

Q₁. Six qualities of a good estimate are:

- Organization
- Correct quantities
- Correct pricing
- Accurate calculation
- Completeness
- Proper overhead
- Proper profit
- A good estimate should be prepared by experienced estimator.
- It should be prepared according to the drawing
- Based on the specification
- should have explanatory note
- should consider the location of site
- should be conducted after site visit

(Any six 1 mark for each)

Q₂. Mention the three (3) resources which require a unit rate in estimation.

- Labour
 - Materials
 - Plant (equipment and tools)
- (1 mark each)

Q₃. State five factors which an estimator should consider in pricing construction materials.

- Transportation costs
- Loading and unloading
- Materials movement on site
- Extra materials to compensate for wastage
- Actual cost of material
- Quantity of materials needed
- Type of materials needed
- The time when the materials are needed
- Taxation
- Stacking costs (Any five one mark for each)

Q4. Highlight clearly the four (4) stages of preparation of estimate.

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- Taking out the quantities
- Squaring
- Timezing
- Pricing / abstract (2 marks for each)

Q5. The visit to the site will enable the estimator to produce a report which has specific information, describe three (3) of such information in that report.

- The position of the site in relation to the road.
 - Names of local and statutory authorities
 - Details of site / ground conditions, spot item etc. (topography)
 - Facilities for disposal of surplus excavated materials etc.
 - Availability of services such as electricity water.
 - Environmental condition and availability of labour.
- (Any three 2 marks for each)

Q6. Explain the meaning of the Contract documents as used in estimation

a) Condition of Contract: A written agreement intended to be enforceable by law to bind the appointed contractor with the employer based on an agreed condition.

b) Contract drawings: Technical / detailed construction drawings for measurement / cost by QS / Engineers prepared by architect / engineer

(2 marks each)

Q. Differentiate the following documents which are used in estimations:

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- (i) Specification/Preambles: A concise description of materials and workmanship standard of quality of workmanship. It must convey the architect and engineer's requirement.
- (ii) Bill of quantities: Prepared by quantity surveyor based on measurement from the construction drawing/building plans. This document was itemized all the quantities for each categories of works applied in constructing the building. The contractor will price/estimate all the works associated in completing the buildings during pre-construction stage.

(2 marks each)

Q. What do you understand with the term "Valuation"? Explain clearly.

Valuation is the art/science of estimating values or
It is the process of determining the fair price of a property such as land, building or factory.

(3 marks)

Q. Provide a clear description of the following terms used in estimation:

a) Appraisal: Means the written provision of valuation, combined with professional opinion, advice and/or analysis relating to the suitability of profitability or otherwise, of the subject property for the defined purposes, or to the effects of specified circumstances thereon, as

judged by the valuer following relevant investigations.

b) **Worth**: Is a specific investor's perception of the capital sum which he would be prepared to pay (or accept) for the stream of benefits (real or inferred) which he expected to be produced by the investment.

c) **Value**: Is the estimate of the price that would be achieved if the property were to be sold in the market.

d) **Market Value**: The market value of a property is the amount which can be obtained at any particular time from the open market if the property is put for sale. or It is a current price on the market.

(2 marks for each)

Q10. What is the difference between price and cost? Give a clear meaning of each.

a) **Price**: The value of the property on the market or value that you can sell a property.

b) **Cost**: Is the total amount required to construct a project from the starting to the completion. (2 marks each)

Q11. List at least four (4) items stated in the enquiries and quotation document to the suppliers during tender preparations.

- The specification of the material

- The quantity required
- The anticipated delivery dates
- The items upon which the price is required
- The date by which the quotation is required
- The address of the site and access details
- Period for which the quotation is open for acceptance
- Invitation letter
- Source of fund
- Instruction to tender
- Required documents for tendering
- Technical prescription

(Any four 1 mark each)

SECTION II

Answer any three questions

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Q12) What are overheads?

Overheads may be defined as the cost of maintaining (running) the contractor's organization. (Analyse the student's answer)
(2 marks)

b) Explain head office overheads by giving six (6) examples.

