

**PROGRAM** : NATIONAL DIPLOMA: BUILDING

**SUBJECT** : QAUNTITY SURVEYING 3

**CODE** : QSG 331

**DATE** : SUMMER EXAMINATION 2016  
23 NOVEMBER 2016

**DURATION** : (SESSION 2) 12:30 - 16:30

**WEIGHT** : 50 : 50

**TOTAL MARKS** : 182

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**EXAMINER** : MR N. ANSARY

**MODERATOR** : MRS K. CLOETE

**NUMBER OF PAGES**: 4 PAGES INCLUDING THE COVER PAGE AND  
4 MARKING RUBRICS & 3 DRAWINGS

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**INSTRUCTIONS** : STUDENTS MAY RETAIN THE QUESTION PAPER BUT  
HAND IN THE DRAWINGS.

PLEASE READ THE INSTRUCTIONS OVERLEAF

**REQUIREMENTS** : 16 SHEETS OF DIMENSION PAPER.

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**INSTRUCTIONS TO CANDIDATES:**

**CANDIDATES ARE STRONGLY ADVISED TO READ THESE INSTRUCTIONS**

1. SIGN AND DETACH ALL DRAWINGS, SCHEDULES AND HAND IN WITH ANSWER BOOKS
  2. *Answer all the questions. Read the question carefully before making any enquiries into this paper.*
  3. ALL work is to be measured strictly in accordance with the relevant and latest Standard System of Measurement.
  4. Scaling will not be allowed, unless dimensions are not given and could not be calculated
  5. Where dimensions are not given they should be calculated or measured from the drawings.
  6. Candidates are to assume their own specifications where workmanship and/or materials that are not mentioned.
  7. In marking papers, 5 % of the marks will be given for systematic and orderly method of "taking off", well referenced and accurate dimensions and clear descriptions of work.
  8. **Work to be measured strictly in construction sequence or as per the rubric**
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**QUESTION 1**

Demonstrate your ability by measuring/taking off quantities for the **Earthworks** as per attached Drawing No. QUSU3/0 T2. Use the dimension paper provided. **(41)**

- 1.1 Bulk excavation for ramp and basement
- 1.2 Excavation for the holes and trenches
- 1.3 Keeping excavation free from water

**Notes & Specifications:**

- *All excavation in pick-able material*
- *Remember that you are to measure everything below the reduced levels*

**QUESTION 2**

Demonstrate your ability by measuring/taking off quantities for the **SUB-STRUCTURE of a Reinforced Concrete Framed Building** complete as per attached Drawing No. QUSU 3/0 RCS 12 (N). Use the dimension paper provided. **(44)**

### Notes & Specifications:

- All excavation in pickable material and substructure is measured up to NGL
- Allow 300 mm deep soft rock excavation
- Do not measure the working space but allow for formwork to column bases and columns in foundations
- Backfill with selected excavated material to 90% Mod AASHTO
- Surplus material to be carted off site
- 100 mm thick concrete blinding under all bases being 10 Mpa 19 mm stone
- All columns are central on the bases
- All reinforced concrete in bases, beams and slabs are 20 Mpa 19 mm stone except where indicated
- All formwork is F1 (rough) quality in foundations

### QUESTION 3

Demonstrate your ability by measuring/taking off quantities for the **SUPER STRUCTURE of a Reinforced Concrete Framed Building** complete as per attached Drawing No. QUSU 3/0 RCS 12 (N). Use the dimension paper provided. (43)

### Notes & Specifications:

- All reinforced concrete in bases, beams and slabs are 20 Mpa 19 mm stone except where indicated on the drawing.
- The super structure is measured from the NGL and columns to u/s of beams and not to u/s of slab as per principles
- Smooth formwork to all exposed surfaces
- Measure clause 11 and 12 from horizontal from top to bottom as

*12000 mm overall and from left to right at 5.500 mm*

#### QUESTION 4

Demonstrate your ability by measuring/taking off quantities for the **Reinforcement** complete as per the attached bending schedule QUSU 3/0 RCS 09/d. Use the dimension paper provided. Square out all the dimensions fully. (54)

#### Notes & Specifications

- *R denotes Mild Steel*
- *Y denotes High Tensile Steel*
- *Measure high tensile steel most expensive to least expensive (Y20-Y10)*
- *Measure mild steel from most expensive to least expensive (R8 - R6)*
- *Use the bar mark as a reference as this is crucial*
- *At the end determine the total tonnage as per the SSm6th and 7<sup>th</sup> edition*

**Total Marks [182]**

*Please note that some items in the rubric/s have to be measured separately as they are lumped together*



**Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.**

Student Name:.....

