



**PROGRAM** : NATIONAL DIPLOMA  
ENGINEERING : CIVIL

**SUBJECT** : **DOCUMENTATION 3**

**CODE** : **DIS3111**

**DATE** : SUMMER SSA EXAMINATION 2015  
10 DECEMBER 2015

**DURATION** : (SESSION 2) 11:30 - 14:30

**WEIGHT** : 40 : 60

**TOTAL MARKS** : 100

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**ASSESSOR** : Mrs N. NGCOBO

**MODERATOR** : Mr S. MSUTWANA FILE NO: 2295

**NUMBER OF PAGES** : 4 PAGES, 1 ANNEXURE & 6 MEASURING SHEETS

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**INSTRUCTIONS** : ONLY ONE POCKET CALCULATOR PER CANDIDATE  
MAY BE USED.

: PLEASE ANSWER ALL QUESTIONS.

**REQUIREMENTS** : NONE

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**QUESTION 1**

**Annexure A** shows the plan and sections of a winder house in reinforced concrete. Using the measurement paper provided, take off quantities for earthworks, concrete and formwork. Make reasonable assumptions for any information not known and clearly state these assumptions. (25)

Once you have concluded your measure of quantities, draw up a suitable Schedule of Quantities as per the acceptable standard format. (5)

(30)

**QUESTION 2**

- 2.1 Your client would like to do a cost comparison between building a 20MPa concrete wall and a 1½ brick wall. The height of the wall is 5m. The client has requested your input. Show how you would calculate the unit rate for the two options using the following information.

**Concrete wall**

Concrete will be mixed on site with a 400 litre mixer  
 Hire rate for the mixer is R250 / hr  
 Fuel cost R14 / litre  
 Lubrication can be taken as 10% of fuel  
 Stone size – 19mm

**Waste:** Sand - 10%  
 Stone – 10%  
 Cement – 3%

**Brick wall**

Make the following allowances for shrinkage and waste:

- cement : 4%
- sand : 8%

Cement mortar ratio – 1:3

Mortar will be mixed by labour on site

Mortar : Waste 5%

Bricks : R1500 / 1000

Waste on bricks : 5%

Production : 700 bricks / 8 hr day

**Cost of material is as follows:**

Cement	-	R80 / bag
Sand	-	R200 / m <sup>3</sup>
Stone	-	R250 / m <sup>3</sup>

**Cost of Labour:**

Labourer - R30 / hr

Bricklayer - R45 / hr

Operator - R40 / hr

(35)

**NB: Where information is not clear, make reasonable assumptions.**

**QUESTION 3****REJECTION OF WORK****NARRATIVE:**

You are running a Contract let under the General Conditions of Contract 2010 for the construction of a new motorway. The Resident Engineer rejects a completed section of crusher run base course because he considers that the final levels are outside the specified tolerances.

You consider that you are close enough to these tolerances and that the Resident Engineer is being unnecessarily fussy. You also point out that the final black top will eliminate the inaccuracies about which he is concerned and also that it will not cost any more as the black top is payable on a square metre basis.

The Engineer's Representative is adamant and orders that the base course be regraded and recompact.

**REQUIREMENT:**

Quote the relevant Clauses of the General Conditions of Contract (GCC) 2010 to determine:-

1. The circumstances, if any, under which the Resident Engineer can reject work
2. Any redress that you may have over his unacceptable ruling
3. Any subsequent action the Engineer could take if his Representative had accepted your plea with which the Engineer later disregard
4. What redress you have in the event of the Engineer's decision being unfavourable?

**Additional Requirements**

Under which clause of the General Conditions of Contract (GCC) 2010 is the contractor's Representative appointed and what legal protection, if any, does he have?

What steps can the contractor take to ensure any limitations in the powers of the Representative are recognised?

**(15)****QUESTION 4**

- 4.1 In a Contract based on the General Conditions of Contract (GCC) 2010 the specification contains the following clause:

"The Contractor shall keep the whole of the works free from water and allow for pumping, dewatering, shoring, temporary drains, sumps, etc., necessary for the purpose and shall make good at his

own cost and to the satisfaction of the Engineer all damage caused in carrying out this work. The Contractor shall be deemed to have taken the foresaid into account in fixing his rates and prices and to have included the cost in the sum named in the tender."

There is no specific item in the Schedule of Quantities covering the cost of this requirement.

At a particular point in the excavations the Contractor finds an underground stream and running sand of a magnitude which he considers will prevent "the works" being carried out as intended. He considers that the circumstances are exceptional and that special action is called for.

Quote the relevant Clauses of the General Conditions of Contract (GCC) 2010 and to determine:

4.1.1 The Contractors liability and responsibilities.

4.1.2 The basis of any claim for the additional expense incurred by the contractor.

(10)

### **QUESTION 5**

Use the General conditions of Contract for Construction works (GCC) 2010 to answer the following questions. Also state the relevant clause numbers to substantiate your answers.