- Head office overheads
- Annual cost of staff salaries, expenses.
- Rents
- Rates
- Water
- Electricity
- Gas
- Telephones
- Office equipment
- Postage
- Insurance
- Maintenance of buildings and equipment etc.

The cost of these items is expressed as a percentage of a company's turnover and included in the tender.

(Any 6 1 mark for each)

c) Give two (2) examples of project or site overheads.

Project or site costs including non-productive (manual) site staff, site office costs, storage facilities and other preliminary site organization costs.

(Any 2, 1 mark each)

Q13. Name at least five (5) SI basic units, their five basic quantities and the corresponding five symbols.

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SI Basic unit

Base unit	SI base unit	
	Name	Symbol
Length	Meter	m
Mass	Kilogram	kg
Time	Second	s
Electric current	Ampere	A
Thermodynamic temperature	Kelvin	K
Amount of substance	Mole	Mol
Luminous intensity	Candela	cd

(Any five 2 marks for each)

Q14. a) Name five (5) items which the cost of temporary storage of water can include.

- Cost of labour
- Cost of materials in constructing surface tank, overhead tank
- Pipe work cost
- Cost of cleaning and maintaining tanks, water pipes and water pumps
- Pumps cost
- Cost of removal of water storage and temporary pipe work and
- Cost of making good ground disturbed
- Overheads and profits.

(Any five 1 mark each)

b) In costing the pipe borne water in a site, mention five (5) cost items included.

- Cost of water connection by water board
- Cost of labour for laying pipes
- Cost of disconnection, removal of pipe and making good defect.
- Cost of materials
- Cost of temporary storage
- Overhead and profit
- (Any five 1 mark each)

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Q15. a) What are preliminary items?

Preliminary items are items of cost which do not relate to any particular work section and usually listed in the first bill of quantities. (2 marks)

b) Describe site supervision as a preliminary item.

Site supervision is defined as the work that is done before starting the construction work to check:

- The accessibility of the site
 - Condition of the site
 - Availability of materials
 - Availability of tools and plants
 - Availability of labour
- (3 marks)

c) Highlight five (5) cost items to be considered by an estimator during the pricing of scaffolding.

- Hire rate for the duration of the project
- Labour cost for erecting scaffolding on site

- Labour cost for adopting scaffolding for special uses
 - Labour cost for dismantling scaffolding at the end of the project
 - Transportation cost for bringing to site and removing from site all scaffolding
 - Profit and overhead.
- (5 marks)

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Q16. Highlight ten (10) characteristics which can describe a good estimator.

- Reads contract document well
- Knowledge about construction techniques
- Familiar with typical job conditions
- Familiar with construction products
- Has good visualisation skills
- Follows instructions explicitly
- Is creative, yet practical
- Is detail-oriented and thorough
- Can meet deadlines and work under pressure
- Familiar with purchasing
- Familiar with computer applications
- Works well with numbers and statistics
- Is a perfectionist at the task level
- Has very good organization skills.

(1 mark each)

SECTION III

Q17. Discuss clearly ten (10) factors affecting tender price

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- Market Condition
- Availability of material
- Availability of labour
- Transportation
- Location
- Location of site
- Time Consideration
- Site condition
- Total height of building
- Legislation
- class of contractors
- Type of client
- Types of Consultants
- Types of Tendering

(Any ten remarks each)

Q18. Prepare an abstract of estimated cost of part of a wall of a building from the given plan and section and general specifications (wall with standard Modular Bricks)