Student No.:.....

**Assessment scheme/Marking Rubric/Assessment criteria**

Measurement of Bulk Earthworks		
QUESTION 1	Score	Achieved
Collections to the ramp (16 x 1/2)	8	
Descriptions & Dimensions:- Excvt for basement and ramp in categories (22 x 1/2)	11	
Descriptions & Dimensions:- Excavate for column bases A (14 x 1/2)	7	
Descriptions & Dimensions:- Excavate for column bases B (6 x 1/2)	3	
Centre line for trenches (6 x 1/2)	3	
Descriptions & Dimensions: Excavate for trenches (6 x 1/2)	3	
Descriptions & Dimensions: Kefow (4 x 1/2)	2	
Good taking off principles:- page no's, sign posting & following instructions	4	
<b>Total Marks</b>	<b>41</b>	

Students to please note that marks will be allocated strictly as above.

**Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.**

Student Name:.....

Student No.:.....

**Assessment scheme/Marking Rubric/Assessment criteria**

Measurement of RCF building:- Substructure		
QUESTION 2	Score	Achieved
Descriptions & Dimensions:- Excvt in pm and bacfill to sides of fnds (10 x 1/2)	5	
Descriptions & Dimensions:- Excvt in holes for SR (6 x 1/2)	3	
Descriptions & Dimensions:- ROC to col bases and Kefow (14 x 1/2)	7	
Descriptions & Dimensions:- Mass Conc to blinding (10 x 1/2)	5	
Descriptions & Dimensions:- RC to col bases (10 x 1/2)	5	
Descriptions & Dimensions: RC to cols in fnds (12 x 1/2)	6	
Descriptions & Dimensions: Rough formwork to sides of bases (6 x 1/2)	3	
Descriptions & Dimensions:- Rough formwork to sides of Columns in fnds (10 x 1/2)	5	
Good taking off principles:- page no's, sign posting & following instructions	5	
<b>Total Marks</b>	<b>44</b>	

Students to please note that marks will be allocated strictly as above.

**Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.**

Student Name:.....

Student No.:.....

**Assessment scheme/Marking Rubric/Assessment criteria**

Measurement of RCF building:- Superstructure		
QUESTION 3	Score	Achieved
Descriptions & Dimensions:- Smooth formwork to cols (14 x 1/2)	7	
Descriptions & Dimensions:- RC to cols (8 x 1/2)	4	
Descriptions & Dimensions:- RC to slabs inclusive of beams (12 x 1/2) Clause 2 - 6 <sup>th</sup> edition SSM	6	
Descriptions & Dimensions:- Smooth formwork to soffit of slabs (6 x 1/2)	3	
Descriptions & Dimensions:- Smooth formwork to soffits and sides of beams (Clause 11) (16 x 1/2)	6	
Descriptions & Dimensions:- Smooth formwork to soffits and sides of beams (Clause 12) (10 x 1/2)	5	
Collections for beams (16 x 1/2)	8	
Good taking off principles:- page no's, sign posting, referencing & following instructions	4	
<b>Total Marks</b>	<b>43</b>	

Students to please note that marks will be allocated strictly as above.

**Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.**

Student Name:.....

