UNIVERSITY
OF
JOHANNESBURG

PROGRAM	:	NATIONAL DIPLOMA *ENGINEERING: BUILDING*
SUBJECT	:	**QUANTITY SURVEYING 1**
CODE	:	**FQSG11A**
DATE	:	NOVEMBER EXAMINATION 30 NOVEMBER 2016
DURATION	:	(SESSION 2) 12:30 - 15:30
WEIGHT	:	40 : 60
TOTAL MARKS	:	150

ASSESSOR	:	MR. BERENGER Y. RENAULT
MODERATOR	:	N. ANSARY
NUMBER OF PAGES	:	17 PAGES INCLUDING THE COVER PAGE AND 1 ANNEXURE (10 Dimension sheets for take off)

INSTRUCTIONS	:	ANSWER ALL QUESTIONS.
REQUIREMENTS	:	WRITING MATERIALS.

INSTRUCTION TO CANDIDATES

- *SIGN AND DETACH ALL DRAWINGS, SCHEDULES AND HAND IN WITH FOLDERS*
- *The standard System and Model Bills is not to be used in the examination.*
- *ALL work is to be measured STRICTLY in accordance with the latest edition of the "Standard System of Measuring Building Work".*
- *Scaling will not be allowed unless dimensions are not given and could not be calculated.*
- *Where dimensions are not given they should be calculated or measured from the drawings.*
- *Candidates are to assume their own specifications where workmanship and/or materials that are not mentioned.*
- *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.*
- *Work to be measured strictly in construction sequence.*
- *Candidates are to round off all recorded dimensions to 2 decimal places.*
- *Squaring of dimensions is not required*
- *Use the answer/assessment sheet provided to answer QUESTION 1, QUESTION 2 and QUESTION 3.*
- *Use the dimension sheets provided to answer QUESTION 4 ONLY*

QUESTION 1 - Bills of Quantities

1.1 State three functions of a bill of quantities in the construction industry (3)

1.2 Why do you think a bill of quantities is important? (2)

1.3 What is a Quantity Surveyor? (2)

1.4 List seven (7) day-to-day services provided to Clients by Quantity Surveyors (7)

[14]

QUESTION 2 - Standard System of Measuring

2.1 State the order/sequence in which dimensions should be given (3)

2.2 State the first three categories for excavations in ground (3)

2.3 When will Risk of Collapse to sides of trench excavations be described as:

2.3.1 Not exceeding 1.5m deep from Natural Ground Level? OR (1)

2.3.2 Exceeding 1.5m deep from Natural Ground Level? (1)

2.4 State the unit in which the following items are to be measured:

2.4.1 Trench excavation (1)

2.4.2 Carting away of excavated materials (1)

2.4.3 Keeping excavations free from water (1)

2.4.4 Face brickwork (1)

2.4.5 Damp proof membrane under surface bed (1)

2.4.6 Concrete footings (1)

2.4.7 Risk of collapse to sides of trench excavation (1)

2.4.8 Backfilling trench with excavated materials (1)

[16]

QUESTION 3 - Mensuration

3.1 A path of with 1.8m runs inside along the boundary of a field which is in the shape of a square of side 72 m. Find the cost of tiling the path at the rate of R280 per m^2. Also find the cost of manuring the field at the rate of R55 per m^2. **See Fig.1.**

