks**

iv) The cost of foundation masonry at 55,000Rwf per unit if this one will be 20cm above the leveled ground. **3marks**

18. KAMANA has constructed a simple house in the district of KAMONYI. The following are some rates for certain elements of his house:

Element	Rate in Rwf
1. Sub-structure	300,000
2. Super-structure	450,000
3. Roofing	150,000
4. Finishing	320,000
5. Drainage	290,000
6. Gardening	115,000
7. Provisional sum	100,000

If 15% is to be added to cover profit and overhead cost, calculate the tender for these elements using:

i) Net pricing method **5marks**

ii) Gross pricing method. **5marks**

19. a) State and explain in short three types of certificates to be given to the contractor during the construction project period. **3marks**

b) List down 7 steps of works valuation before payment if the contractor is to be paid from time to time. **7marks**

20. Read carefully the table below and answer to the asked questions.

	Item No.	Quantity	... (a)....	...(b)...in Rwf/unit	Amount in ...(c).....
1.	Earth work in excavation in foun dation.	11.42	... (d)...	350.00	... (e).....
2	Earth work in filling.	42.15	... (f)....	... (g).....	11,550.00
3.	Lime concrete in foundation	... (h)...	Cu m	220.00	717.20
4.	1st class brick work in lime mortar.	21.42	... (i)....	300.00	6,426.00
5.	12mm sand plastering 1:6	... (j).....	... (k).....	7.00	323.40
6.	2.5cm cement concrete 1:2:4 floors over and including 7.5cm lime concrete.	21.84	... (l)....	18.65	..... (m)...

7.	2.5cmcement concrete 1:2:4 floor	8.16	Sq m	... (n).....	146.88
				Total	... (o).....
				Add 3% of contingencies	... (p).....
				Add2% for work charged establishment	... (q).....
				Grand Total	... (r).....
				We say.....(s).....francs.	

i) Propose a reasonable title to the table above. **0.5mark**

ii) Replace letters in parentheses from (a) to (s) by corresponding values or words. **9.5marks**

21. a) Develop any four purposes of doing an estimate. **4marks**

b) Identify the most important principles of deciding a unit of measurement for construction works. **6marks**

Section III. Choose one question from this section 15marks

22. The Rwanda Public Procurement Authority (RPPA) is a state owned institution. One of its duties is to insure that Bill of quantities and cost estimates for works to be carried out is prepared by qualified people. Identify the seven qualifications required for a good estimator. **15marks**

23. One secondary school wants to construct an on ground circular water tank. The dimensions of the tank are:

- Internal Diameter=2.5m and 2.75m height up to the top cover.
- Thickness of plaster 30 mm.

Find out the following:

a) The volume of water to be stored in the tank when filled. **4marks**

b) The amount of internal and external plaster lime cement mortar mixed at 1: 2: 4. **3marks**

c) The amount of each particular constituent of mortar. **4marks**

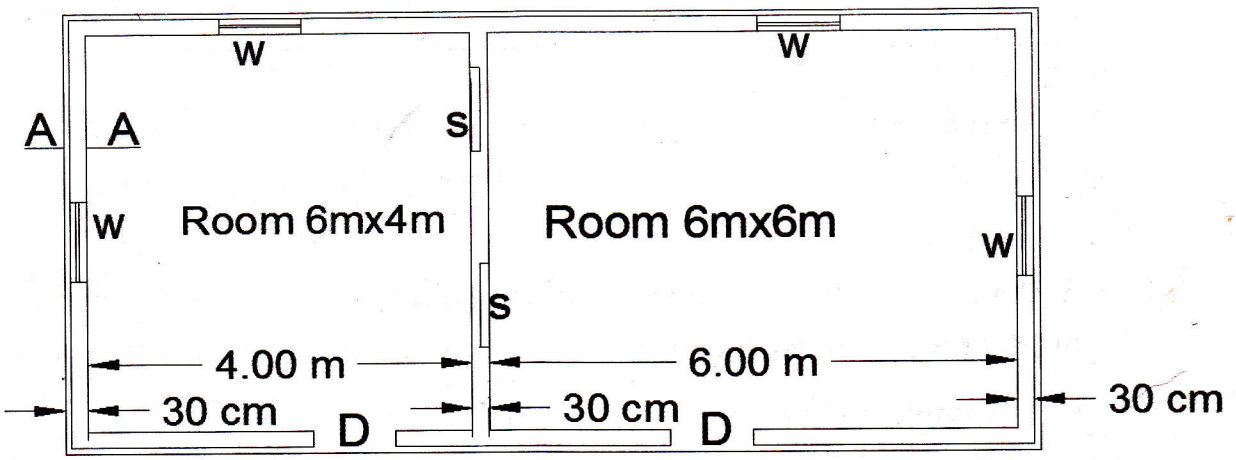
d) The amount of oil paint to be used on internal wall if 5 litters can paint 2.2m^2. **4marks**

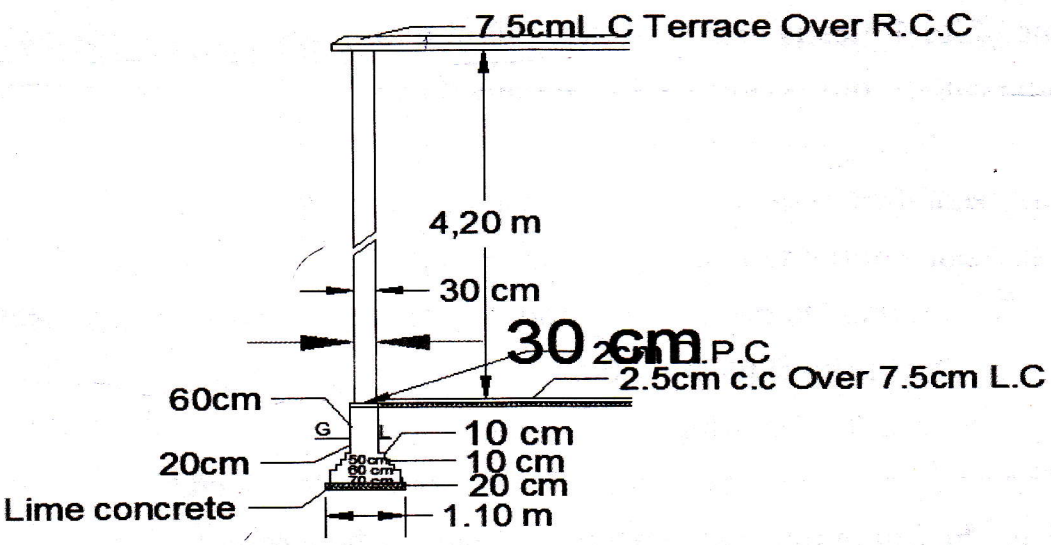
24. Using the information provided on the below drawings, apply the center to center or the long and short wall method to calculate the required quantities of:

i) Earth work in foundation in excavation; **3marks**

ii) Lime concrete in foundation, **2marks**

iii) 1st brick work in cement mortar 1:6 in foundation and plinth. **10marks**





BLANK PAGE