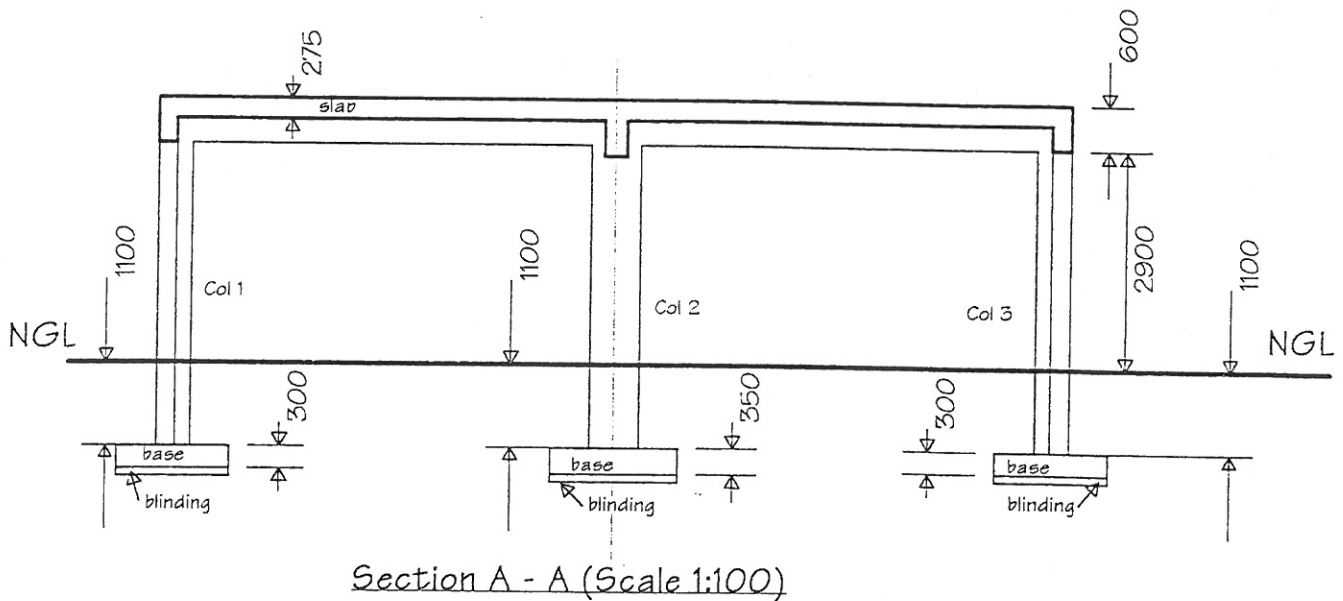
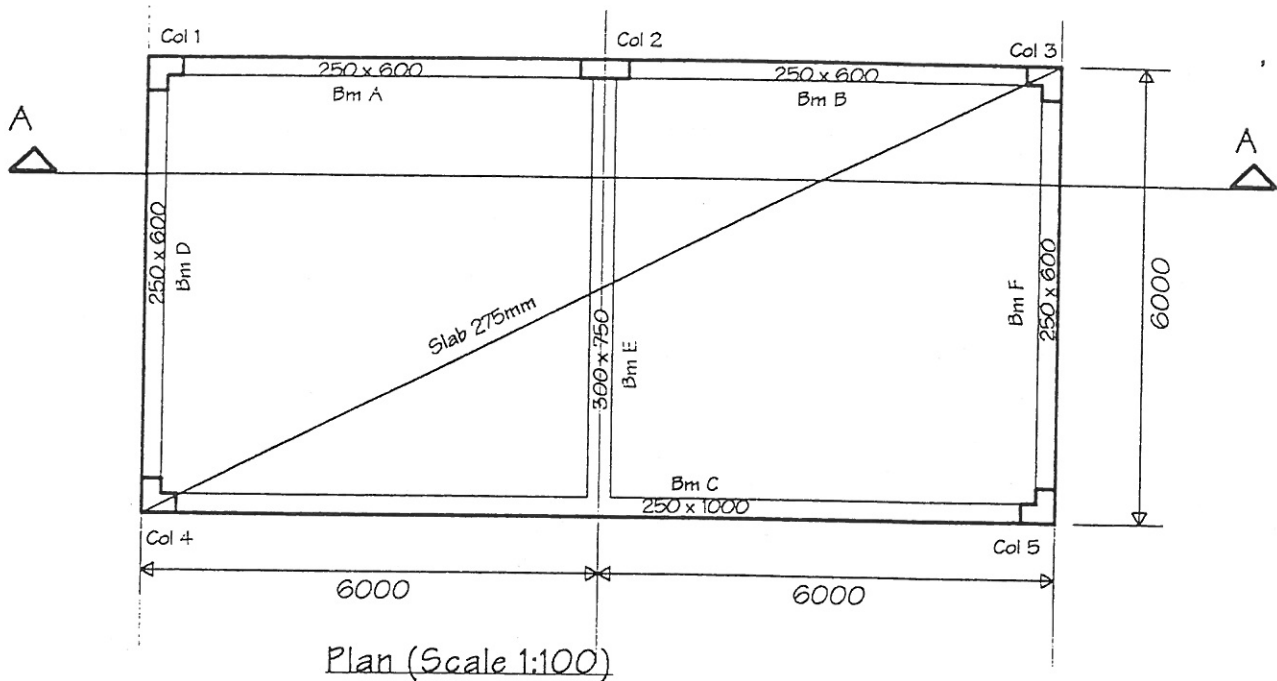
Student No.:.....