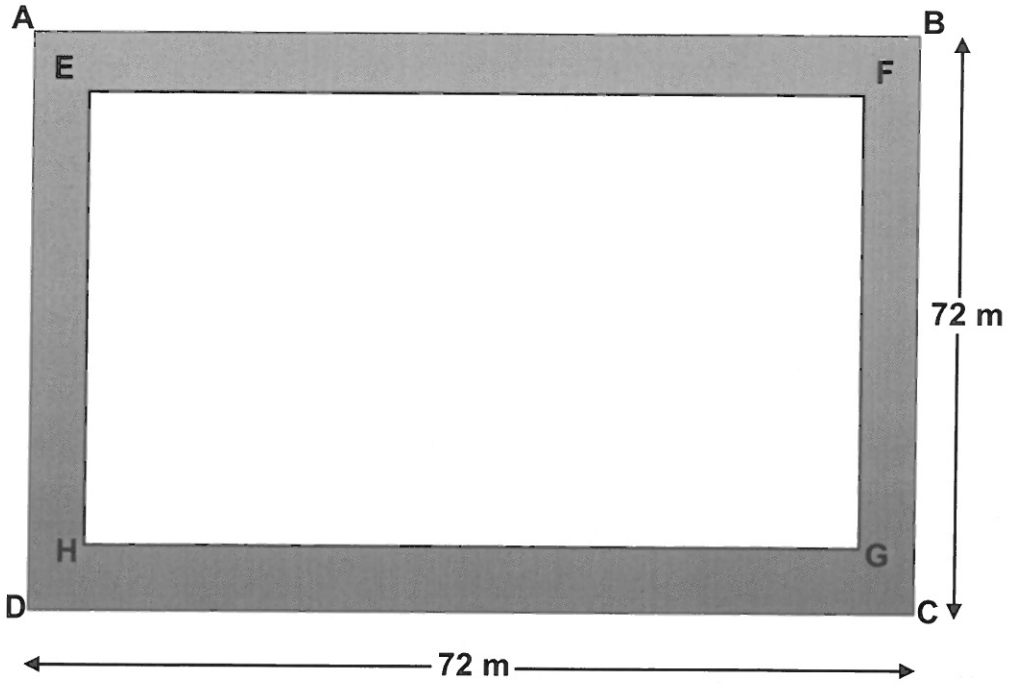
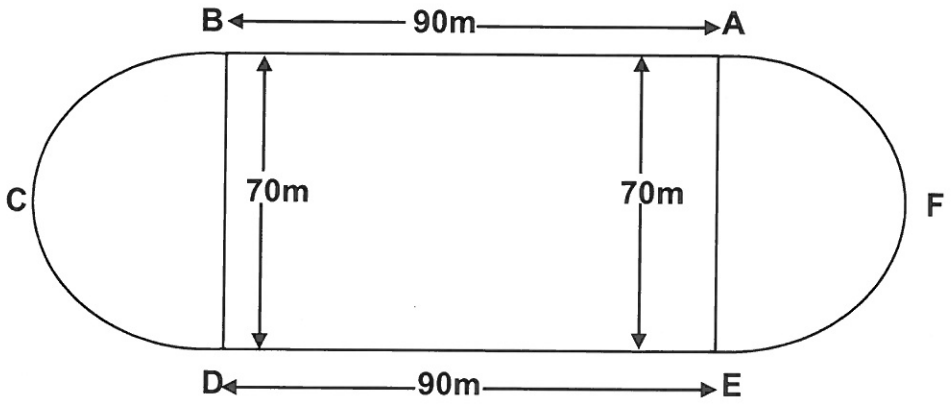


Fig. 1. (6)

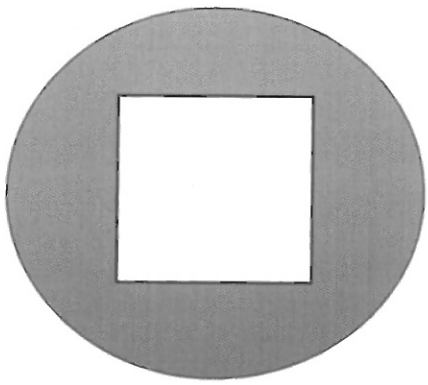
3.2 The diagram below shows a running track.BA and DE are parallel and straight. They are each of length 90 metres. BCD and EFA are semi-circular. They each Have a diameter of length 70 metres. Calculate:

3.2.1 The perimeter of the track; (2)

3.2.2 Total area inside the track (2)



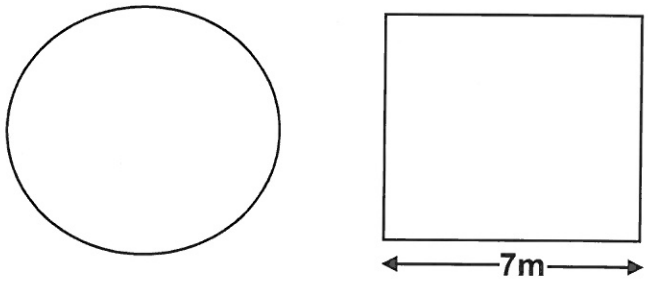
3.3 A square hole is cut in a circular piece of card to create the shape shown.