Detailed estimate of measurement and calculation of quantities

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S/N	Description of Items	No	Dimension			Quantities
			Length (m)	Breadth (m)	Height (m)	
1	Earthwork in excavation in foundation	1	6	0.8	0.9	4.32 Cu.m
2	Lime concrete in foundation	1	6	0.8	0.3	1.44 Cu.m
3	1st class brick work in lime mortar in foundation and plinth					
	1st footing	1	6	0.6	0.2	0.72 Cu.m
	2nd footing	1	6	0.5	0.2	0.60 Cu.m
	Plinth wall up to G.L	1	6	0.4	0.2	0.48 Cu.m
	Plinth wall above G.L	1	6	0.4	0.6	1.44 Cu.m
	Total					3.24 Cu.m
4	2.5cm damp proof course	1	6	0.4	-	2.4 Sq.m
5	First class brick work in lime mortar for superstructure	1	6	0.3	3.5	6.3 Cu.m
6	12mm plaster of cement sand inside	1	6	-	3.5	21 Sq.m
	Outside including 10cm below G.L	1	6	-	4.2	25.2 Sq.m
7	White washing 3 coats over inside	1	6	-	3.5	21 Sq.m
8	Colour washing 2 coats over one coat of white washing (outside above G.L)	1	6	-	4.1	24.6 Sq.m

Abstract of estimate cost

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Item No	Description of items of work	Quantity	unit	Rate RWF	Per	Amount RWF	
1	Earthwork in foundation	4.2	Cu.m	350 320	Per Cu.m	1512 81	1.5 marks
2	lime concrete in foundation	1.44	Cu.m	220	Per Cu.m	316.80	1.5 marks
3	1st class brickwork with white lime in foundation/plinth	3.24	Cu.m	300	Per Cu.m	972	1.5 mark
4	D.P.C.	2.4	Sq.m	20	Per Sq.m	48	1.5 mark
5	1st class brickwork with white lime in superstructure	6.3	Cu.m	320	Per Cu.m	2016	1.5 mark
6	12mm Cement plaster	46.2	Sq.m	8.5	Per Sq.m	392.70	1.5 mark
7	White washing 3 coats	22	Sq.m	0.75	Per Sq.m	15.75	1.5 mark
8	Colour washing 2 coats over one coats of white washing	24.6	Sq.m	0.82	Per Sq.m	20.17	1.5 mark
Total						5283/422 RWF	3 marks

8 items: 1.5 marks each, correct estimate tables with all columns 2 marks, and correct answer 3 marks.

Item No	Description of Item	Dimensions			No	Quantities	Explanatory notes
		Length	Breadth	Height			
1	Earthwork in excavation - Front	2.7	1	0.2	0.54 cu.m	$h = 2.50 + 0.1 + 0.1 = 2.7m$	
	Side	1.7	1	0.2	0.34 cu.m	$h = 2.50 - 0.90 + 0.10 = 1.7m$	
	Total				0.88 cu.m	3 marks	
2	Concrete in foundation - Front	2.7	1	0.15	0.405 cu.m	Length the same as above	
	Side	1.7	1	0.15	0.255 cu.m		
	Total				0.66 cu.m	3 marks	
3	Brickwork - 1st Step - Front	2.50	0.90	0.20	0.450 cu.m	$L = 2.50$	
	Side	1.60	0.90	0.15	0.216 cu.m	$h = 2.50 - 0.90 = 1.60m$	
	2nd Step - Front	2.20	0.60	0.15	0.198 cu.m	$L = 2.50 - 0.30 = 2.20m$	
	Side	1.60	0.60	0.15	0.144 cu.m	$L = 2.20 - 0.60 = 1.60m$	
	3rd Step - Front	1.90	0.30	0.15	0.086 cu.m	$h = 2.50 - 0.60 = 1.90m$	
	Side	1.60	0.30	0.15	0.072 cu.m	$h = 2.50 - 0.30 = 1.60m$	
	Total				1.166 cu.m	4 marks	
	4	20mm Cement plastering - 1st Step - Front	4.70	0.30	0.15	1.41 sq.m	$L = 2.50 + 2.20 = 4.70m$
		Side	5.00	0.30	0.15	0.75 sq.m	
2nd Step - Front		4.10	0.30	0.15	1.23 sq.m	$L = 2.20 + 1.90 = 4.10m$	
Side		4.40	0.30	0.15	0.66 sq.m		
3rd Step - Front		3.50	0.30	0.15	1.05 sq.m	$L = 1.90 + 1.60 = 3.50m$	
Side		3.80	0.30	0.15	0.57 sq.m		
Plinth. Rise, Front		3.20	0.30	0.15	0.48 sq.m		
Total				6.15 sq.m	5 marks		

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