5.1 A heavy thunderstorm on a pipe laying contract site in Boksburg late on a Friday afternoon caused serious damage to a pipe trench and to the partly laid pipe. The contractor claims an extension of time, additional P & G and the costs of repairs. Would you expect the Engineer to agree to this claim? (5)

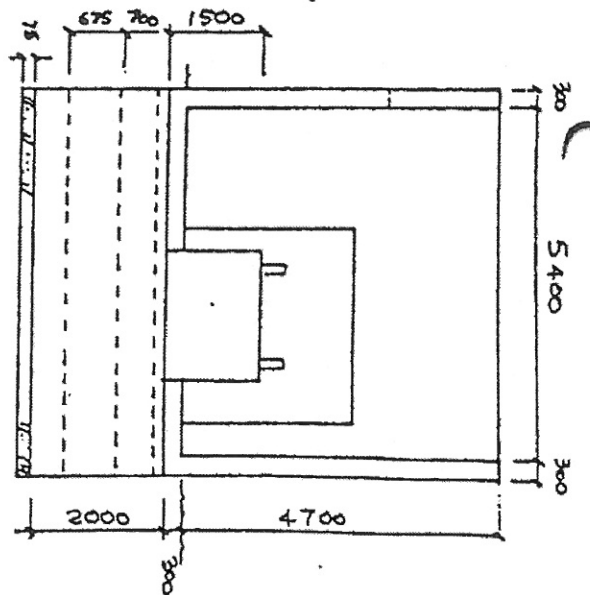
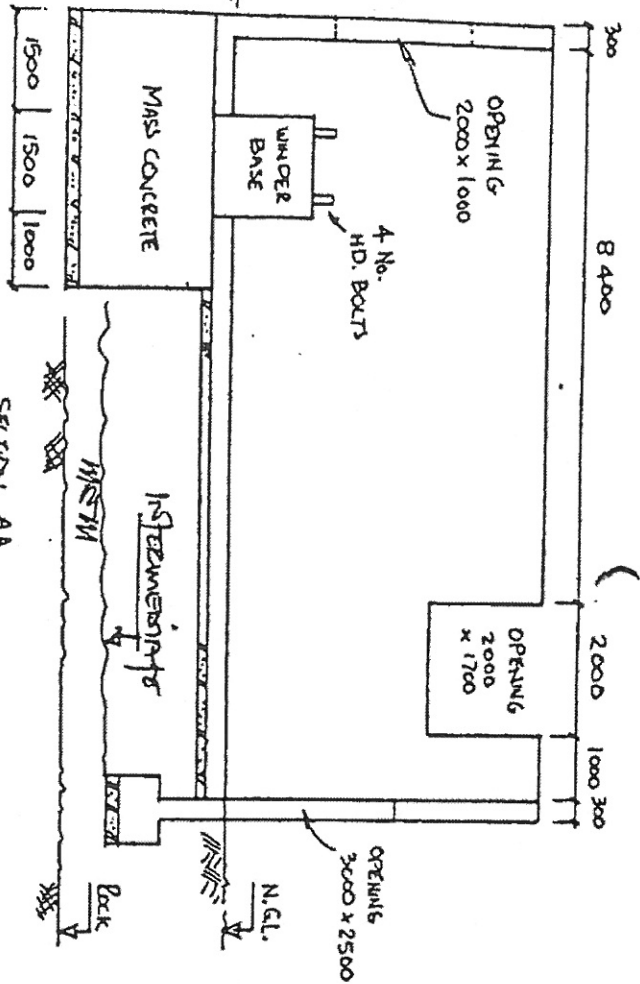
5.2 A contractor considers that they are being unfairly treated and delayed because drawings are constantly being issued late by the Engineer. This is affecting the program since they have insufficient "lead time" to order formwork and reinforcing steel plus have little time to plan the contract and set out the works. What action should the contractor take? (5)

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**TOTAL = 100**

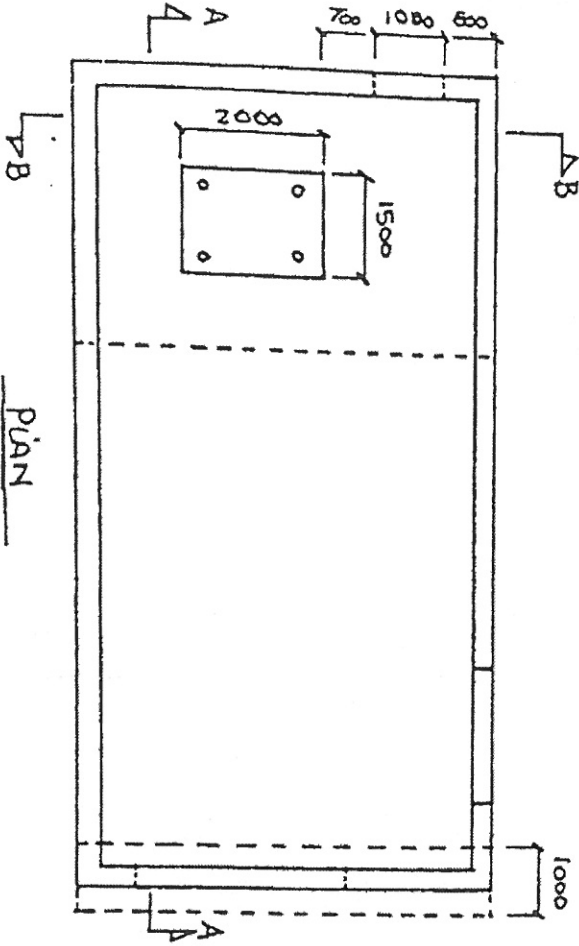
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# ANNEXURE A



SECTION AA.

SECTION B.B.



Pian

- NOTES:-

- ① All concrete to be 20 MPa
- ② Allow 3.5 tone for reinforcing steel
- ③ Binding : 75mm : 15 MPa
- ④ Floor : Power Floor ; 100mm : 15 MPa

DIEPSLOOT MINE

WINDER HOUSE

## CONCRETE DETAILS

DRAWDN

姓名:

DATE

3

SCALE: N:7.5

DRG. No.

WH-0967

STUDENT NUMBER . . . . .

1	2	3	4	5	6	7
Item No	Timesing	Dims	Product	Description (Incl Ref. & waste)	Unit	Quantity

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1	2	3	4	5	6	7
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