

Education 100

Bourgeois
QUANTITY SURVEYING N411
(One 4-hour paper)

(With effect from January 1980)

This syllabus is divided into three parts, viz. Analysis of construction details; theory of quantity surveying; practical quantity surveying.

- A. Analysis: Free-hand sketches (in good proportions) of construction methods, details and materials necessary for the efficient measurement and description of quantities for small buildings of simple design, with particular reference to contents of bills of quantities and relevant specifications.
- B. Theory:
- (i) The relationship between drawings, bills of quantities, specifications, the Standard Form of Building Contract and the Standard System of Measuring Builder's Work in South Africa.
 - (ii) Essential components of general preliminaries and trade preambles in bills of quantities.
 - (iii) Office procedures related to the production of bills of quantities.
- C. Practical:
- (i) Exercises in squaring, abstracting and billing including intermediate checking operations and the use of the specially ruled dimension, abstract and billing paper.
 - (ii) Taking off of quantities of small buildings not exceeding four rooms consisting of a basement and/or ground floor in the following trades and operation: Excavator; Concretor; Reinforced concrete work; Bricklayer; Carpenter; Plasterer; Electrician; Plumber.

QUANTITY SURVEYING N521

(One 4-hour paper)

(With effect from January 1981)

Note

- (a) The Standard System may be used in the examination.
- (b) This syllabus is divided into three parts:
1. Analysis of construction details
 2. Theory of Quantity Surveying
 3. Practical Quantity Surveying.
1. Analysis: Free-hand sketches (in good proportion) of construction methods, details and materials necessary for the efficient measurement and description of quantities for a double-storey building of simple design, with particular reference to descriptions in and contents of bills of quantities and relevant specifications.
2. Theory:
- (i) The quantity surveyor's role and responsibilities in building contracts.
 - (ii) The relationship between the form of contract, drawings, bills of quantities, specifications and the Standard System of Measuring: the effects of this relationship on the contents and method of presentation of bills of quantities.
 - (iii) Prime cost items and provisional sums.
 - (iv) The preparation of valuations for payment certificates
 - (v) The preparations of final accounts, variation orders and the settlements of contracts.
3. Practical:
- (i) Taking off, squaring, abstracting, and billing from drawings of the following items: Excavations and earthworks; foundations; basements; sloping site foundations; solid and hollow wall construction screen and fence walls; fireplaces; chimney shafts; copings, sills; internal floor, wall and ceiling finishes; timber and metal windows; all types of doors; plumbing and drainage.
 - (ii) Billing without quantities.

QUANTITY SURVEYING N631

(One 4-hour paper)

(With effect from September 1981)

Note

- (a) The level of examination work will be appreciably higher than in the previous grade.
- (b) The Standard System may be used in the examination.
- (c) This syllabus is divided into three parts:
 - 1. Analysis of construction details
 - 2. Theory of Quantity Surveying
 - 3. Practical Quantity Surveying.

Scope: Contemporary building work; complete buildings or parts of buildings in extension of the work of previous grades; three-storey block of shops and offices with steel fire escape; ware-house type of framed structure with a saw-tooth roof; demolitions; alterations; precast concrete work (excluding electrical and mechanical services and mason.)

- 1. Analysis: Construction methods, details and materials. Free-hand sketches. Analysis of relevant construction methods, details and material with particular reference to descriptions in bills of quantities. Relevant specifications.
- 2. Theory: A basic knowledge of various methods or forms of bills of quantities and methods generally adopted in contractors' offices. Direct billing, abstracting, cut and shuffle, and computer methods. Preamble and preliminary items. Editing and presentation of Bills of Quantities. Preparation of interim valuations.

Final account: Prime cost and provisional sums; extras; omissions; variations; day-work. Provisional quantities. Sub-contractors.
- 3. Practical: Taking off and descriptions of quantities for: Demolitions; alterations; excavations; planking, strutting and shoring; concrete, formwork and reinforcement; precast concrete; bricklayer; waterproofing; slater and tiler; carpenter and joiner; floor coverings; ironmongery; metalwork; curtain walling, shopfitters' work and partitions; pavior and plasterer; tiler; plumber and drainlayer; glazier and painter; fencing.