3.3.1 Find the shaded area of the card if the radius of the circle is 5.2 cm and the sides of the squares are 4.8 cm (2)

3.3.2 Find the radius of the circle if the shaded area is 50 cm^2 and the square has sides of length 4.2 cm. (2)

3.4 The circumference of the circle and the perimeter of the square are equal. Calculate the radius of the circle. (2)



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QUESTION 4 – Descriptive Quantification

Refer to QUSU 96/11/345d and demonstrate your ability to take off quantities for the following sections of work, all in accordance with the specification notes.

4.1 Foundation collections. (6)

4.2 Foundations/substructure up to top of surface bed level. (69)

4.3 Solid Floor Construction. (24)

[100]

Specification

Earthworks

- Clear site to 1500mm beyond the building
- Stripping of topsoil is NOT required
- Rock excavation: Soft rock depth 400 mm; Hard rock depth 300 mm.
- Backfill to foundations with excavated material in 150mm layers compacted to 80% Mod. AASHTO density
- Surplus excavated material to be carted off site
- 25mm Thick clean river sand as sand blinding under floors
- 100mm Filling under floors with clean filing material supplied by the Contractor
- 150mm Hardcore filling under floors

Concrete, Formwork and Reinforcement

- Mass concrete 1:3:6 (19mm stone) in concrete footings
- Mass concrete 10 Mpa (13mm stone) in filling to cavity of hollow wall.
- Mass concrete 15 Mpa (13mm stone) in concrete surface bed.

Masonry

- All brickwork in concrete stock bricks in 1:4 cement mortar built in stretcher bond.
- Face bricks to external brickwork is Inca Brown Smooth face bricks with square recessed joints and pointed with 1:3 cement mortar.

Waterproofing

- 375 Micron Gundle Gunplas DPC on walls.
- 250 Micron Gundle Gunplas (SABS) DPM under floors with sealed laps.