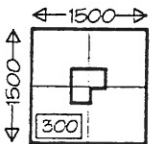
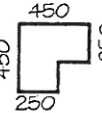
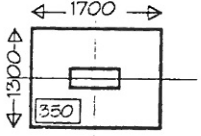
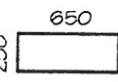
**Assessment scheme/Marking Rubric/Assessment criteria**

Measurement of RCF building:- Reinforcement		
<b>QUESTION 4</b>	<i>Score</i>	<i>Achieved</i>
Descriptions & Dimensions:- High tensile steel (54X 1/2)	27	
Descriptions & Dimensions:- Mild Steel (30X 1/2)	15	
Good taking off principles:- page no's, sign posting and referencing & following instructions	4	
Total tonnage (16 X 1/2)	8	
<b>Total Marks</b>	54	

Students to please note that marks will be allocated strictly as above.





SCHEDULE				
Col No	Base Size	Column	Col concr mix	Specification
1, 3, 4, 5			25 MPa	All excavation in pickable material Allow 300mm deep of Soft Rock excavation Backfill with selected excavated material Surplus material to be carted off site  100mm thick mass concrete blinding under all bases 10 MPa.
2			25 MPa	All columns are central on bases All Reinforced concrete in bases, beams and slabs are 20 MPa All Formwork is F1 (rough) quality Allow the Provisional Sum of R 50 000,00 for all bar reinforcement

PROPOSED NEW OFFICE BLOCK

DWG No. QUSU 3/0 RCS Jb

**Reinforcement/Bending Schedule**

Dwg No. QUSU 3/0 RCS 09 / d

Member	Mark	Diam	No.	Total No.	Girth (mm)
Stairs	1	Y16	16	16	1200
Stairs	2	R8	4	4	4550
String beams to stairs	3	Y12	2	4	3800
=	4	Y12	2	4	4250
Binders	5	R8	15	30	800
Slab	6	Y10	9	18	3300
=	7	Y16	61	61	2450
=	8	Y10	22	22	7750
=	9	R8	54	54	600
Beams	10	Y12	2	4	2200
=	11	Y10	2	4	2000
Binders	12	R8	12	24	1050
Beams	13	Y20	3	12	8175
=	14	Y16	2	8	7775
Binders	15	R6	40	40	1050
Beams	16	Y20	3	6	3100
=	17	Y12	2	4	2950
Binders	18	R6	17	34	1005
Beams	19	Y20	3	6	2500
=	20	Y12	2	4	1650
Binders	21	R6	4	8	1050
Columns	22	Y16	4	24	3000
Binders	23	R8	16	32	700
=	24	R8	16	64	850

Diameter of Steel	Weight per metre (Kg / m)
6mm	0.222 Kg / m
8mm	0.395 Kg / m
10mm	0.617 Kg / m
12mm	0.888 Kg / m
16mm	1.580 Kg / m
20mm	2.470 Kg / m
25mm	3.860 Kg / m
32mm	6.310 Kg / m
40mm	9.870 Kg / m



**Student Name and No.....**





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