DEPARTMENT OF EDUCATION

Enquiries: Mr. D R Ludik
Ref: 13/1B
Tel.: (012) 314 9217
Fax.: (012) 323 8070

Directorate: National Examinations and Assessment
Private Bag X110
PRETORIA
0001

1999-10-29

TO:

TECHNICAL COLLEGES
IDENTIFIED EXAMINATION CENTRES
COMMITTEE OF TECHNICAL COLLEGE PRINCIPALS
TECHNICAL COLLEGE OF SOUTH AFRICA
THE ASSOCIATION OF DISTANCE EDUCATION COLLEGES OF SOUTH AFRICA
CORRESPONDENCE COLLEGES
EXAMINERS AND MODERATORS
PROVINCIAL EDUCATION DEPARTMENTS

CIRCULAR NO. 18 OF 1999

IMPROVEMENT OF THE PASS PERCENTAGE OF THE INSTRUCTIONAL OFFERING QUANTITY SURVEYING N6 (ENGINEERING FIELD OF STUDY)

At a meeting held in Pretoria on 9 August 1999 and attended by the current examiner(s), (examiner(s) appointed as from the year 2000), lecturers, markers as well as Education Specialists from the above-mentioned Directorate, it was decided that the following issues need special attention in order to improve the present very poor national pass percentage of this instructional offering at the N6 level:

1. ENROLMENT

- 1.1 Candidates may enrol on the N6 level provided that proper proof has been submitted that the instructional offering was passed at the previous N5 level.
- 1.2 The book *"The Association of South African Quantity Surveyors – Standard System of Measuring Building Work"* – Sixth Edition (Revised) 1999 has to be obtained and used by each candidate.

2. TUITION

- 2.1 Throughout the duration of the course, the candidates must be taught the actual meaning of terminology as used on site and in practice in the particular field of study. Many candidates experience difficulty to understand the language.

- 2.2 Lecturers have to encourage candidates to make line drawings/free-hand drawings to represent the facts in the questions in order to simplify the questions. Practices, such as the use of coloured pencils in combination with the line drawings, are advisable and are in keeping with methods used in industry.
- 2.3 Tuition of Quantity Surveying N6 must incorporate practical work as far as possible.
- 2.4 Lecturers must ensure that the term marks given to candidates is a true reflection of the candidates' abilities and these marks have to correlate with the percentages the candidates obtain in the national examination.
- 2.5 Candidates should not only be trained to pass the examination, but also how to answer a question paper properly.

3. PRACTICAL EXPERIENCE

Candidates should be exposed to site practice and other practical aspects in general. Theory and practice (construction site) are not two separate entities. They are closely related to each other.

4. EXAMINATION

- 4.1 As from April 2000 the examination question paper will include a choice question of 20 marks which can be attempted by candidates.
- 4.2 Lecturers are reminded that examiners' and moderators' reports can be obtained from the representatives of the various provincial education departments.

5. LONG TERM RECOMMENDATIONS

- 5.1 Lecturers teaching the above-mentioned instructional offering are not quantity surveyors or do not have the required experience to teach the instructional offering properly. Therefore, the training of lecturers is essential.
- 5.2 The syllabus for Quantity Surveying N6 needs revision. The syllabus seems to be quite long and in order to clarify the depth of the learning content to be covered in a period of 11 weeks, Annexure A, compiled by the examiner and recommended by the moderator, is included and has to be used as a guide.


 DIRECTOR-GENERAL

QUANTITY SURVEYING N6¹

(One 4-Hour Paper)

(With effect from September 1981)

Note

- (a) The level of examination work will be appreciably higher than in the previous grade.*

CLASSROOM PRESENTATION:

Refresh N4- and N5-work. The basic principles are the same, but the learner has to deliver more work in the same time given. Because examples have more detail, they are more complicated.