Helpful Formulas

Circumference of a circle $\Longrightarrow$ $C=\pi \times d$ **OR** $C=2\pi R$

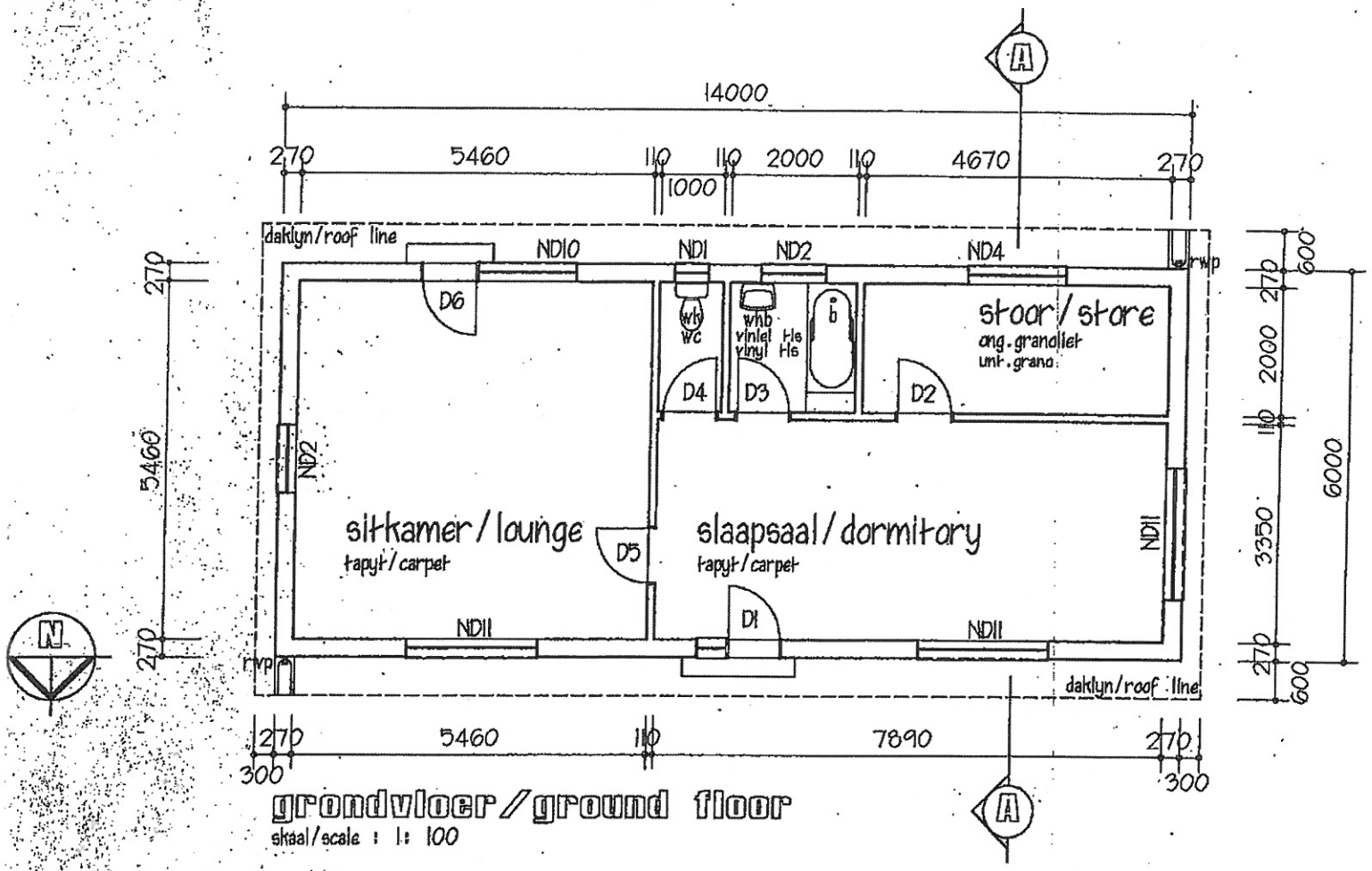
Perimeter of a square $\Longrightarrow$ $P=L \times 4$

Area of a circle $\Longrightarrow$ $A=\pi R^2$ **OR** $A=1/4 \times \pi \times D^2$

Area of a square $\Longrightarrow$ $A=L^2$

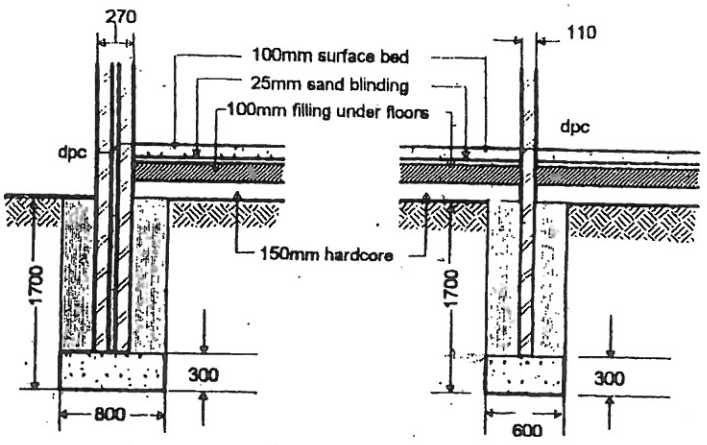
skaal/scale : 1: 100

Dwelling House of Mr J.F Lebo - Drawing No. QUSU 96/11/345d



grondvloer/ground floor

skaal/scale : 1: 100



SECTION A - A

SECTION B - B

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Dimension paper

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