

## PREPARE BILLS OF QUANTITIES

**UNIT CODE:** ENG/OS/QS/CR/05/6/A

### UNIT DESCRIPTION

This unit describes the competence in preparing bills of quantities. It involves interpreting working drawings, taking off quantities, working up dimensions, abstracting measured quantities, billing measured works, pricing bill of quantities and estimating the project cost.

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicized terms are elaborated in the Range)</i>
1 Interpret working drawings	1.1 <b><i>Type of drawing</i></b> is identified based on the title 1.2 Drawing dimensions are read and scaled as per the unit of measure 1.3 Shape of the drawing is identified based on geometry 1.4 Schedules are read together with the drawings 1.5 Instructional notes are read for additional information on the drawing
2 Take off quantities	2.1 Dimension sheet/paper is prepared based on the standard format 2.2 List of quantities to be measured is prepared based on items to be measured 2.3 <b><i>Quantities</i></b> are calculated based on the unit of measure 2.4 Dimensions are booked based on the principles of measurement 2.5 Booked items are described based on the standard method of measurement for building and associated civil works ( SMM) and civil engineering standard method of measurements (CESMM)
3 Work up dimensions	3.1 Timesing of dimensions is carried out as per SOPs 3.2 Dimensions are squared as per SOPs
4 Abstract measured quantities	4.1 Abstracting sheet is prepared based on the standard format 4.2 Description of booked items are transferred to the abstracting sheet as per SOPs 4.3 Squared quantities are transferred to the abstracting sheet 4.4 Net quantities are calculated as per SOPs 4.5 Running through dimensions is carried out as per SOPs
5 Bill measured Quantities	5.1 Billing paper is prepared based on the standard format 5.2 Abstracted quantities and their corresponding descriptions are transferred as per SOPs 5.3 Casting up is carried out as per SOPs 5.4 Price the bill of quantities as per the SOPs
6 Estimate the project cost	6.1 Unit rates are built up based on the work element 6.2 Unit rates are inserted as per SOPs 6.3 Total cost of each work element is calculated as per SOPs

## RANGE

Variable	Range <i>May include but is not limited to:</i>
1. Type of drawing	1.1 Architectural 1.2 Structural 1.3 Electrical 1.4 Mechanical 1.5 Civil
2. Quantities	2.1 Volumes 2.2 Areas 2.3 Linear meters 2.4 Numbers (enumeration) 2.5 Items

## REQUIRED KNOWLEDGE

- Technical drawing
- Building drawings
- Civil drawings
- Construction technology
- Civil technology
- Applied mathematics
- Technical terminologies
- Structural design
- Standard documents (CESMM and SMM)
- Quantity surveying practice and procedures
- Construction procedures
- Units of measurement
- Principles/terminologies
- Abstracting
- Casting up
- Running through
- Estimating and costing
- Work study
- MS Excel

## SKILLS

- analytical
- computer literacy
- Construction
- Structural detailing
- Scaling
- Technical and building drawings

- Civil drawings
- Design

## EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>• Identified type of drawing</li> <li>• Read and scaled dimensions</li> <li>• Read instructional notes</li> <li>• Carried out taking off of quantities</li> <li>• Worked up dimensions</li> <li>• Transferred descriptions of booked items to abstract sheet</li> <li>• Transferred squared quantities</li> <li>• Run through dimensions</li> <li>• Billed measured works</li> <li>• Priced bill of quantities</li> <li>• Build up unit rates</li> </ul>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>• Stationery</li> <li>• Computers</li> <li>• Computer lab</li> <li>• Computer software</li> <li>• IT technician</li> <li>• Computer accessories</li> <li>• Scientific calculators</li> <li>• SMM/CESMM</li> <li>• WIN-QS</li> </ul>
<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <p>3.1 Written text</p> <p>3.2 Interview</p> <p>3.3 Observation</p>
<p>4. Context of Assessment</p>	<p>Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.</p>

5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.
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