EXAMINATION:

For example:

N4 single-room foundation: The candidate achieves one mark (1%) for each correct description, each side cast and each dimension.

N6 multi-room foundation: The candidate will only earn ½ mark (½%) for each of the above.

- (b) The Standard System may be used in the examination.*

CLASSROOM PRESENTATION:

Learners should be in possession of the latest issue of the STANDARD SYSTEM OF MEASURING BUILDING WORK and must be able to use it.

1999 6th Edition available from the:

ASSOCIATION OF SOUTH AFRICAN QUANTITY SURVEYORS

P.O. Box 3527

1685 HALFWAY HOUSE

Tel.: (011) 315-4140

Fax: (011) 315-3785

(Students are entitled to a special students' discount.)

¹Bold and italic fonts quote the Quantity Surveying N6 syllabus.

EXAMINATION:

- Separation (categories etc.) must be strictly according to the Standard System. As the candidate is free to use it during the examinations, the marking will be strict.
- From time to time the skill to look something up in the Standard System will be tested.

(a) This syllabus is divided into three parts:

- 1. Analysis of construction details*
- 2. Theory of Quantity Surveying*
- 3. Practical Quantity Surveying*

Scope: contemporary building work: complete buildings or parts of buildings in extension of the work of previous grades; three-storey block of shops and offices with steel fire escape; ware-house type of framed structure with a saw-tooth roof; demolitions; alterations; precast concrete work (excluding electrical and mechanical services and mason.)

CLASS ROOM PRESENTATION:

Contemporary building work

- Find practical examples.
- Be careful with examples found in handbooks introduced from overseas (the construction methods AND measuring principles differ from those in South Africa.)
- Refresh and continue on N4 and N5 work:
 - Foundations
 - Superstructure and Roofs
 - Openings
- Try to do at least one site visit.

Complete buildings or parts of buildings in extension of the work of previous grades

- 'Complete buildings' are to be separated into sections (GENERAL CHECK LISTS) as used in N4 and N5.

Three-storey block of shops and offices with steel fire escape

Ware-house type of framed structure with a saw-tooth roof

- Introduce concrete structures (concrete, formwork and reinforcement)
- Consult the Standard System Trade: CONCRETE, FORMWORK and REINFORCEMENT
- Introduce steel structures (steel frames)
- Consult the Standard System Trade: STRUCTURAL STEELWORK
- 'Shops', 'Offices' and 'Warehouses' are of no special significance
- Make use of any general examples

DEMOLITIONS

ALTERATIONS

- Introduce the measuring of variation orders.
- Keep it simple.
- For example:
 1. Measure a two-room structure
 2. Measure the variation order:
'Two rooms to be one room', i.e. the design has changed BEFORE the builder has started the works. OMISSIONS, ADDITIONS.
 3. Measure the variation order:
'Remove internal wall', i.e. the design has changed AFTER the builder has completed that room. ALTERATIONS.

Precast concrete work

- Get hold of Manufacturers' detailed drawings
- Consult the Standard System trade: PRECAST CONCRETE

EXAMINATION:

- Pay attention to previous examination questions, but be aware of small changes in dimensions and specifications.
- Complete buildings are separated into sections and each examination question can be done independently.

- Errors in preliminary calculations will not be penalised a second time in case of recurrence in the taking-offs.
- Measurements of variation orders will be examined.

1. ***Analysis: Construction methods, details and materials. Free-hand drawings. Analysis of relevant construction methods, details and material with particular reference to descriptions in bills of quantities. Relevant specifications.***

CLASSROOM PRESENTATION:

- Construction background must be given constantly.
- Try to align with the BUILDINGS AND STRUCTURAL CONSTRUCTIONS N4, N5 and N6 lecturer.
- Discuss the construction before taking-off.
- Make use of coloured pencils.
- Try to do site visits.
- No necessity for memorizing building regulations. The Quantity Surveyor's task is not to query regulations. He should measure whatever is designed. However, he must make sure that the construction is workable. For instance, he must measure - and if necessary include query notes - the fixing brackets for hand wash basins although they may not be specified.

EXAMINATION:

- Very basic free-hand drawings similar to those found in the N4 and N5 examinations may be expected.
- Include the new topics, such as manholes and steel stanchions.
- Basic construction background is needed to interpret the given drawings right through the question paper.
- Not many marks will be allocated/earned for independent construction questions/free-hand drawings (± 5 marks).

2. **Theory: A basic knowledge of various methods or forms of bills of quantities and methods generally adapted in contractors' offices. Direct billing, abstracting, cut and shuffle and computer methods. Preamble and preliminary items. Editing and presentation of Bills of Quantities. Preparation of interim valuations. Final account: Prime cost and provisional sums; extras; omissions; variations; day-work, provisional quantities. Sub-contractors.**

CLASSROOM PRESENTATION:

- Squaring, abstracting and billing must be exercised on a continuous basis.
- The purpose, contents and types of Bills of Quantities must be fully understood.
- The cut and shuffle technique should only be explained, no need to do exercises.
- Computer methods should be explained.
- A visit to a quantity surveying firm demonstrating computer methods is recommended.
- *Preambles & Preliminaries:* Refresh N4 work. A deeper insight is now necessary.
- *Preparation of interim valuations.* Refresh N5 work. Exercises are necessary.
- *Final Account work:* Refresh N5 work. A deeper insight is now necessary.
- *Prime Cost and Provisional Sums (Sub-contractors).* Refresh N5 work.
- *Extras, omissions, variations, dayworks.* Refresh N5 work. Introduce escalations.
- *Provisional quantities.* Explain how the Foundation, the Plumbing and External Works are measured provisionally and are remeasured on completion.

EXAMINATION:

- Essays must contain enough facts and must show considerable insight.
- All the above theory topics will be examined on a rotational basis.
- Keep the building industry in mind.
- The following may be examined:
 - Knowledge about the various types (± 10 marks).
 - Calculations for interim valuations OR
 - Calculations for escalations (±5 marks)

3. ***Practical: Taking off and descriptions of quantities for: Demolitions; alterations; excavations; planking; strutting and shoring; concrete; formwork; and reinforcement; precast concrete; bricklayer; waterproofing; slater and tiler; carpenter and joiner; floor coverings; ironmongery; metalwork; curtain walling; shopfitters' work and partitions; pavior and plasterer; tiler; plumber and drainlayer; glazier and painter; fencing.***

CLASSROOM PRESENTATION:

- Note: The above trades are to be renamed and are to be re-arranged slightly according to the latest edition of the Standard System.
- Introduce the following trades:
 - ◆ Alterations
 - ◆ Concrete, Formwork and Reinforcement
 - ◆ Waterproofing
 - ◆ Plumbing and Drainage
 - ◆ External Work
- Discuss and exercise the basics, do not use drawings with complicated dimensions.
- Consult the relevant trade in the Standard System for the basic principles.
- (Make sure learners comprehend the questions.)

EXAMINATION:

- Concentrate on practical work the learner would come across when involved in the building industry. This will be general taking-off which is often done on site and by assistants:
 - Remeasurements (Foundations, Plumbing, External Works)
 - Variation Orders (Openings, etc.)
- Consult previous examination papers.
- Expect questions on the following broad topics:
 - Foundations, External works
 - Parts of concrete structures
 - Roofs
 - Openings
 - Plumbing and Drainage

- Note: some of the above topics
 - are to be taken-off
 - must be worked-up
 - will be included in the theory question

The year 2000 question papers:

- All three papers have the same format
- 5 questions of 25 marks each
- Choose 4 questions
- Most questions are based on previous questions.
- Each taking-off question refers to its own drawing/diagram (independent questions)
- 3 questions: taking-off
- 1 question: working-up
- 1 question: theory

E. HARMSE

October 1999